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PROJECT COST TASK FORCE WHITEPAPER

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 **SPP** Southwest
Power Pool

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Introduction

The Markets and Operations Policy Committee (MOPC) formed the Project Cost Task Force (PCTF) to address the SPP Regional State Committee (RSC) Motions 1 and 4 from their October 25, 2010 meeting. This document provides the recommendations that have been jointly developed by the PCTF, SPP staff, and interested stakeholders to address these Motions.

RSC Motion 1

RSC recommends that SPP review what is the best manner to address significant cost increases and/or overruns of transmission projects that are regionally funded.

Problem Summary

The issue of increases in transmission project cost estimates is a result of increased project cost estimates provided by Designated Transmission Owners (DTO) in response to their respective Notification To Construct (NTC) letters for some of the Priority Projects approved by the Board of Directors (BOD) in April 2010. This issue is a product of the increased openness and transparency of the SPP planning processes and concern due to the new Highway/Byway regional cost allocation. In the past, transmission cost estimates tended to remain internal to each member utility, subject only to the utility's internal review processes and any applicable obligations to its regulatory authorities.

With the implementation of SPP's Highway/Byway cost allocation methodology, additional scrutiny is warranted in reviewing changes to regionally funded project cost estimates for projects that were a result of an SPP process and that have cost estimates greater than \$20 million (Applicable Projects). An Applicable Project may consist of individual cost estimate(s) provided by more than one DTO that sum up to the total Applicable Project cost estimate. Each DTO will be held accountable for its portion of the Applicable Project cost estimate. This document describes the PCTF and SPP staff proposed process.

RSC Motion 4

SPP evaluate how cost estimates are established for transmission projects before Cost Benefit Analyses are performed.

Problem Summary

Current review of transmission project cost estimates appears to be inadequate, resulting in movement to a more rigorous cost review process that will lead to more transparency of the cost components and assumptions contained within a cost estimate.

The PCTF and SPP staff were charged with creating a standardized and transparent method for the development of transmission project cost estimates associated with Applicable Projects. These cost estimates should be refined as projects move from a conceptual estimate to the design/construction phases of an Applicable Project. The PCTF and SPP staff have proposed a continuous tracking and reporting process that reflects updates that will have increasingly higher levels of accuracy and certainty as the project moves from a conceptual cost estimate stage to the completion of the project.

Project Tracking - Current Process

When SPP issues an NTC for an approved project, it is entered into the Project Tracking process. For an NTC associated with SPP approved Project(s), the DTOs currently have 90 days to respond to the NTC committing to a project(s) as specified in the NTC or proposing a different project schedule or project specifications.

The DTO is required to submit quarterly updates of cost estimates and the expected in-service date. These updates are incorporated into a quarterly report that is submitted to the BOD/Members Committee, the MOPC, and the RSC. In accordance with the guidelines provided in the SPP Open Access Transmission Tariff (OATT) Business Practices document BP 1.15 - Notification to Construct, cost estimates that have increased by more than 20% since the previous estimate require the DTO to submit justification for the variance.

PCTF Recommendations

The PCTF recommends multiple enhancements to the tracking and the cost estimate processes for projects upon which SPP will perform cost benefit analyses.

Revised project tracking enhancements are proposed to the current project tracking process for the DTO to provide a detailed explanation of changes to the study estimate to timely recognize Applicable Projects that are nearing or are already outside stated bandwidths.

To increase the transparency related to modifications of cost estimates for projects after BOD approval and issuance of an NTC to a DTO, a defined cost estimate process is proposed to be used for Applicable Projects. The PCTF also recommends implementing a mechanism for a new working group to review whether a project that has experienced a cost variance that exceeds a specified bandwidth is reasonable, and to provide a

recommendation to SPP with the working group findings. SPP will determine whether the project should be reevaluated for construction, with the BOD making a final determination regarding the status of the project under review.

Standardized Cost Estimate Reporting Template

The PCTF recommends the development and implementation of a Standardized Cost Estimate Reporting Template (SCERT) that will be utilized for all approved project cost estimates and applicable monthly/quarterly updates. The PCTF developed the SCERT by assessing the appropriate information to be provided in response to the SPP Project Tracking inquiries. The objectives of the SCERT are to:

- a. Provide a consistent format among all estimates
- b. Facilitate the Project Tracking process
- c. Ensure the required level of detail is provided
- d. Facilitate the transition of a completed project into the proper Annual Transmission Revenue Requirement (ATRR) recovery process through SPP's OATT

The SCERT includes: (i) estimated/actual expenditures spent to date; (ii) estimate at completion; (iii) projected in-service date; (iv) direct and indirect costs; (v) AFUDC estimates and if project has CWIP in rate base; and (vi) proposed route map. An example SCERT is included in Appendix A.

Field Code

Conditional Notification to Construct

The PCTF recommends the introduction of a Conditional Notification To Construct (CNTC) to be issued for Applicable Projects 100 kV and above that have been approved by the SPP Board of Directors (BOD). The purpose of the CNTC is to provide the DTO(s) additional time to perform detailed engineering within a stated timeframe to refine its study estimate for further SPP analysis to determine if the project should proceed with an NTC for actual construction.

The CNTC is not an authorization for the DTO(s) to order materials or begin construction on the project, but rather is an initiative to the DTO(s) to perform any cost estimate analysis not previously done to improve the accuracy of the study estimate such that the DTO(s) will be within a +/- 20% precision bandwidth. The DTO will provide to SPP an estimate of the costs required to respond to CNTC.

The PCTF recommends the DTO(s) should be fully compensated (without ROE) for costs incurred to prepare the refined study estimate for projects that SPP determines will not proceed to construction.

Project Tracking Enhancements

To make the Project Tracking process more rigorous, the PCTF proposes several enhancements that should be considered for implementation after an NTC or CNTC is issued.

For Applicable Projects 100 kV and above that have been approved by the BOD and issued a CNTC:

1. If the DTO accepts the CNTC, it shall provide SPP with a CNTC Project Estimate (CPE) as described in Stage 3 of the proposed process (see Project Specification and Cost Estimation Process below). Field Code
2. If the CPE variance bandwidth of -20% to +20% does not exceed the study cost estimate variance bandwidth of -30% to +30%, the project's cost variance will be deemed acceptable and will be immediately issued an NTC by SPP staff. This will be the authorization for the DTO to proceed with the project.
3. If the CPE variance bandwidth exceeds the variance bandwidth of the study estimate, SPP staff will re-evaluate this project using the new cost estimate data, and will make a recommendation to the BOD at its next scheduled quarterly meeting. SPP staff's recommendation could be but is not limited to one of the following actions:
 - a. Accept the cost variance and approve the project as is
 - b. Modify the existing project
 - c. Replace the project with an alternative solution
 - d. Cancel the project
4. The study estimate received from the DTO for these projects will be used as the initial baseline for measuring final project approval.
5. If the cost variation of the CPE is accepted by the BOD, the CPE will be used as a final baseline for reporting all cost estimate changes during the Project Tracking process and will be the basis for determining project variance.

For all other projects approved by BOD and issued an NTC:

1. If the DTO accepts the NTC, it shall respond as prescribed in the NTC letter and provide SPP with a refined study cost estimate. This estimate is referred to as the NTC Project Estimate (NPE).
2. The NPE received from the DTO for these projects will be used as the final baseline for reporting all cost estimate changes during the Project Tracking process and will be the basis for determining project variance.

For all Applicable Projects with an approved NPE:

1. SPP's Project Tracking process should be enhanced to require DTOs of all Applicable Projects with an approved NPE to submit Project Tracking updates to SPP staff on a quarterly basis, unless the bandwidth is exceeded as denoted in 1.(a) or 1.(b) below, in which case the DTO will notify SPP immediately with the information as follows:
 - a. If an Applicable Project deviates or is expected to deviate +/-10% from its established baseline cost, the DTO will immediately notify SPP staff detailing the cost variances with an updated SCERT with comments on the variances. SPP staff will provide notification to the Project Cost Working Group (PCWG) with no corrective action expected. SPP staff will monitor these projects and take appropriate action if necessary.
 - b. If an Applicable Project deviates or is expected to deviate +/-20% from its established baseline cost, the DTO will immediately notify SPP staff detailing the cost variances with an updated SCERT with comments and explanations regarding the variances. SPP staff will provide the updated information to the PCWG. The PCWG will review and provide recommendations to the MOPC and BOD. The PCWG will provide an update to the RSC. The DTO will be required to provide monthly updates to SPP staff until BOD action is taken.
2. At least quarterly, SPP will submit a Project Tracking report to the PCWG detailing all project cost estimate changes outside the established project variance bandwidth.

Project Specification and Cost Estimation Process

The PCTF recommends a tiered approach for project cost estimates based on the level of project definition that is known while also considering an appropriate level of risk valuation. These stages are defined as:

- The **Conceptual Estimate** is the estimate prepared by SPP staff based on historical cost information in an SPP database and updated information provided by the DTO(s). It is to be used as a screening tool to determine if a project is cost-effective and should or should not be pursued in meeting a determined system need. This estimate would not attempt to address detailed environmental, geography, terrain or other issues.
- The **Study Estimate** is the estimate prepared by the DTO(s) for projects that pass the Conceptual Estimate screening process and require a more refined cost estimate for project approval.
- The **CNTC Project Estimate (CPE)** is the estimate prepared by the DTO(s) for projects after the receipt of a CNTC. This estimate will include any cost estimate analysis not previously done to improve the accuracy of the Study Estimate, but before any construction investment is made by the DTO(s).

- The **NTC Project Estimate (NPE)** is provided by the DTO after receipt of an NTC for a non-Applicable Project; it includes any additional cost information known at the time the DTO is required to provide its response to the SPP.
- **Design and Construction Estimates** are provided by the DTO to SPP after the DTO engineering and construction are being completed, including any environmental, routing or siting requirements, and that has a known route. This would include but not be limited to any known material and labor costs. This cost estimate will also include any known condemnation costs.

The Cost Estimate Stage Definition table below lists the four stages of the project estimating process. Each of these stages must have more refined requirements for the accuracy of cost estimates and detail of data. The bandwidth for estimate accuracy reduces as the scope definition detail increases.

Estimate Name ^a	Stage		Level of Project Scope Definition	End Usage	Precision Bandwidth
	Projects - 100-400 KW & > \$20 Million	All other BOD Approved Projects			
Conceptual	1	1	0% to 10%	Concept screening for ITP20/ITP10	-50% to + 100%
Study	2	2	10% to 20%	Study of feasibility and plan development for ITP10/ITPNT	-30% to +30%
	<i>CNTC Issued</i>	<i>NTC Issued</i>			
CNTC Project (CPE)	3	N/A	20% to 40%	Final baseline (CNTC)**	-20% to +20%
	<i>NTC Issued</i>				
NTC Project (NPE)	N/A	3	20% to 40%	Final baseline (NTC)**	-20% to +20%
Design & Construction	4	4	40% to 100%	Design after NTC issued and build the project	-20% to +20%***

* The Conceptual Estimate will be prepared by SPP. All subsequent estimates will be prepared by the DTO(s).

**BOD approval required to reset the baseline.

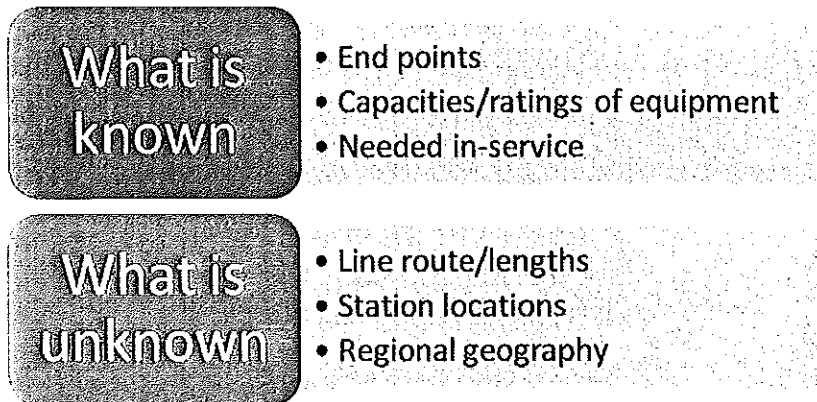
***Actual cost is expected to be within +/-20% of final baseline estimate.

Table 1: Cost Estimate Stage Definition

The PCTF recommends that DTOs develop consistent cost estimates through the completion of a SCERT for similar information to be included in a cost estimate as well as assumptions used by the DTO to develop the Study Estimate. For the Study phase estimate, all DTOs shall base those estimates relative to Study Estimate Design Guide.

The sections below describe each Stage of the Cost Estimation process in more detail:

Conceptual Estimate Stage



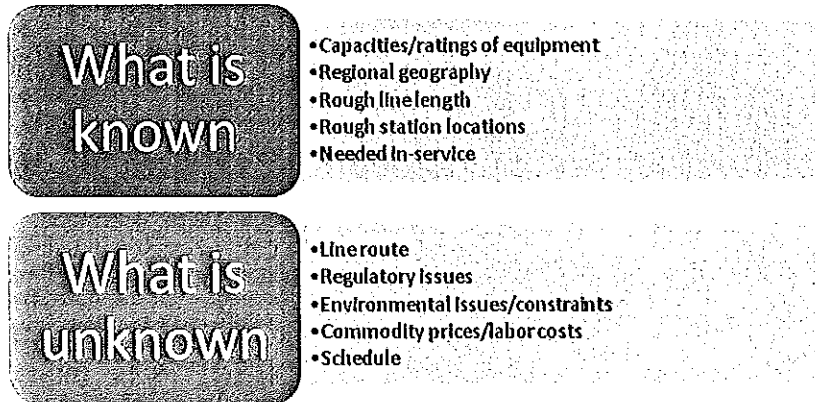
Knowns and unknowns are meant to be illustrative

In this first stage, SPP staff will develop the initial project scopes and Conceptual Estimates using a generic cost estimate tool (database platform) that will be developed in conjunction with the Transmission Owners¹. The estimating tool will include generic SPP historical cost data such as cost per mile for specific voltage levels, substation cost estimates, and cost modifiers for other factors such as different regions, terrain, urban/rural, etc. This allows cost estimates to be developed easily for screening large numbers of potential projects and selecting suitable candidates for further study.

The output of the tool will be a table providing the total cost estimate for each project under consideration, as well as all the supporting information for each. This will provide an easy-to-use reference for the cost estimates and the variations among them. SPP staff, in conjunction with the Transmission Owners, will update the cost data used in the cost estimating tool on an annual basis. To support these updates, SPP staff will provide an aggregate summary of final cost data collected in the Project Tracking process. This will ensure the cost estimate tool is kept up-to-date for Conceptual Estimates and will help refine the tool to reflect actual costs.

¹ Future development

Study Estimate Stage



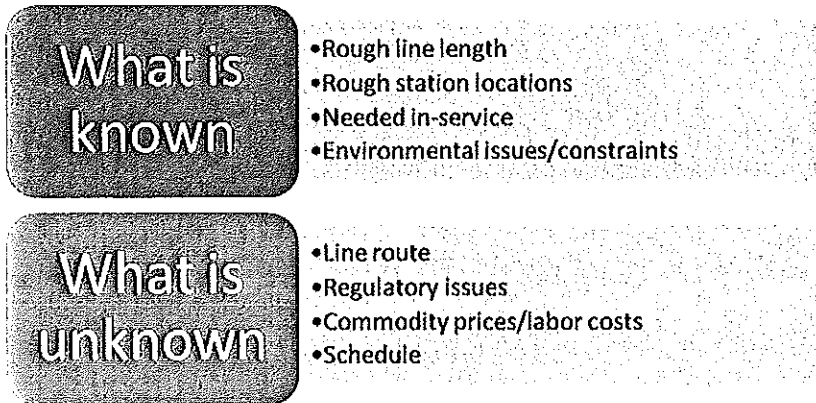
Knowns and unknowns are meant to be illustrative

Stage 2 begins after the initial project screening is completed and the list of potential projects has been narrowed to those most likely to be selected. SPP and incumbent DTO for each project must review and refine the project scope and provide study-level cost estimates for each alternative project.

The Study Estimate is the first detailed estimate the DTOs will be required to submit. For this estimate, DTOs will base assumptions relative to the Study Estimate Design Guide. There are still a large number of unknowns at this point in the planning process and the project scope should identify those unknowns and the risks associated with them.

The final project cost is expected to be within a -30% to + 30% variance from Study Estimate.

CNTC Project Estimate Stage



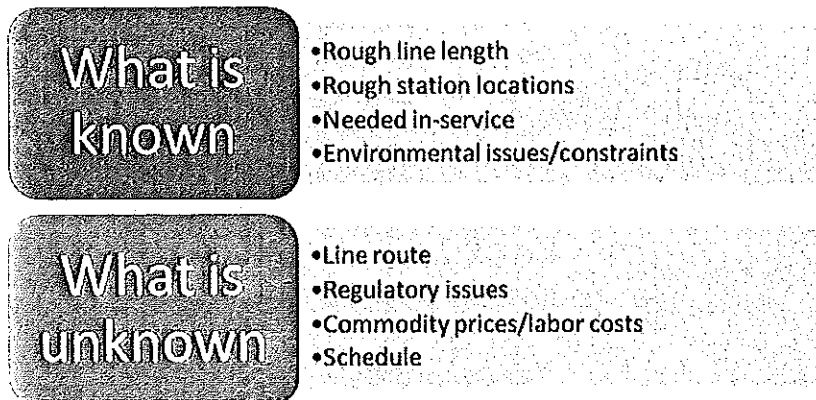
Knowns and unknowns are meant to be illustrative

For Applicable Projects 100 kV and above, the DTO's time to submit an updated cost estimate to SPP, referred to as the CNTC Project Estimate (CPE), will be extended to allow the DTO the opportunity to perform cost estimate analysis not previously done to improve the accuracy of the Study Estimate.

The CPE should be submitted to SPP no later than four months prior to the start of the next applicable ITP process cycle. If the cost variation exceeds the accepted bandwidth, SPP staff will re-evaluate the project with the updated cost data and present this analysis to the BOD, no later than one quarter prior to the start of the next applicable ITP process cycle.

The final project cost is expected to be within a -20% to + 20% variance from the CPE.

NTC Project Estimate Stage

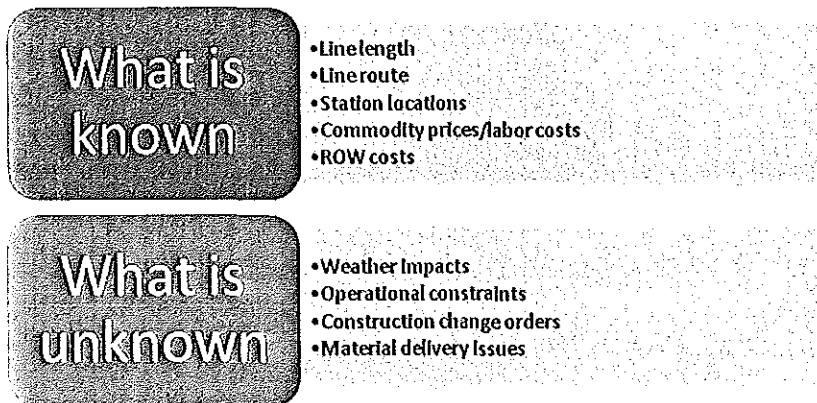


Knowns and unknowns are meant to be illustrative

This stage begins after a non-Applicable Project has been issued an NTC. The DTO has 90 days to respond to the NTC by committing to a project as specified in the NTC or proposing a different project schedule or project specifications. If the DTO accepts the NTC, it shall respond as prescribed in the SPP NTC letter and provide SPP with a refined study scope and cost estimate. This estimate will be referred to as the NTC Project Estimate (NPE). The NPE will cover the period between accepting the NTC and the start of project design.

The final project cost is expected to be within a -20% to + 20% variance from the NPE.

Design and Construction Estimate Stage



Knowns and unknowns are meant to be illustrative

This stage covers the period between starting design engineering to the final project closeout and submittal of actual project costs to SPP through the Project Tracking process. All line-item differences between the estimate being used as a baseline and these updated estimates must be accompanied by a detailed explanation from the DTO.

The final project cost is expected to be within a -20% to + 20% variance from the applicable CPE or NPE.

PCWG Process

The PCTF proposes that SPP stage the implementation of the process proposed for PCWG to initially apply to approved Applicable Projects 300 kV and above, and after the process is refined and working well to include approved Applicable Projects 100 kV and above.

The DTO shall immediately provide data and information to SPPprojecttracking@spp.org for any Applicable Project that deviates or is expected to deviate +/- 10% from its established baseline cost. SPP staff will then notify the PCWG. The PCWG may require the DTO to provide a monthly project tracking data.

Field Code

If an Applicable Project deviates or is expected to deviate +/-20% from its established baseline cost, the DTO will immediately notify SPP staff detailing the cost variances with an updated SCERT with comments and explanations regarding the variances. The PCWG will oversee a quarterly report to be submitted to the MOPC, RSC, and BOD prior to their quarterly meetings. The PCWG will notify MOPC if a trend is developing in cost estimates deviating from the Study Estimate Design Guide. The MOPC will then determine if a review of the Guide is required.

The PCWG will receive the updated scope and SCERT, project tracking data updates, any comments from the DTO related to cost estimate variances, and any applicable input from SPP staff. The DTO's comments should include relevant information regarding any sunk costs, an explanation for the cost estimate variances, and comments as to why the project should or should not continue forward.

The PCWG's recommendations to the MOPC and BOD may include any of the following:

- i. Accept the cost deviation as reasonable and acceptable and reset the baseline used to evaluate future cost deviations.
- ii. Identify all or a portion of costs related to the variances and recommend changes to the NTC that would reduce the cost or avoid issues that may be causing the increase.
- iii. Suspend all future expenditures on the project while SPP restudies the project to determine appropriate changes to the NTC or possible withdrawal of the NTC.

If the PCWG recommends a restudy and/or changes or revocation of the NTC, the recommendation to the MOPC would follow SPP's existing processes for approval to the BOD. The BOD will make the final determination on whether to restudy and/or change or revoke the NTC.

There are instances when resetting the baseline cost estimate will be prudent, as it would not be reasonable for a project to be flagged automatically for review every month

following a cost estimate variance that had been previously reviewed and accepted. The PCWG will recommend to the BOD whether to reset the baseline cost estimate. The BOD will make the final determination on whether to reset the baseline. If a baseline cost estimate is reset, the previous estimates will be retained in the monitoring tool.

Appendix A

Standardized Cost Estimate Reporting Template (SCERT)

SPP Project Name					
Current Year Dollars					
Loaded Nominal Dollars					
Project ID					
Upgrade ID					
Estimate Provider					
Estimate Creation Date					
Project Scope					
RTO Determined Need Date					
Project Start Date					
In-Service Date					
Line Costs	Loaded Nominal \$	Line Assumptions		Segment 1	Segment 2
Engineering Labor		Mileage			
Construction Labor		Number of Circuits			
Right-of-Way		Shield Wire	Number		
Material			Type		
Line Sub-Total			Size		
Station Costs		Conductor	Type		
Engineering Labor			Size		
Construction Labor			Rating		
Site Property Rights			# Conductors per Phase		
Material		Structure	Configuration		
Station Sub-Total			Foundation Type		
Summary Info			Material		
Line Sub-Total			NESC Assumptions		
Station Sub-Total			Dead Ends		
AFUDC			Tangents		
CWIP (Y/N)			Underbuild		
Contingency		Station Assumptions		Station 1	Station 2
Total Project Cost Estimate		Location			
		Transformers	Quantity		
			Size		
		Breaker Scheme	Quantity		
			Size		

Appendix B

Project Tracking Process Flow

