



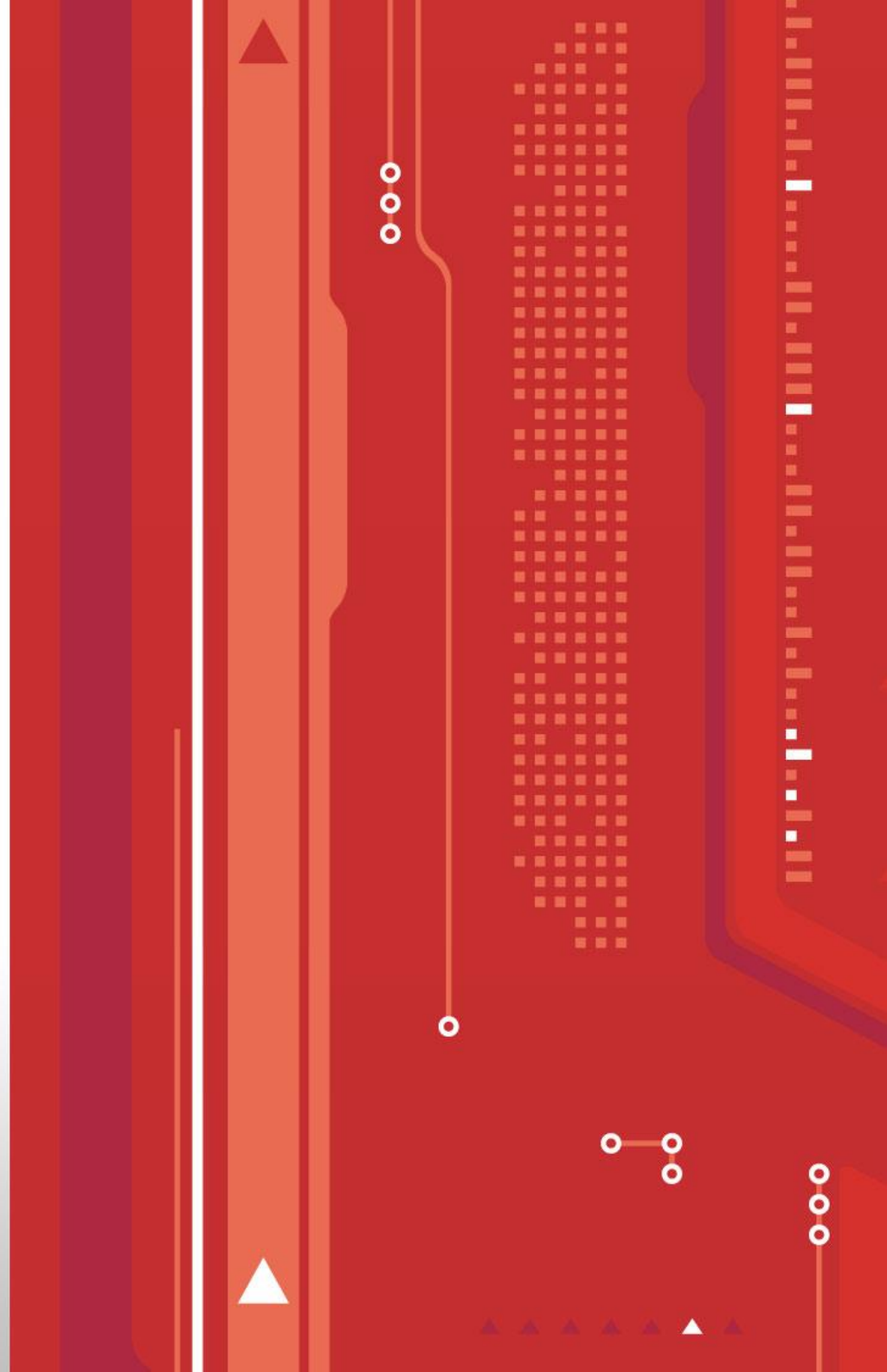
SPP *Southwest
Power Pool*

Helping our members work together
to keep the lights on... today
and in the future



Project Cost Task Force – Knowns and Unknowns Overview

May 25, 2011



PCTF Known and Unknown Overview

PCTF was asked to provide an overview to CAWG on:

- **Uncertainties in cost estimates – knowns and unknowns**
 - What is causing unknowns?
 - How do you narrow unknowns?
- **What is known at cost estimate stages?**
- **Provide overview of PCTF activities**
- **What can be done to get better certainty on cost estimates?**

Project Cost Drivers

- Ratings/Capabilities
- Geography/Terrain
- Land Use
- Line Length & Routing
- Project Schedule
- Commodity/Labor Prices
- Exchange Rates
- Environmental Constraints
- Regulatory Requirements

Knowns and Unknowns at NTC



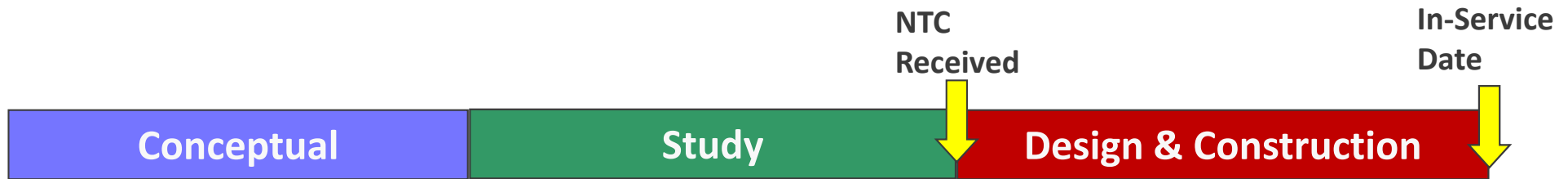
KNOWNS AT NTC

- Capacities/Ratings of TL & Major Station Equipment
- Rough Line Length
- Rough Station Locations
- Regional Geography
- Needed In-service Date

UNKNOWNNS AT NTC

- Line Length & Routing
- Regulatory Issues
- Environmental Issues/Constraints
- Specific Geography & Geotechnical Data
- Clearance Constraints
- Commodity (Material) Prices
- ROW Costs
- Construction Labor Costs
- Project Schedule

Knowns and Unknowns after Regulatory Approval



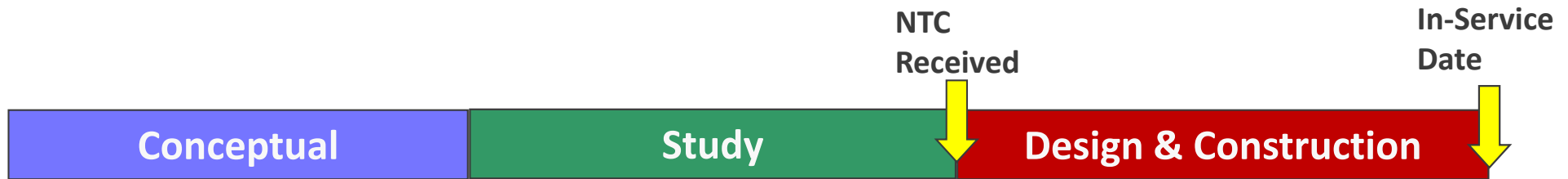
KNOWNNS AFTER REGULATORY APPROVAL

- Line Route
- Line Length
- Planned Station Locations
- General Project Geography/Terrain/Land Use
- Project-Level Environmental Issues/Constraints
- Project Schedule

UNKNOWNNS AFTER REGULATORY APPROVAL

- Structure Locations
- Route-specific Environmental Issues/Constraints
- Specific Geography & Geotechnical Data
- Clearance Constraints
- Commodity (Material) Prices
- ROW Costs
- Construction Labor Costs
- Final Engineering Design

Knowns and Unknowns at Start of Construction



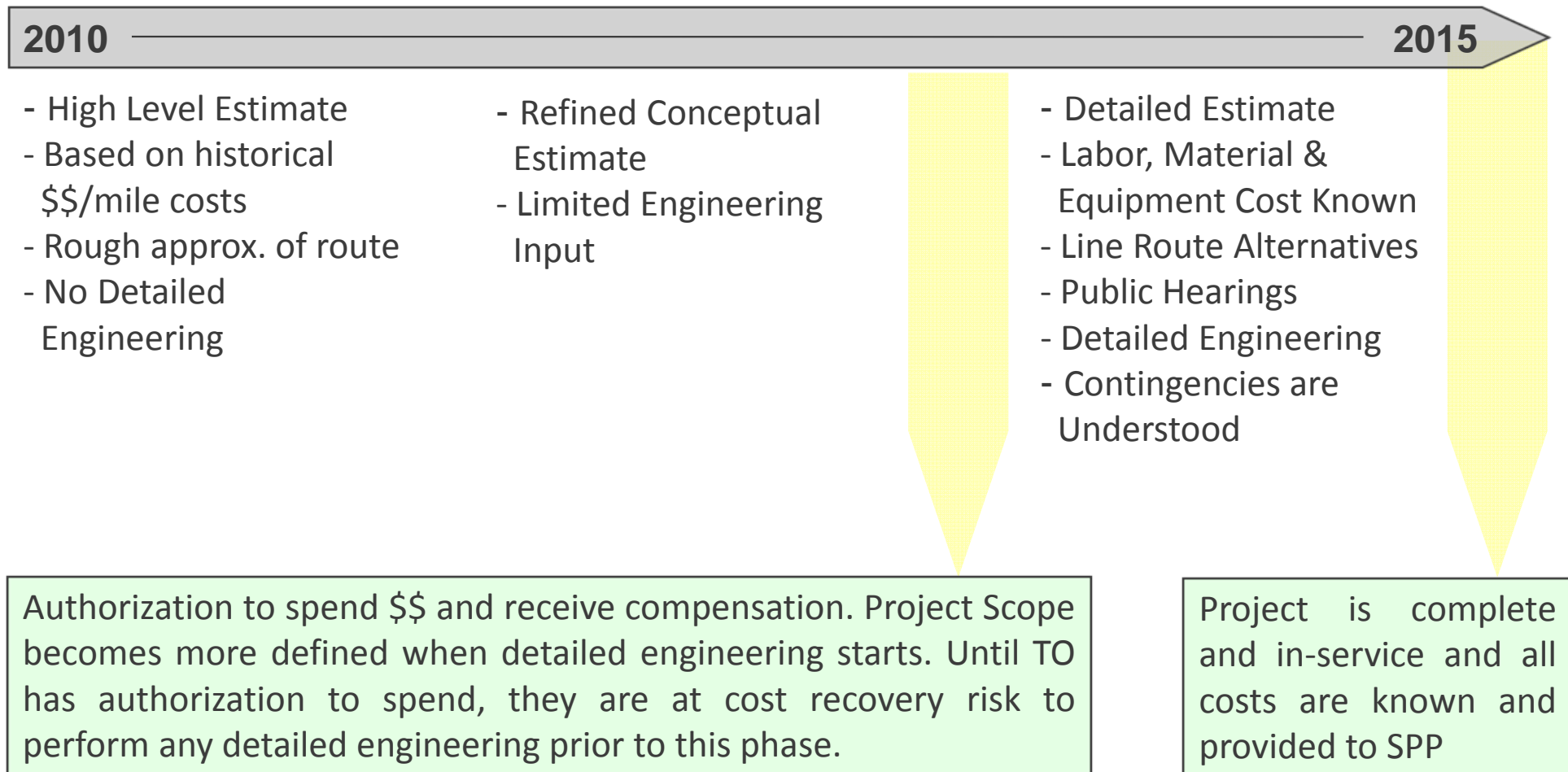
KNOWNS AT START OF CONSTRUCTION

- Line Route
- Line Length
- Station Locations
- Structure Locations
- Structure-specific Environmental Issues/Constraints
- Specific Project Geography/Terrain/Land Use
- ROW Costs
- Clearance Conditions
- Material Costs & Delivery Schedule
- Construction Labor Costs
- Construction Schedule

UNKNOWNNS AT START OF CONSTRUCTION

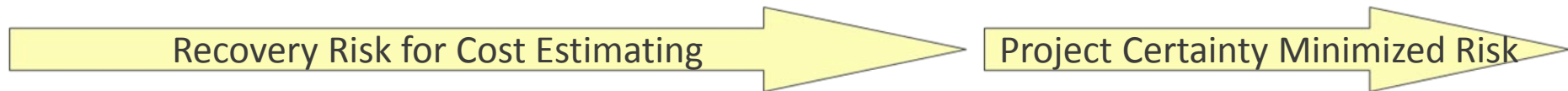
- Weather Impacts on Construction
- Clearance Returns / System Restoration
- Construction Change Orders
- Material Delivery Issues
- Unknown unknowns

Project Management & Cost Estimating Overview



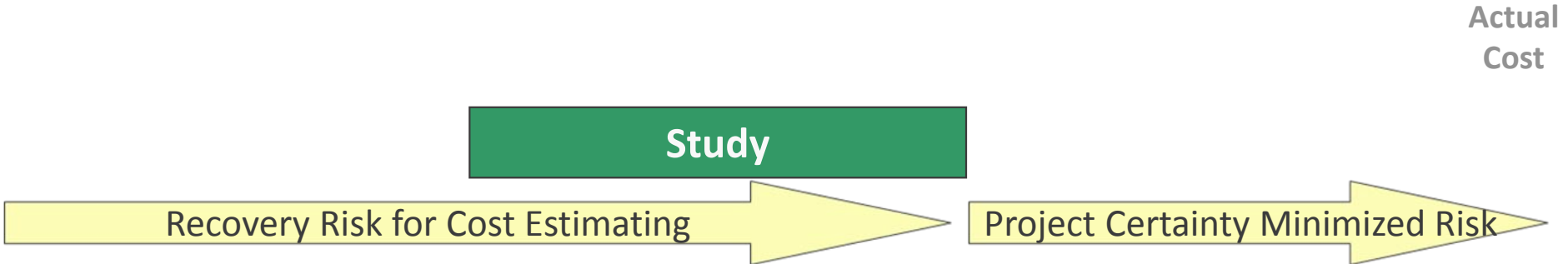
Conceptual Estimate

Actual
Cost



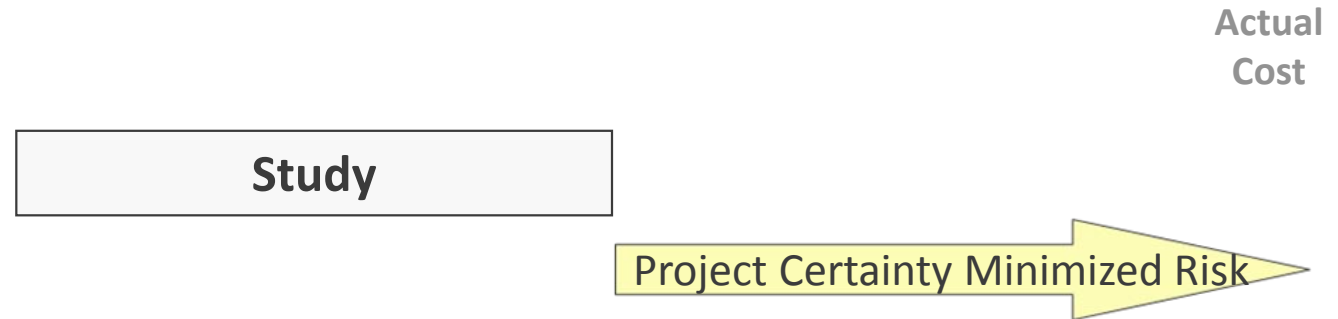
- High-level cost estimate provided by SPP based on historical information and high level project parameters such as voltage
- SPP considers several high level factors such as terrain challenges and siting requirements
- Soil conditions unknown, except for assumptions based on experience
- Specific environmental conditions and actual route unknown

Study Estimate



- **Develop project alternatives and options based on conceptual estimated costs, project location, planning studies, and project requirements**
- **Consider environmental, routing, soils, terrain, etc.**
- **Use the highest project contingency percentages at this stage**

NTC Response Estimate

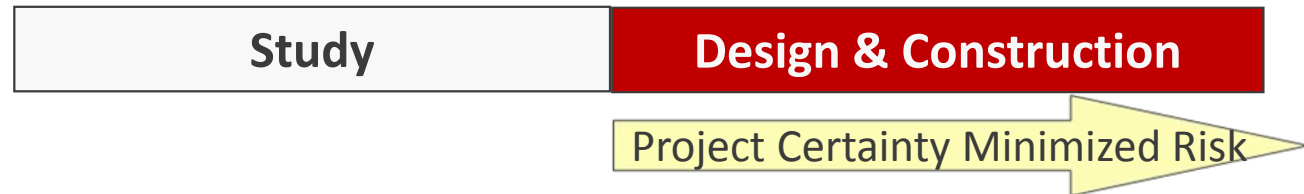


- TO refines Study Cost Estimate and updates SPP with new cost information in response to NTC
- TO may or may not have negotiated blanket purchase orders and blanket labor contracts to estimate cost for major materials and labor
- Additional knowledge of state siting and environmental requirements allows an inclusion in cost estimates, as applicable

Contingencies reduced as more information is known and factored into estimate.

Design and Construction Estimate

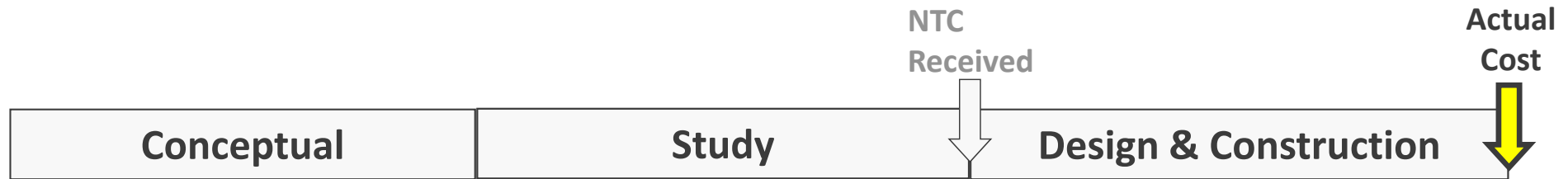
Actual
Cost



- Initiated after siting approval (CCN/CECPN) and final route is known
- Engineering provides detailed cost estimates for final route
- ROW provides detailed ROW cost estimate and starts procurement of easements
- Construction bids firm up construction costs
- Material costs known
- Environmental issues and mitigation costs understood
- Contingencies refined & contingency % reduced
- TO updates SPP Quarterly Tracking Report with new cost estimates

Contingencies reduced to minimal levels as more information is known.

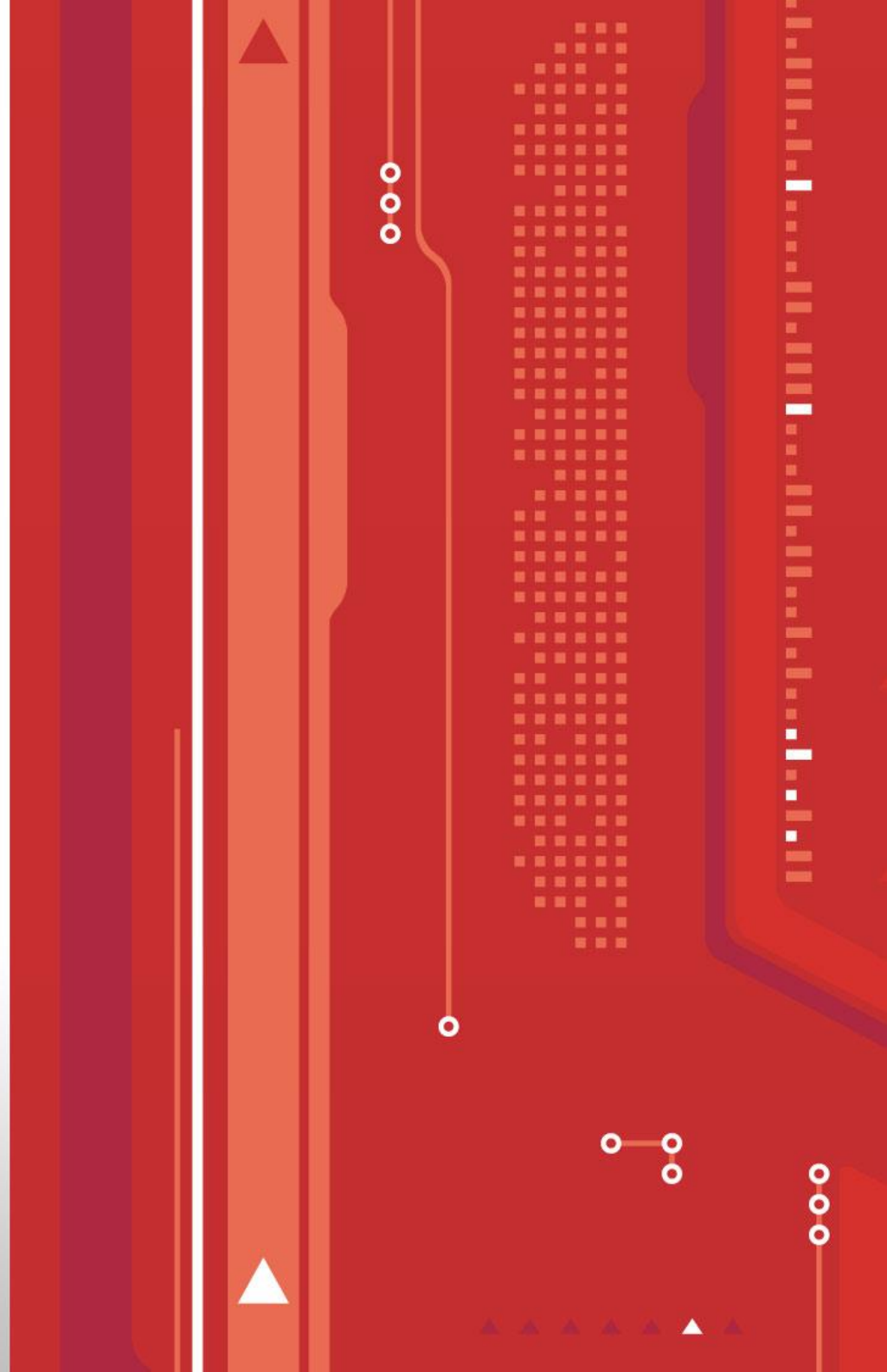
Actual Cost – Project Built and Constructed at Cost



- Project is complete and in service
- As-builts are completed
- All outstanding invoices have been paid and final project accounting completed
- TO provides final project cost information to SPP for inclusion in TO SPP rates

PCTF Activities Overview

May 25, 2011



RSC Motions (Oct 2010)

- **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.
- **MOTION 2**: RSC recommends that SPP review the SPP review the Novation Process and report to the RSC by April 2011.
- **MOTION 3**: RSC recommends that SPP consider establishing design and construction standards for transmission projects at 200 kV and above that are regionally funded.
- **MOTION 4**: SPP evaluate how cost estimates are established for transmission projects before Cost Benefit Analysis are performed.
- **MOTION 5**: CAWG to study various methods on how costs that exceed some standard can be addressed with different cost allocation mechanisms and recommend strategies to RSC.

Stages of Cost Estimation

1) Conceptual

- prepared by SPP from historical data
- used for screening purposes only

2) Study

- submitted by TO if project passes Conceptual screening and requires more refined estimate

3) NTC Estimate (Refined Study)

- submitted by TO in response to NTC/CNTC issuance
- established as baseline for project cost variance

4) Design/Construction

- quarterly cost estimates from TO as engineering and construction for project is completed

Cost Estimate Stage Definition

Estimate Name	Stage	Level of Project Definition	End Usage	Precision and Range
Conceptual	1	0% to 10%	Concept screening for ITP20/ITP10	-50% to + 100%
Study	2	10% to 40%	Study of feasibility and plan development for ITP10/ITPNT	-30% to +30% (-30 to +50%)
NTC Project Estimate	3	10% to 40%		-20% to +20%
Design & Construction	4	40% to 100%	Design after NTC issued and build the project	-20% to +20%

NTC/CNTC Issued



PCTF Proposed Process Improvements

- **Standardized Cost Estimate Reporting Template (SCERT)**
 - all cost estimates
 - quarterly reporting
- **Proposed Project Cost Working Group (PCWG)**
 - detail its role in project tracking process
- **Conditional Notification to Construct (CNTC)**
 - projects > \$20 Million and > 100 kV
- **Establish the NTC Project Estimate (NPE) as baseline**
 - CNTC
 - NTC

Conditional Notification To Construct (CNTC)

- Study Estimate > than \$20 Million and > 100 kV
- Additional time for TO to refine estimate
- SPP re-evaluates project if refined estimate outside accepted bandwidth
- NTCs issued
 - Cost variance is acceptable
 - BOD approves the refined cost analysis



Value of CNTC

- Provides initiative for TO to improve cost estimate accuracy
- PCTF recommends a cost recovery method for estimate refinement costs
- Additional BOD checkpoint with refined cost analysis

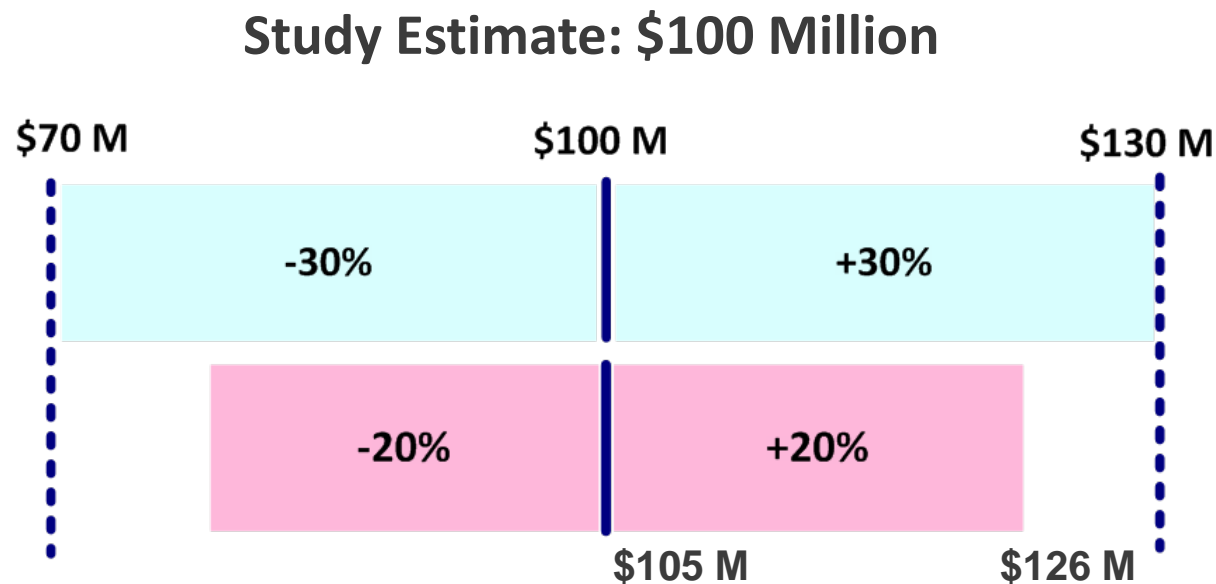


Refined Study Estimate

- **Refined Study Estimate (RSE)**
 - **TO's response to CNTC**
 - **compared to Study Estimate**
- **Cost variation from RSE to Study Estimate acceptable if its variance bandwidth does not exceed variance bandwidth of Study Estimate**

RSE Evaluation Illustrations

If the +/-20% precision bandwidth of the project's RSE is within the accepted range, an NTC will be immediately issued

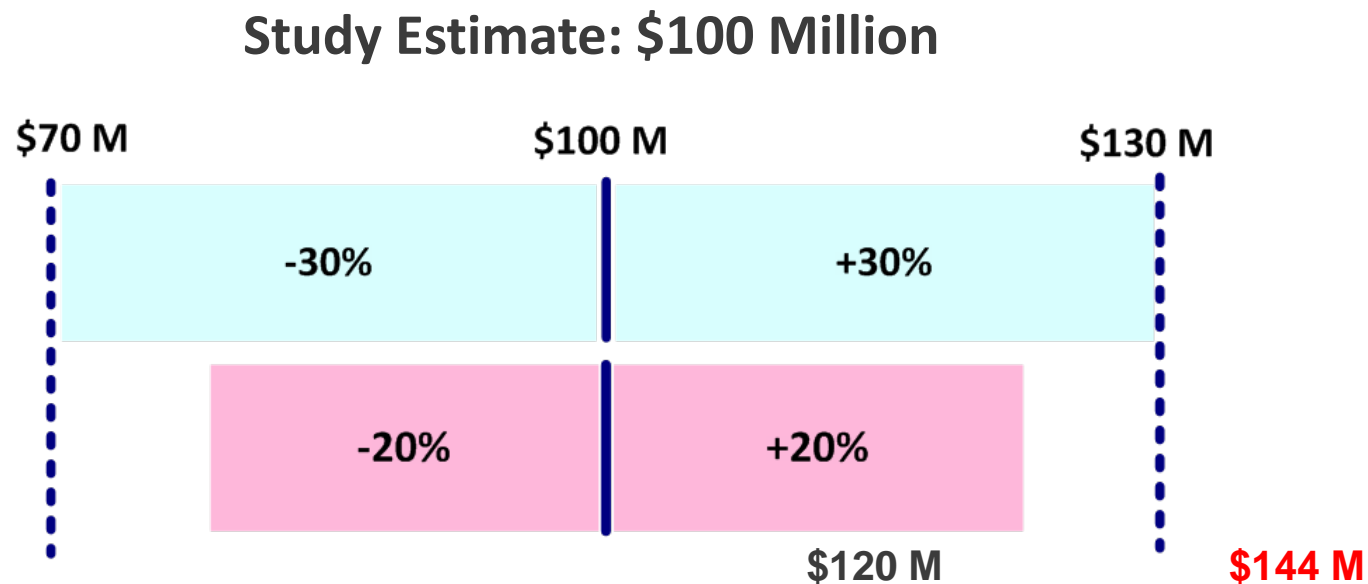


Refined Study Estimate: **\$105 Million**

Action: **SPP Issues NTC to TO**

RSE Evaluation Illustrations

If the +/-20% precision bandwidth of the project's RSE is outside the accepted range, SPP Staff will re-evaluate the project and submit updated analysis to BOD for review



Refined Study Estimate: **\$120 Million**

Action: **SPP Re-evaluation and BOD Review**



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