Introduction to Central California Clean Energy Transmission Project

Stakeholder Meeting
February 6, 2008

Chifong Thomas
Central California Clean Energy Transmission Project (C3ET Project)

a. Project Description and Objectives
b. Background
c. Potential Corridors
d. Project Implementation Plan
e. Study Objectives and Preliminary Study Schedule
Central California Clean Energy Transmission Project

- **Project Scope**
  - Construct new 500 kV Double Circuit Tower Line from Midway to a new Substation east of Fresno on new R/W

- **Project Objectives:**
  - Enhance reliability to Yosemite/Fresno area
  - Increase utilization of the Helms PSP to enhance the value of off-peak generation
  - Facilitate efficient management of renewables
  - Increase Path 15 transfer capability by ~1,250 MW
  - Provide opportunity for future expansion

Potential Corridors shown are for illustrative purposes only.
C3ET Project Description

• Expected Operation Date – 3Q/4Q 2013:
  – Build a 500 kV double circuit tower line with two 2,300 kcmil AAL conductors (bundled), with both circuits strung.
  – Build a new 500 kV Substation (E2) with one 500/230 kV 1,120 MVA transformer bank,
  – Loop the Helms – Gregg #1 and #2 230 kV lines into the E2 Substation,
  – Build two 500 kV line terminations each at Midway and E2
  – Install additional voltage supports in the Fresno area. The amount and location of the voltage support will be evaluated in a voltage stability study.
Potential Renewable Resources in WECC and Major Load Centers in California

- Alberta mixed Renewables
- B.C. Wind and Small Hydro
- Geysers Geothermal
- Mojave Solar
- Montana Wind
- N.E. California, Oregon, Nevada Geothermal and Wind
- Pacific NW Wind
- Salton Sea Geothermal
- Solano County Wind
- Tehachapi Wind
- Wyoming Wind

-- Major Load Centers in California
Transmission under Consideration in WECC
=> Potential impacts on N CA System

- Palo Verde–Devers II
- Green Path Project
- IV-San Felipe
- Indian Hills - Upland
- Sunrise Powerlink
- Monta de Fuego
- En-ti (Ely-Harry Allen)
- Northern Lights
- Montana Alberta Tie Line
- Frontier Project
- Trans-West Express Project
- TOT3 Expansion Project
- High Plain Express
- Eastern Plains
- Colorado-New Mexico Interconnection Project
- Juan de Fuca Cable
- West Coast Cable
- Harry Allen- Robinson Summit
- BC- Northern California Transmission
- Mountain States
- White Pine-Midpoint
- Lake Elsinore Advanced PSP
- Green Path Project
- Colorado-New Mexico Interconnection Project
- TOT3 Expansion Project
- Eastern Plains
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- Colorado-New Mexico Interconnection Project
- TOT3 Expansion Project
Possible Future Transmission Corridors in California

-- Major Load Centers in California
Potential Resource Scenarios

Prevalent Power Flow is from N to S during on-peak

Prevalent Power Flow is from S to N during off-peak

Increases in Path 15 transfer capability required if delivery of resources from S CA to N CA is needed during off-peak conditions.

Increases in Path 15 and Path 26 transfer capability NOT immediately required for delivery of resources from S CA to N CA during on-peak conditions.
**Potential Corridors**

**East Corridor:**
- ~140 miles
- Runs along the foothills – minimum impacts on farm lands, avoid urban areas
- Potential use of SCE access roads

**West Corridor:**
- ~170 miles
- Crosses farm land and urban areas

PG&E will perform environmental, engineering, and economic analyses to determine preferred Corridor.

Potential Corridors shown are for illustrative purposes only.
Project Implementation Plan

Phase I:
- Prepare PEA pursuant to CPUC requirements.
- Perform the necessary engineering and design work required to prepare the PEA.
- Coordinate WECC Regional Planning and Path Rating Process with external interested parties.
- Develop decision-quality cost estimates for proposed corridor and other expected alternatives
- Request CAISO and PG&E Board approval

Phase II:
- File an application in approximately 1Q 2009 with the CPUC for a CPCN.
- Assuming the CPUC grants a CPCN by August 2010, update project cost, schedule and scope per CPUC-approved corridor w/ final recommended contingency and project risk assessment

Phase III:
- Land acquisition and project construction would start immediately to achieve a 3Q/4Q 2013 completion date.
Roles and Responsibilities

- **CPUC:**
  - Conduct the Environmental Review
  - Determine the route

- **CAISO:**
  - Determining if the project is needed for reliability and/or economic reasons:

- **PG&E:**
  - Perform Planning Studies
  - Coordinate Regional Planning and obtain Project Rating at WECC
  - Prepare Proponent’s Environmental Assessment, proposal on the route, etc.
  - Develop Project Cost Estimates, Engineer, Design and Construct Project

- **For this Planning Study:**
  - PG&E: Perform Reliability Assessment Studies
  - CAISO Perform Economic Assessment Studies
CAISO- PG&E Study Objectives

• Evaluate further the potential alternatives to meet major long-term (at least 20 years) Goals:
  – Support California’s Renewable Portfolio Standard (RPS) target(s);
  – Improve transmission reliability and serve load growth in the Fresno and Yosemite areas;
  – Maximize asset utilization by providing support for all three units at Helms Pumped Storage Plant (PSP) to operate in the pumping mode;
  – Provide opportunity for future expansion that can be integrated with the California regional bulk transmission system.
## Preliminary Proposed Study Schedule

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Preliminary Schedule</th>
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<tbody>
<tr>
<td><strong>1st Stakeholder Meeting:</strong> Present draft study plan</td>
<td>1/9/2008, 2/6/2008</td>
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<td>Stakeholder’s written comments on study plan</td>
<td>1/23/2008</td>
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<tr>
<td>Publish 1st draft base cases for review and comments</td>
<td>January, 2008</td>
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<tr>
<td>Finalize Study Plan</td>
<td>February, 2008</td>
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<tr>
<td>Stakeholder’s written comments on draft base cases</td>
<td>February, 2008</td>
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<tr>
<td>Finalize and publish the study base cases (peak and off-peak)</td>
<td>February, 2008</td>
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<tr>
<td>Complete steady-state and post-transient PF analysis</td>
<td>March, 2008</td>
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<td>Conduct economic analysis</td>
<td>March, 2008</td>
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<tr>
<td>Complete Sensitivity studies</td>
<td>April, 2008</td>
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<tr>
<td><strong>2nd Stakeholder Meeting:</strong> Present preliminary reliability study results</td>
<td>April, 2008</td>
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<tr>
<td>Stakeholder’s written comments on preliminary reliability study results</td>
<td>April, 2008</td>
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<tr>
<td>Complete economic analysis</td>
<td>April, 2008</td>
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<tr>
<td><strong>3rd Stakeholder Meeting:</strong> Present economic analysis results</td>
<td>May, 2008</td>
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<tr>
<td>Stakeholder’s written comments on economic analysis study results</td>
<td>May, 2008</td>
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<tr>
<td>Complete and issue draft planning report for review and comment</td>
<td>July, 2008</td>
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<td><strong>4th Stakeholder Meeting (if needed): Review comments if any</strong></td>
<td>TBD</td>
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<tr>
<td>Incorporate comments and issue final study report</td>
<td>August, 2008</td>
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Questions?