



California ISO



ITP Evaluation Process Plan

AC to DC Conversion Project

June 14, 2016

The goal of the coordinated Interregional Transmission Project (ITP) evaluation process is to achieve consistent planning assumptions and technical data of an ITP to be used in the individual regional evaluations of an ITP. The joint evaluation of an ITP is considered to be the joint coordination of the regional planning processes that evaluate the ITP. The purpose of this document is to provide a common framework, coordinated by the Western Planning Regions, to provide basic descriptions, major assumptions, milestones, and key participants in the ITP evaluation process.

The information that follows is specific to the ITP listed in the ITP Submittal Summary below. An ITP Evaluation Process Plan will be developed for each ITP that has been properly submitted and accepted into the regional process of the Planning Region to which it was submitted.

ITP SUBMITTAL SUMMARY

Project Submitted To:	California Independent System Operator (California ISO), WestConnect
Relevant Planning Regions:	California ISO, WestConnect
Cost Allocation Requested From:	Not requested

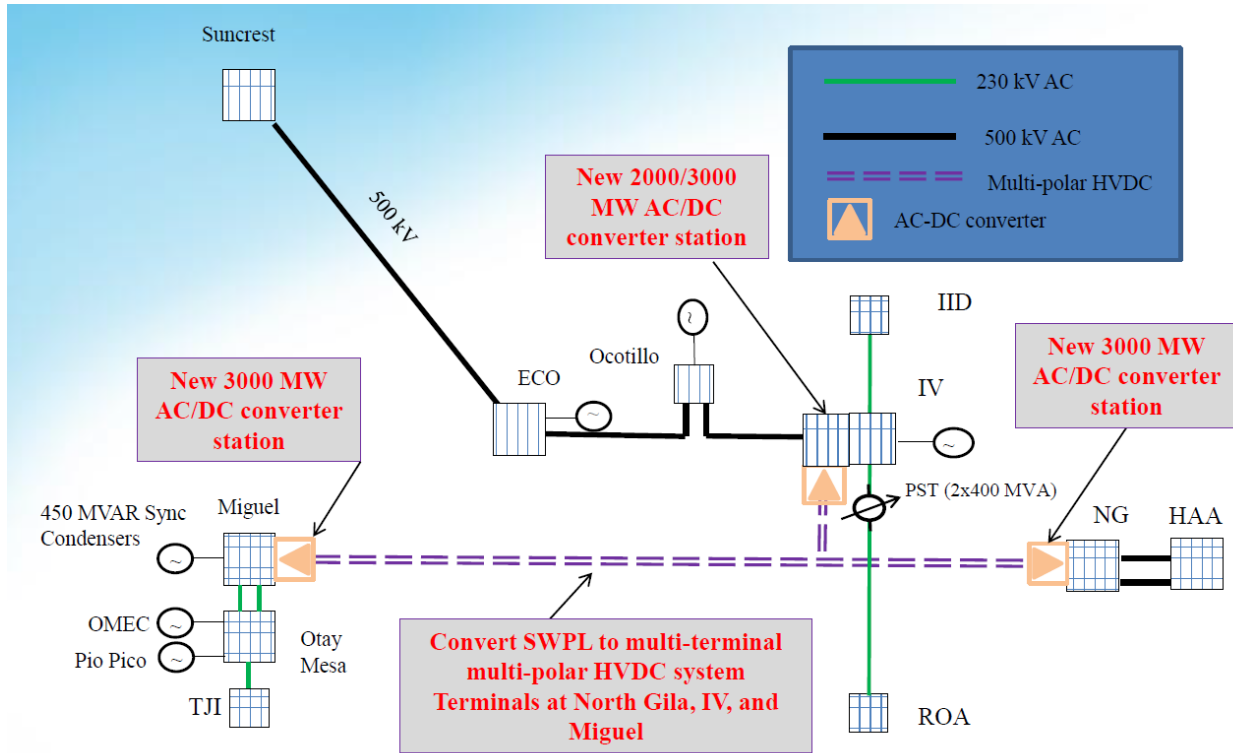
The Relevant Planning Regions identified above developed and have agreed to the ITP Evaluation Process Plan.

ITP SUMMARY

San Diego Gas and Electric (SDG&E) submitted the AC to DC Conversion Project to WestConnect and the California ISO as an ITP. The proposed project would convert a portion of the 500 kV Southwest Powerlink (SWPL) to a multi-terminal, multi-polar HVDC system with terminals at North Gila (500 kV), Imperial Valley (500 kV), and Miguel Substations (230 kV). The proposed project is intended to optimize the transfer capability on existing infrastructure. A project map of the proposed project is shown in Figure 1.

SDG&E points out in their project submittal that all of the project’s proposed changes and conversions would occur within existing rights of way and within or adjacent to existing substations. Therefore, environmental and permitting related impacts would be minimized.

Figure 1: Project Map
 (Source: AC to DC Conversion Submittal Attachment)



ITP EVALUATION BY RELEVANT PLANNING REGIONS

The California ISO has been identified as the Planning Region that will lead the coordination efforts with the other Planning Regions involved in the evaluation process. In this capacity, the California ISO will organize and facilitate interregional coordination meetings and track action items and outcomes of those meetings. For information regarding the ITP evaluation within each Relevant Planning Region’s planning process, please contact that Planning Region directly.

Given that the joint evaluation of an ITP is considered to be the joint coordination of the regional planning processes that evaluate the ITP, the following describes how the ITP fits into each Relevant Planning Region’s¹ process. This information is intended to serve only as a brief summary of each Relevant Planning Region’s process for evaluating an ITP. Please see each Planning Region’s most recent study plan and/or Business Practice Manual for more details regarding its overall regional transmission planning process.

¹ [California ISO Tariff Appendix A](#)

California ISO

The high voltage transmission path from Arizona through North Gila, Imperial Valley, Miguel/Suncrest, and the San Diego-area 230 kV system, has been the major path for transferring renewable energy into Southern California. Now, even more renewable generation to the east of Arizona will attempt to meet Southern California's additional 50% RPS goals, making the path even more stressed. The proposed project can improve and even remove certain regional reliability limitations such as control of pre-and post-contingency flow on the bulk power system in Southern California, including neighboring systems in the Imperial Valley (IID) and Baja California (CENACE); increases San Diego import capability by 500-1000 MW or more by mitigating worst N-1-1 contingency (Sunrise & SWPL); reduces San Diego, Greater Imperial Valley/San Diego, and Western L.A. basin local capacity needs; and increases the WOR and EOR path ratings; among other benefits

SB350, approved in 2015 and increasing the RPS goals to 50% by 2030, has established the need for additional renewable resources. One of the stated purposes of the AC to DC Conversion Project is to improve access to both in-state and out-of-state renewables. This project will provide certain regional benefits to the California ISO by providing access to New Mexico wind and increasing transmission capacity between New Mexico, Arizona, the Imperial Valley, and the California ISO to support California's renewables goals. However, it should be noted that while the AC to DC Conversion Project has identified a need as being tied to procurement of out-of-state renewable resources, California state policy has not yet confirmed the need for those resources. However, as the California ISO is interested in working to explore the benefits interregional transmission may bring in accessing out-of-state renewable resources, the California ISO intends to study this project in the context of our 50% RPS special studies in the 2016-2017 transmission planning process and coordinate with WestConnect in that regard. To this end, the ISO considers the AC to DC Conversion Project "properly submitted" and accepted into our regional planning process.

The objective of the California ISO analysis will be to assess, at a "high" or " cursory" level, the AC to DC Conversion Project within the framework of California's 50% renewables portfolio. Using New Mexico wind portfolio information provided by the California Public Utilities Commission (CPUC), the assessment will attempt to capture the following with and without the AC to DC Conversion Project:

- transmission capability to deliver New Mexico wind resources to California;
- identify renewable curtailments;
- coordinate topology and resource modeling with WestConnect;
- jointly working with WestConnect, consider analysis results and as appropriate, develop recommendations and input refinements should further analysis be conducted in future study cycles

The following "portfolios" will be considered the California ISO analysis:

- FCDS Portfolio: California ISO 50% RPS renewable portfolio with ~2,000 MW New Mexico resources - Full Capacity Deliverability Service (FCDS)²

² California ISO FCDS transmission interconnection provides a reasonable assurance that a generator's dependable capacity can be delivered to load and maintain reliable system performance during contingency conditions simultaneously with all other dependable generation in the same general area at peak load conditions

- EO Portfolio: California ISO 50% RPS renewable portfolio with ~2,000 MW New Mexico resources - FCDS + Energy Only (EO)

The California ISO will develop the detailed modeling information for the GridView and GE PSLF computer programs and exchange that information with WestConnect commensurate with existing data confidentiality requirements.

WestConnect

WestConnect's 2016-17 Regional Study Plan was approved by its Planning Management Committee (PMC) in March of 2016³. The study plan describes the system assessments WestConnect will use to determine if there are any regional reliability, economic, or public policy-driven transmission needs. The models for these assessments are being built and vetted during Q2 and Q3 of 2016. If regional needs are identified during Q4 of 2016, WestConnect will solicit alternatives (transmission or non-transmission alternatives (NTAs)) from WestConnect members and stakeholders to determine if they have the potential to meet the identified regional needs. If an ITP proponent desires to have their project evaluated as a solution to any identified regional need, they must re-submit their project during this solicitation period (Q5) and complete any outstanding submittal requirements. In late-Q5 and Q6, WestConnect will evaluate all properly submitted alternatives to determine whether any meet the identified regional needs, and will determine which alternatives provide the more efficient or cost-effective solution. The more efficient or cost-effective regional projects will be selected and identified in the WestConnect Regional Transmission Plan. Any regional or interregional alternatives that were submitted for the purposes of cost allocation and selected into the Regional Transmission Plan may go through the cost allocation process (if eligible)⁴.

WestConnect regional assessments are performed using Base Cases and Scenarios, which provide a robust platform that is used to identify regional transmission needs and emerging regional opportunities, if any. Base Cases are intended to represent "business as usual," "current trends," or the "expected future", while Scenarios complement the Base Cases by looking at alternate but plausible futures. In the event regional opportunities are observed in the assessments of the Scenario studies, these opportunities do not constitute a "regional need". Specifically, these regional opportunities will be informational in nature and not result in changes to the WestConnect Regional Transmission Plan and will not result in Order 1000 regional cost allocation.⁵ Given that the submitted ITPs submitted to WestConnect, such as the AC to DC Conversion Project, are aligned closely with the Scenarios WestConnect plans to evaluate in this cycle, the PMC will consider this factor when making its determination on how to collect and evaluate alternatives that may address opportunities that may arise from the Scenario assessments. WestConnect recognizes, in the context of interregional transmission project analysis, that other regions may identify regional needs that may align with opportunities observed in the WestConnect planning region. Current expectations are that the WestConnect Scenario analyses and observed opportunities will advance coordinated interregional planning activities.

³ http://www.westconnect.com/filestorage/03_16_16_wc_2016_17_study_plan.pdf

⁴ Please see the WestConnect Business Practice Manual for more information on cost allocation eligibility

⁵ WestConnect has not yet addressed how alternatives (regional or interregional) to meet regional opportunities will be collected or evaluated. This decision will be made by the PMC when and if regional opportunities are identified

AC to DC Conversion Project representatives and other stakeholders are encouraged to participate in the development of the Base Cases and Scenarios to be studied in WestConnect’s 2016-17 Planning Cycle. These studies, as outlined in Table 1, will form the basis for any regional needs or opportunities that ultimately may lead to ITP project evaluations in 2017.

Table 1: WestConnect 2016-17 Transmission Assessment Summary

10-Year Base Cases (2026)	10-Year Scenarios (2026)
Heavy Summer (reliability) Light Spring (reliability) Base Case (economic)	Clean Power Plan: Utility Plans Case (economic) Clean Power Plan: Utility Plans Case (reliability) Clean Power Plan: Heavy RE/EE (economic) Clean Power Plan: Heavy RE/EE (reliability) Clean Power Plan: Market Compliance Case (economic) Regional Renewables (economic)
May result in the identification of regional needs, requires solicitation for alternatives to satisfy needs	Informational studies that may result in the identification of regional opportunities, alternative collection and evaluation is optional and is not subject to regional cost allocation

DATA AND STUDY METHODOLOGIES

The coordinated ITP evaluation process strives for consistent planning assumptions and technical data among the Planning Regions evaluating the ITP. The Relevant Planning Regions have summarized, in Table 2, the types of studies that will be conducted that are relevant to the AC to DC Conversion Project evaluation in each Planning Region. Methodologies for coordinating planning assumptions across the Relevant Planning Region processes are also described.

Table 2: Relevant Planning Region Study Summary Matrix

Planning Study	California ISO	WestConnect
Economic/Production Cost Model	Using the California ISO PCM Base Case, based on the WECC/TEPPC 2026 Common Case, GridView will be used to perform production cost simulation. All model information will be shared with WestConnect.	Regional Economic Assessment will be performed on WestConnect 2026 Base Case PCM (based on WECC/TEPPC 2026 Common Case) and several Scenarios ⁶
Reliability/Power Flow	The GE PSLF will be used	Regional Reliability

⁶ ITP Project evaluation is subject to a number of factors, the first and most critical being the identification of regional needs and/or opportunities as a part of the 2016 Base Case and Scenario Case transmission assessments.

Assessment	<p>to perform steady state and as needed, transient analysis. The WECC 2025 HS1 and 2026 LSP1 will be modified as needed to accurately model the California network and resources that reflects the ISO's finalized 2015-2016 transmission plan.</p> <p>The AC to DC Conversion Project will be added to that model.</p> <p>In addition the Sunzia project will be added to the model to carry wind generation from New Mexico to the Palo Verde area. All model information will be shared with WestConnect.</p>	<p>Assessment will be performed on 2026 Heavy Summer and Light Spring cases, as well as several Scenarios ⁵</p>
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Note that the AC to DC Conversion Project evaluation will be conducted by each Relevant Planning Region in accordance with its approved Order 1000 Regional Planning Process. This includes study methodologies and benefits identified in planning studies.

Data Coordination

The Relevant Planning Regions will strive to coordinate major planning assumptions through the following procedures.

Economic/Production Cost Model

The Relevant Planning Regions intend to use the WECC/TEPPC 2026 Common Case (2026 Common Case) as the starting point data set for regional economic planning studies conducted in 2016 and 2017 (as applicable). Each Planning Region intends to update the 2026 Common Case with their most recent and relevant regional planning assumptions to reflect its starting point transmission topology and generation data. The Planning Regions intend to provide change cases reflecting these updates to each other and WECC in late Q3, 2016.⁷

As an example, the California ISO will update the 2026 Common Case to reflect their most recent Transmission Plan.⁸ NTTG will ensure that its prior Regional Transmission Plan⁹ is reflected.

⁷ This schedule is dependent on the 2026 Common Case being provided by WECC no later than the end of Q2, 2016

⁸ California ISO 2015-2016 Transmission Plan

⁹ NTTG 2014-2015 Regional Transmission Plan

WestConnect will represent their current Base Transmission Plan,¹⁰ and ColumbiaGrid will provide major updates to the 2026 Common Case based on the information from the latest Biennial Plan¹¹ to other Planning Regions.

Through this coordination of planning data and assumptions, the Relevant Regions will strive to build a consistent platform of planning assumptions for Economic/Production Cost Model evaluations of the ITP.

Reliability/Power Flow Assessment

Since each Planning Region reflects characteristics and a planning focus that is unique, different power flow models are generally needed to appropriately reflect each region's system and key assumptions. As such, each planning region will develop its models and data that accurately reflect their Planning Region, but will coordinate this information with the other Relevant Planning Regions. The identification of the starting WECC power flow cases ("seed cases" for the purpose of this evaluation plan), significant assumptions or changes a Planning Region may make to a seed base case are examples of information that will be considered by each Planning Region and coordinated with the other Planning Regions. As such, the inclusion or removal of major regional transmission projects will be coordinated through existing data coordination processes, but the season or hour of study and particular system operating conditions may vary by Planning Region based on its individual regional planning scope and study plan.

The following scenarios will be studied in both the Production Cost Model and the Power Flow Assessment.

1. Base case with EO Portfolio
2. Base case with FCDS Portfolio
3. Base case with FCDS Portfolio and Sunzia
4. Base case with FCDS Portfolio, Sunzia, and the AC to DC Conversion Project

Cost Assumptions

In order for each Relevant Planning Region to evaluate whether the AC to DC Conversion Project is a more efficient or cost-effective alternative within their regional planning process, it is necessary to coordinate ITP cost assumptions among the Relevant Planning Regions. For planning purposes, each Region's cost share of the AC to DC Conversion Project will be calculated based on its share of the calculated benefits provided to the Region by the AC to DC Conversion Project (as quantified per that Region's planning process). The project cost of the AC to DC Conversion Project, as provided in their ITP Submittal form, is provided in Table 3.

¹⁰ WestConnect 2016-2017 Base Transmission Plan

¹¹ ColumbiaGrid 2015 Biennial Plan

Table 3: Project Sponsor Cost Information¹²

Project Configuration	Facilities	Cost (\$) (in 2016 dollars)
AC-DC Converter Stations	Description	3 x \$200 - \$250 million
Ancillary Substation and Site Prep Work	Imperial Valley, North Gila, ECO, and Miguel Substations	\$50 - \$100 million
Transmission Line Modifications	Sunrise/ECO loop-in Imperial Valley Bypass	\$50 million
	Total	\$700 - \$900 million

COST ALLOCATION

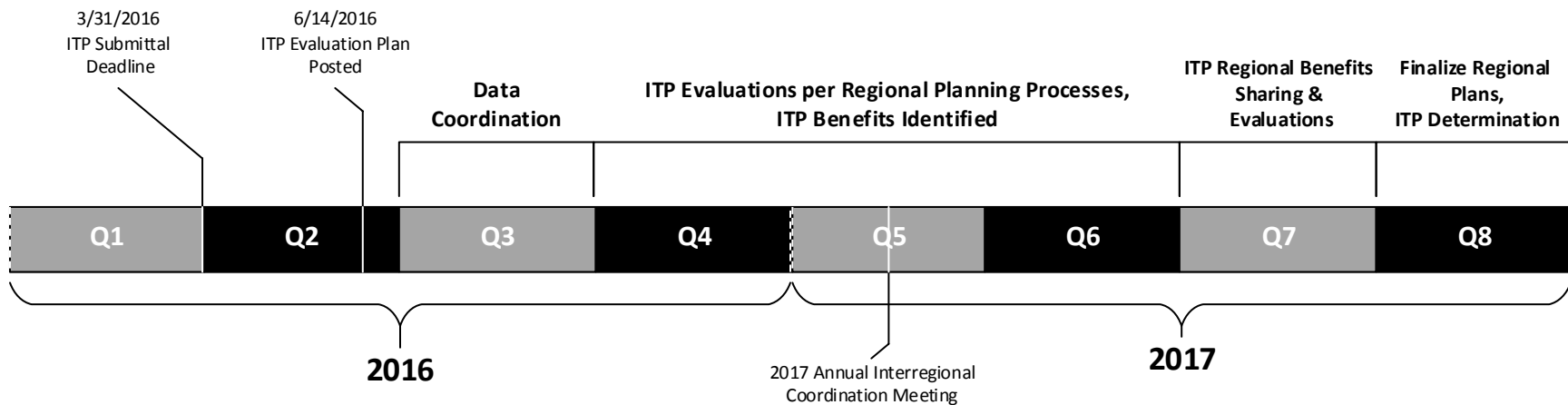
Interregional Cost Allocation does not apply for the AC to DC Conversion Project for the 2016-2017 cycle. Cost Allocation was not requested from the California ISO or from WestConnect.

¹² This information is contingent upon verification by the Planning Regions and may be subject to change during the ITP evaluation process

SCHEDULE AND EVALUATION MILESTONES

The ITP will be evaluated in accordance with each Relevant Planning Region’s regional transmission planning process during 2016 and (as applicable) 2017. The ITP Evaluation Timeline, shown in Figure 2, was created to identify and coordinate key milestones within each Relevant Planning Region’s process. Note that in some instances, an individual Planning Region may achieve a milestone earlier than other Regions evaluating the ITP.

Figure 2: ITP Evaluation Timeline



Meetings among the Relevant Planning Regions will be coordinated and organized by the lead Planning Region per this schedule at key milestones such as during the initial phases of the ITP evaluations and during the sharing of ITP regional benefits.

CONTACT INFORMATION

For information regarding the ITP evaluation within each Relevant Planning Region's planning process, please contact that Planning Region directly.

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