California ISO – TAC Options Initiative

Spreadsheet User Guide v. 1, February 10, 2016

Introduction

The ISO opened the TAC Options initiative to consider whether to modify its existing TAC structure for recovering the costs associated with high-voltage transmission facilities (those rated > 200 kV) if the ISO expands its balancing authority area (BAA) by integrating a new participating transmission owner (PTO) with a load service territory. Readers unfamiliar with this initiative should review the October 23, 2015 Issue Paper, ISO presentations used in stakeholder meetings and workshops, submitted stakeholder comments, and the ISO's February 10, 2016 Straw Proposal. These documents and additional information about the TAC Options initiative are available at: http://www.caiso.com/informed/Pages/StakeholderProcesses/TransmissionAccessChargeOptions.aspx

In response to requests from many stakeholders, the ISO provides the Excel spreadsheet model that this user guide accompanies. The October 23 issue paper included numerical examples of the existing and some hypothetical alternative TAC structures, using projected data to the year 2029 for the annual high-voltage transmission revenue requirements (TRR) and annual MWh of load and exports for the existing ISO BAA and the PacifiCorp BAA. That paper also illustrated TAC structures that used a breakdown of the high-voltage category into two sub-categories for facilities between 200 kV and 300 kV, and facilities above 300 kV. Two limitations stakeholders identified with regard to the issue paper examples were that: (1) there was no consideration of adding other new PTOs in addition to PacifiCorp, and (2) the data used represented only transmission already in service plus projects that have already been approved for development in either the ISO's transmission planning process (TPP) or PacifiCorp's process; *i.e.*, those examples did not attempt to consider cost impacts of transmission projects that may be approved in the future, other than an assumed basic allowance for needed reliability upgrades.

The spreadsheet model the ISO is now providing will enable stakeholders to consider the cost impacts of future developments that go beyond the limitations of the issue paper examples. To be specific, the spreadsheet provides the following:

a) Data series for the current ISO BAA from 2015 projected through 2029, including annual TRR for facilities rated between 200 kV and 300 kV, annual TRR for facilities rated above 300 kV, and annual MWh of internal load and exports. These data series are the same ones the ISO used to construct the examples in the October 23 issue paper. The TRR series do not include estimates of potential future public policy-driven or economic transmission projects beyond those included in ISO transmission plans approved through 2015.

   It is important to understand that the breakdown of the > 200 kV high-voltage cost category into the 200-300 kV and > 300 kV sub-categories is a rough estimate that was prepared for the October 23 issue paper examples and was never intended to be a precise breakdown of costs. Furthermore, the ISO recognizes that the TRR data series

need to be revised to reflect more recent adjustment to TAC rates and new transmission additions and upgrades in the latest ISO comprehensive transmission plan, which will be submitted to the ISO Board of Governors in March of this year. The ISO will provide an updated version of the spreadsheet some time after the March Board meeting.

b) The corresponding data series for PacifiCorp, also the same ones used to construct the examples in the October 23 issue paper. For these TRR series also, the breakdown of PacifiCorp's TRR into the voltage-level categories is a rough estimate that was prepared for the October 23 issue paper and should not be interpreted as a precise calculation of the TRR for these transmission facility categories.

c) Functionality to calculate the two "baseline" TAC structures and the "alternative 1" as presented in the October 23 issue paper.

d) Functionality for the user to add two additional new PTOs and see the resulting annual TAC rates under the scenarios of bullet (c). For each new PTO the user must specify hypothetical annual high-voltage TRR and MWh values comparable to (a) and (b) above, plus the initial year in which the new PTO is integrated into the expanded ISO BAA.

e) Functionality for the user to add new transmission facilities that may be developed in the future and see the resulting annual TAC rates. For each new facility, the user specifies the total capital cost and in-service year, and the model calculates the annual revenue requirement as a percentage of the capital cost. The user also specifies the benefit shares of the facility for each sub-region. The costs are then allocated to the existing ISO BAA, PacifiCorp, and the two additional new PTOs (if the user chooses to include them in the analysis) based on the benefit shares.

f) Functionality to automatically graph the TAC rates that result from scenarios the user creates as described above.

The following sections of this user guide provide additional details on the use of the spreadsheet model.

Key terms and concepts

The following terms and concepts are consistent with what has been presented during the TAC Options stakeholder process.

a) **"CAISO" =** Current ISO BAA, ISO controlled grid and PTOs, prior to adding a new PTO with a load service territory.

b) **"PacifiCorp" or "PAC"** = Current PacifiCorp footprint, combining PAC East and PAC West.

c) **"PTO 1" =** New PTO with a load service territory to join the CAISO to form the expanded ISO BAA.

d) **"PTO 2" =** New PTO, same as above.

e) **"Existing facilities" =** Entity's transmission assets which, at the time of joining the expanded ISO, are either in service or have been approved in the entity's separate transmission planning process (TPP) and have scheduled in-service dates. The TRR data provided for CAISO and PacifiCorp reflect the costs of existing facilities as defined here.

f) "**New facilities" =** Transmission elements that are planned and approved via an integrated TPP for the expanded ISO. This could include a project that was being considered as an "inter-regional" project prior to the new PTO joining the ISO, and that is subsequently adopted and approved via the expanded ISO TPP.

g) Under an expanded ISO BAA, the current CAISO system (PTOs and ISO controlled grid), as well as each new PTO with a load service territory that joins, will be considered a "sub-region" in this spreadsheet.

h) This spreadsheet only covers high-voltage (>200 kV) transmission facilities. They are provided in three categories:

- 200 to 300 kV facilities (i.e., 230 kV)
- >300 kV facilities (i.e., 345 kV and 500 kV)
- >200 kV facilities = the sum of the above

i) Capital cost ($ millions) – for new projects approved under the expanded ISO TPP

j) Transmission Revenue Requirements (TRR) = the annual dollar amount of transmission cost to be recovered through TAC charges. For a new project planned and approved in the expanded ISO TPP the TRR for the project is estimated at 15% of the capital cost.

Spreadsheet model structure and functionality

The TAC options spreadsheet has four tabs:

1. Assumptions (user input)
2. Summary
3. New facilities TRR calculations
4. TAC rate scenarios calculations

1. Assumptions (user input)

The assumptions page is where the user can provide key assumptions that will be used to calculate the TAC rates under different scenarios. Default assumptions are already provided. **This is the only tab that requires user input.** All user input fields are highlighted in yellow in the spreadsheet.

NOTE: The ISO has included hypothetical TRR and load data for PTO 1 and PTO 2 to reflect a PTO roughly midway in size between CAISO and PAC (PTO 1) and a PTO roughly half the size of PAC (PTO 2). These data are purely hypothetical and any resemblance to actual BAAs is only a coincidence. Users should feel free to construct data series for PTO 1 and PTO 2 in any manner that interests them.

- Year joined. Year that the prospective PTO will join the expanded ISO BAA. If the cell is left blank, it is assumed that the PTO does not join and no TAC rates are calculated. This field applies to PAC and two optional additional PTOs.

- TRR for existing facilities. This field applies to the two optional PTOs. CAISO and PAC data have been filled in and correlate with data used in the issue paper.
- Gross Load (GWh). Gross load in GWh for the year 2015 for two optional PTOs along with an average annual growth rate in (%). CAISO and PAC data have been filled in and correlate with data used in the issue paper.
- New (hypothetical) facilities approved via the expanded ISO TPP. This section contains one table, in which the user must specify for each hypothetical new project: the project name, the year in service, the capital cost ($ millions), the TRR as percent of capital cost (the ISO suggests 15%), and the percentage cost shares (based on benefit shares) for the sub-regions (CAISO, PAC and other new PTOs). Cost shares must add to 100 percent. If the project cost will be allocated entirely to one sub-region the user should enter 100% for that sub-region's cost share and zero for the others.

2. Summary

No user input is needed in this tab. The summary tab contains the annual numerical values and graphs of those values for the various TAC options that are calculated based on the user's inputs. The four calculated TAC rate scenarios are described below.

Existing facilities: Separate rates >200 kV (Baseline 1) and single merged rate (Baseline 2)

This scenario presents each PTO's TAC rate for all existing facilities above 200kV. The single line in black represents the total combined TAC rate for all PTOs.

Existing facilities: Separate rates >200kV (Baseline 1) and merged rate for >300 kV (Alternative 1)

This scenario presents each PTO's TAC rate if all existing facilities above 200 kV are recovered separately, compared to separate cost recovery for the existing 200-300 kV plus a merged rate for existing facilities greater than 300 kV.

Sum of individual separate TAC rate for existing >200 kV (Baseline 1) and benefit shares of new facilities

This scenario presents each PTO's TAC rate if all existing facilities greater than 200 kV are recovered separately and the benefit shares of new facilities are allocated according to the user-specified percentages.

Sum of individual TAC rate for merging existing >300 kV (Alternative 1) and benefit shares of new facilities

This scenario presents each PTO's TAC rate if all existing 200-300 kV facilities are recovered separately, greater than 300 kV existing facilities are merged, and the benefit shares of new facilities are allocated according to the user-specified percentages.

3. New facilities TRR calculations

No user input is needed in this tab. The "New facilities TRR calc" tab will calculate each sub-region's annual costs for new facilities based on the user inputs on the previous tab.

4. TAC rate scenarios calculations

No user input is needed in this tab. The "TAC rate scenarios calc" tab is the end product of the user's input from the assumptions tab. The TAC rate is calculated with the following formula:

$$\frac{TRR\ (\$\ millions)}{Gross\ load\ (GWh) * 1000} = TAC\ rate\ \left(\frac{\$}{MWh}\right)$$

Each sub-region's TRR and gross load will be used in the TAC rate calculation when the user specifies the year that it will join the expanded ISO BAA.

- **"TAC rates for existing facilities" –** The TAC rate for existing facilities was calculated by incorporating the "TRR for existing facilities" from the "assumptions" tab. As each PTO joins and becomes a sub-region in the expanded BAA, the PTO's individual TAC rate for existing facilities will appear. The individual TAC rates will then be used for the different scenarios listed below, which correspond to scenarios presented in the October 23 issue paper.

  Baseline 1: Individual TAC rates for all existing facilities

  The rates in this section are each sub-region's separate rate for all existing facilities above 200 kV. The TAC rate is shown only when the PTO joins the expanded ISO BAA. The rates are shown in a graph at the bottom of the tab.

  Baseline 2: Merged TAC rate for existing >200 kV (current CAISO TAC structure)

  The single rate in this section is the "postage stamp" rate for all facilities > 200 kV for all sub-regions, with no separation by voltage sub-class. The rates are shown in a graph at the bottom of the tab and repeated on the "Summary" tab.

  Alternative 1: Sum of individual TAC rate for 200-300 kV and merged for >300 kV

  The rates in this section are the sum of keeping the 200-300 kV TAC rates separate for each sub-region and merging the cost allocation for all existing facilities >300 kV into a single postage stamp rate. The rates are shown in a graph at the bottom of the tab and repeated on the "Summary" tab.

- **"TAC rates just for new facilities" –** The TAC rates for new facilities are derived from the "New facilities approved via the expanded ISO TPP" under the "Assumptions" tab. With each project that is entered by the user, the spreadsheet will calculate the additional TAC rate that will need to be added into each sub-region's individual "existing facilities" TAC rate. This calculation will be used in assessing the TAC rates for existing and new facilities listed below.

- **TAC rates for existing and new facilities**

  Sum of each sub-region's TAC rate for existing facilities and its share of new facilities.