

CALIFORNIA  
TRANSMISSION  
PLANNING  
GROUP



# Technical Steering Committee Report

CTPG Executive Committee Meeting  
July 7, 2011

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# AGENDA

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- General Update – Mike Deis
- Stakeholder Comments and Responses – Jan Strack
- 2011 Draft Study Plan – Garry Chinn
- Technical Study Team – Ben Morris
- 2011 Work Plan – Mike Deis
- Web Site Improvements Update – Ben Brownlee
- TEPPC Activity Update – Craig Cameron
- Next Steps – Mike Deis

# GENERAL UPDATE

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- TSC conducted 5 conference calls and 1 in-person meeting in May and June.
- Conducted a stakeholder meeting on May 19<sup>th</sup>
- TSC and Stakeholder meeting topics included:
  - 2011 Phase I and Phase II Work Plan and deliverables
  - May 19<sup>th</sup> Stakeholder Meeting planning and results
  - Written stakeholder comments and responses
  - Proposed Path Flow Assumptions and Generation Re-dispatch Methodology
  - Once-Through-Cooling Approach
  - Proposed 2011 study scenarios and assumptions
- Conducted a joint meeting with the Southwest Area Transmission (SWAT) Sub-regional Planning Group

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# **STAKEHOLDER COMMENTS AND RESPONSES – JAN STRACK**

# STAKEHOLDER COMMENTS – 2011 Work Plan

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**CEC Staff:** Provide call-in line for CTPG Executive Committee meetings

- CTPG Response:* request will be reviewed with Executive Committee

**CPUC Staff, BAMx:** Study CPUC's four LTPP Renewable Portfolios (including high DG/high CHP)

- CTPG response:* Under consideration

**Vote Solar Initiative (the "Group"), Clean Line/Centennial West, Large-scale Solar Assc.:** Study West of River Stress scenario (Heavy Eldorado injection and Heavy Palo Verde injection)

**TransWest Express:** Study relocation of 12,000 gWh of renewables from California to Wyoming

**APS:** Study "Solar Imports from Arizona" scenario and renewable portfolios in CAISO's 2010-2011 transmission plan

- CTPG response:* Will consider study of a West of River Stress scenario

# STAKEHOLDER COMMENTS – 2011 Work Plan (Cont.)

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**Clean Line/Centennial West**: Study scenarios for OTC, low carbon emissions, displacement of inefficient “must-run” generation and integration of imported renewables

- *CTPG response*: OTC assumptions will be made, low carbon emissions already studied, displacement of inefficient “must-run” generation unclear, integration analysis will not be performed

**BAMx**: Study “Max. Use of Existing XMSN” scenario (add renewables in an area until reliability criteria violation found).

- *CTPG response*: Under consideration

**BAMx**: Study “high potential” Pacific Northwest & “high potential” Northwest Nevada corridors

- *CTPG response*: Under consideration

# STAKEHOLDER COMMENTS – 2011 Work Plan (Cont.)

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**BAMx**: Only include XMSN upgrades in Base Case that have:

- ✓ BAA approval,
- ✓ CPUC approval, and
- ✓ Resource agency approvals (e.g., BLM, environmental reviews)

• *CTPG Response*: All XMSN upgrades with BAA approval will be included in base case

**BAMx**: Use grid simulation model (production cost model) to economically decrement fossil-fired generation

• *CTPG Response*: Will not conduct grid simulations but will review CAISO production cost modeling of “Hybrid” renewable resource portfolio

# STAKEHOLDER COMMENTS – 2011 Work Plan (Cont.)

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**Clean Line/Centennial West:** CTPG should evaluate proposed inter-regional transmission projects

**APS:** Assess benefits of proposed 500 kV Delaney-Colorado River line

- CTPG Response:* Project proponents should seek evaluation by relevant sub-regional planning groups; CTPG may identify similar XMSN upgrades if effective in mitigating criteria violations

**Clean Line/Centennial West, Vote Solar Initiative:** Improve coordination with WECC TEPPC.

**TransWest Express:** conduct economic analysis of XMSN upgrades

- CTPG Response:*
  - ✓ Participation at TEPPC useful, suggestions for improved coordination welcome
  - ✓ TEPPC's economic analysis suggests Centennial West and TransWest Express projects not economic compared to alternative of using existing grid for new renewables outside CA



# STAKEHOLDER COMMENTS – 2011 Work Plan (Cont.)

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**BAMx, First Solar:** Update renewable net short using mid-point of CEC staff's net short range

- *CTPG Response:* Will use “high” end of CEC staff's May, 2011 updated load forecast

**First Solar:** Reevaluate SCIT Nomogram

- *CTPG Response:* Request being considered

**First Solar:** CTPG needs to develop an intermediate-term transmission implementation plan

- *CTPG Response:* CTPG will not develop an intermediate-term transmission implementation plan

**CPUC Staff:** Use CAISO's hourly/monthly renewable output profiles, distributed resource locations indicated in CPUC's high-DG portfolio.

- *CTPG Response:* CTPG will review information

# STAKEHOLDER COMMENTS – 2011 Work Plan (Cont.)

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**CPUC Staff**: Improve reporting of results (aggregate generator output by technology and load bubble, power flows between load bubbles)

•*CTPG Response*:

- ✓ Generator aggregation by power flow study area feasible, but not by technology or load bubble
- ✓ Power flows between power flow study areas feasible, but not between load bubbles

**Terra-Gen Power**: Study renewables in central Nevada, in southern Nevada and in the Owens Valley corridor

- CTPG Response*: Addressed in CTPG's 2010 study work

**Great Basin HVDC**: Convene subgroup to optimize configuration of Great Basin HVDC project

- CTPG Response*: Outside the scope of CTPG's 2011 study work

# STAKEHOLDER COMMENTS – Status of Responses

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<u>Date Received</u>	<u>Stakeholder</u>	<u>Status of Response</u>	<u>Legal Review</u>	<u>Date Posted</u>
May 20, 2011	Tom Isham	Drafted & TSC review	Not needed	
May 31, 2011	CEC Staff	Drafted & TSC review	Not needed	May 31, 2011
May 27, 2011	Great Basin	Drafted & TSC review	Done	
June 30, 2011				
June 1, 2011	Clean Line+Centennial W.	Drafted & TSC review	Done	June 30, 2011
June 2, 2011	First Solar	Drafted & TSC review	Done	June 30, 2011
	APS	Drafted & TSC review	Done	June 30, 2011
	BAMx	Drafted & TSC review	Done	June 30, 2011
	Vote Solar (the “Group”)	Drafted & TSC review	Done	June 30, 2011
	Terra-Gen	Drafted & TSC review	Done	June 30, 2011
	TransWest Express	Drafted & TSC review	Done	June 30, 2011
	CPUC Staff	Drafted & TSC review	Done	June 30, 2011
	Vote Solar Initiative	Drafted & TSC review	Done	June 30, 2011
June 21, 2011	Vote Solar (the “Group”)	Drafted & TSC review	Done	June, 30 2011
June 24, 2011	Large-scale Solar Assc.	Drafted & TSC review	Not needed	Pending

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# 2011 STUDY PLAN – GARRY CHINN

# NET SHORT UPDATE

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## "CEC IEPR HIGHEST FORECAST"

### GWH

**305,256** **2020 CEC Energy Demand Forecast (May 2011)**

Energy not subject to RPS

3,320 Central Valley Project Pump Load

1,507 Metropolitan Water District Pump Load

8,729 Department of Water Resources Pump Load

15,200 Energy Efficiency

2,336 Private Photovoltaic

- Combined Heat and Power

**274,164** **Retail sales subject to RPS**

**90,474** **Renewable Generation Requirement (33%)**

43,500 Existing Renewables

**46,974** **CEC Staff Renewable Net Short**

CPUC Approved Solar PV Program

876 SCE

91 SDG&E

876 PG&E

**45,131** **CTPG Renewable Net Short**

# STUDY SCENARIOS

No.	Name	Description	Path Flow Pre-Renewables	Renewable Resources	Season Date Time	Net Short (TWH)	Responsible CTPG Member
1	Pacific Northwest Import	Wind imports from Pacific Northwest combined with hydro runoff.	stress COI (n-s)	Out of State CPUC/POU discounted core RETI Best CREZs	spring (May)	45.1	TANC
2			foundation				
3	Northwest Nevada Import	Geothermal and solar from Nevada and wind from Northern California with delivery to new substation and generation tie line.	stress COI (n-s)	Out of State CPUC/POU discounted core RETI Best CREZs	summer peak	45.1	SMUD
4			foundation				
5	South to North Flow	Determine transmission needs required during this time period generally characterized as light load with significant wind and morning solar generation.	Paths 15 & 26 (s-n)	Southern California CPUC/POU discounted core RETI Best CREZs	fall (Sep 9 AM)	45.1	TID
6	CPUC Public Policy	Updates cost constrained scenario: includes Eldorado-Ivanpah, 1,384 MW of DG, 25% of 2020 RPS is out of state and projects from CAISO 2010/11 Transmission Plan.	foundation	CPUC/POU discounted core CPUC Public Policy	summer peak	45.1	SDG&E
7	Central California	Large development of disturbed land with low environmental impact.	foundation	CPUC/POU discounted core Central California gen queue RETI Best CREZs	summer peak	45.1	PG&E
8	West of River Import	High wind & solar imports from Wyoming, Utah, Nevada and Arizona to stress WOR. Inject power at Eldorado (50%), Palo Verde (37%) and N. Gila (13%).	stress WOR (e-w)	Out of State CPUC/POU discounted core RETI Best CREZs	fall (Sep 9 AM)	45.1	SCE
9		Same as Scenario 10, except inject power at Eldorado (37%), Palo Verde (50%) and N. Gila (13%).	Paths 15 & 26 (s-n)				

# ONCE THROUGH COOLING

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- On May 4, 2010, the State Water Resources Control Board adopted a Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling and plant owners are required to submit an implementation plan on 04/01/11
- OTC Modeling
  - Use information from the released implementation plans
    - Three of the 17 OTC plants have been shut down or re-powered
    - Assume all compliance extensions are granted
    - Model units based on plans for 2020
    - Diablo Canyon and San Onofre will be modeled as base loaded
  - Assume OTC units repowered with efficient combined cycle and/or combustion turbine technology to meet local area reliability requirements
  - No uncommitted transmission projects will be included

# RE-DISPATCH APPROACH

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- Fossil generation will be decreased in a merit-order fashion (least economic reduced first) across WECC
- Use heat rate data from WECC Transmission Expansion Planning & Policy Committee's 2017 economic database
- Decrements will be limited to levels above known local capacity requirements as identified by the applicable balancing authority
- CTPG has issued a survey to transmission planning entities throughout WECC to identify
  - Dispatchable generators
  - Obtain minimum output of dispatchable units
  - Constraints requiring specific dispatchable units to be on line



# CTPG SURVEY OF WECC ENTITIES

## Dispatchable Generation & Local Reliability Requirements

### Entities Who Have Responded

Salt River Project (Arizona)  
NV Energy (southern Nevada)  
Metropolitan Water District  
California Department of Water Resources  
Southern California Edison Company  
Public Service Company of New Mexico  
SDG&E  
LADWP  
Modesto Irrigation District  
Turlock Irrigation District  
NV Energy (northern Nevada)  
Bonneville Power Administration  
Northwestern Energy (Montana)  
Idaho Power Company  
SMUD  
British Columbia Hydro and Power Authority  
Alberta  
Avista  
Portland General Electric  
Puget Sound Energy  
Pacific Gas & Electric Company  
Portland General Electric  
NW Montana  
Comision Federal de Electricidad  
Imperial Irrigation District  
WAPA and USBR

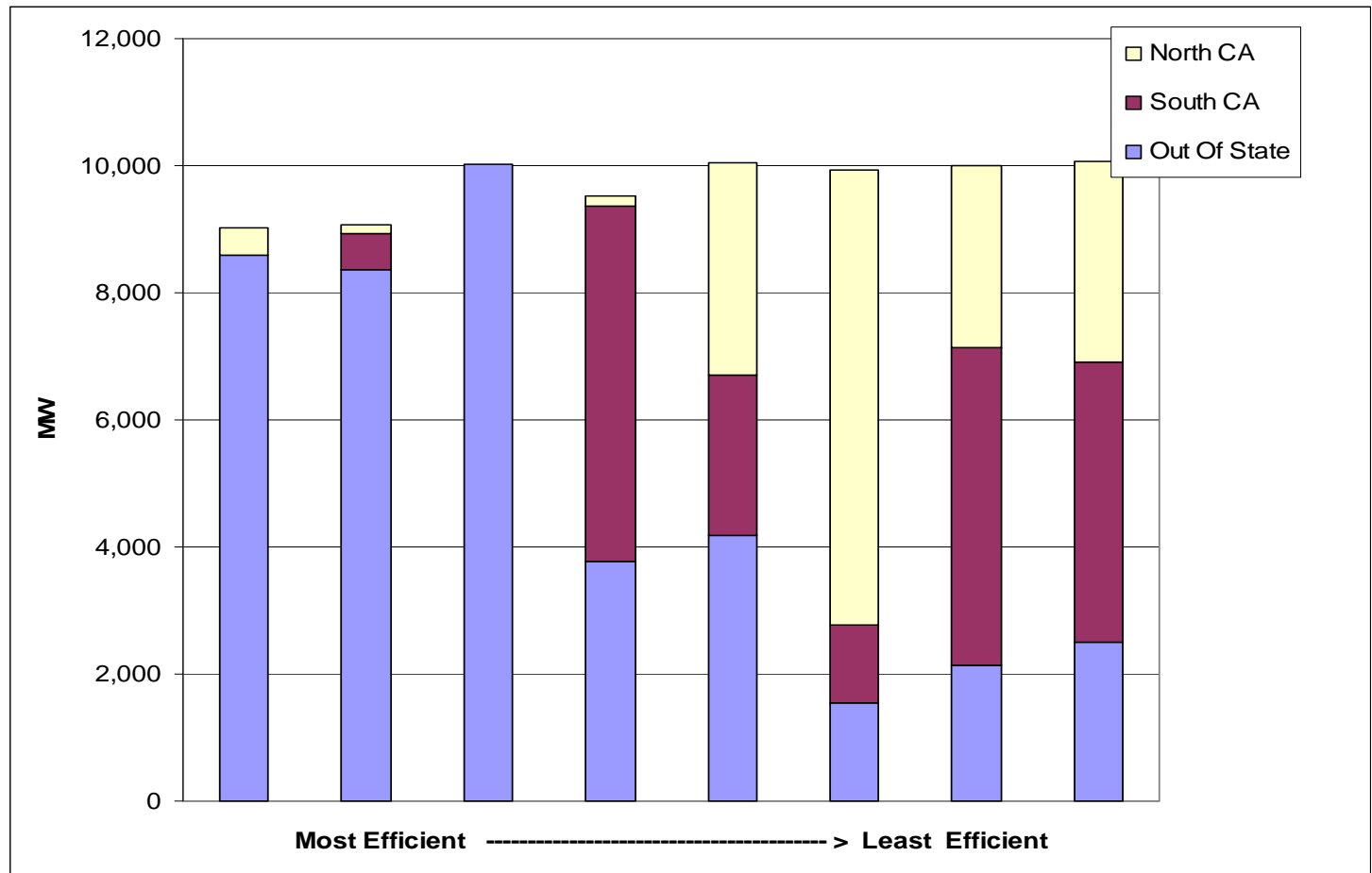
### Entities Who Have Not Responded

WECC TEPPC  
Arizona Public Service  
Farmington Electric Utility System  
Public Service Company of Colorado  
Colorado Springs Utilities  
El Paso Electric Company (WECC portion)  
Utah Municipal Power Agency  
Tri-State Generation & Transmission Association  
Black Hills Power  
Southwest Transmission Cooperative  
Platte River Authority  
Deseret Generation & Transmission Co-operative  
Basin Electric Power Cooperative  
PacificCorp  
FortisBC  
Aquila Networks  
Seattle City Light  
Tacoma Power  
City and County of San Francisco – Hetch Hetchy W & P  
Tucson Electric Power

# WECC INSTALLED CAPACITY DISPATCHABLE GAS-FIRED GENERATION CAISO "HYBRID" RPS CASE

## NOTES:

- CAISO Hybrid RPS Case commits 62,616 MW for 4pm PST on July 22, 2020
- Reflects CAISO assumptions for OTC units (different than CTPG)
- Reflects survey results for dispatchable generation
- On-going refinements



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# TECHNICAL STUDY TEAM – BEN MORRIS

# TECHNICAL STUDY TEAM

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- Study Cases
  - WECC's 2020 HS and 2018 HSPR cases to be updated to reflect 2020 summer, spring and fall conditions (pre-renewable)
  - Cases will be adjusted as appropriate to reflect the 11 renewable resource scenarios (i.e. model renewable generation and associated transmission, and stress key paths as indicated)
- Studies involve
  - Power flow studies--500 kV + other lower voltage outages
  - Stability studies for select outages
  - Identify problems and test potential solutions
  - Tabulate results

# TECHNICAL STUDY TEAM (cont'd)

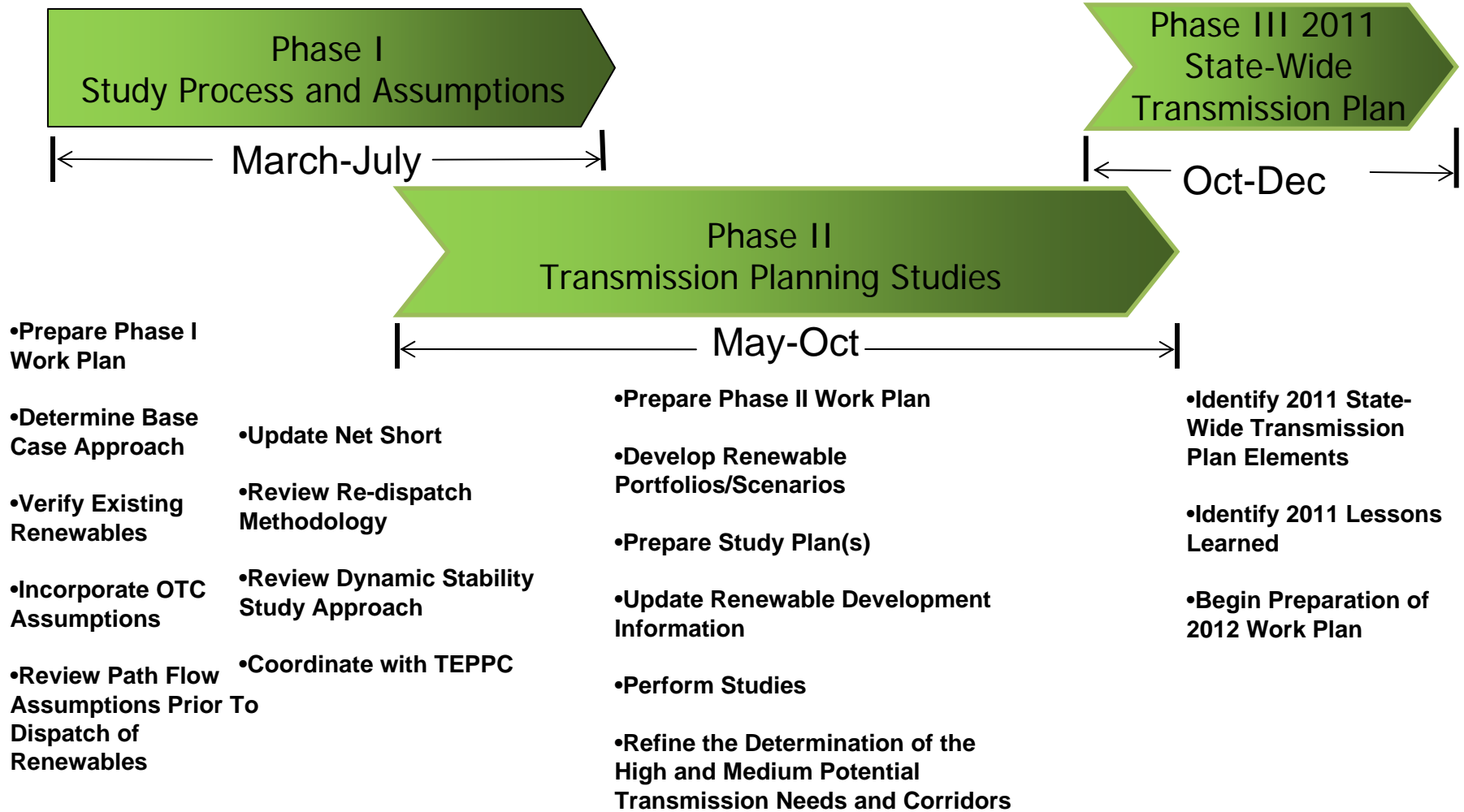
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- Studies will be performed by planners at PG&E, SCE, SMUD, TANC, TID
- Regular weekly conference calls through August with additional calls/meetings, as required
  - Assure steady completion of the study work
  - Assure data/files are circulated among the study team (avoid duplication of effort)
  - Address study issues in a timely manner

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# 2011 CTPG WORK PLAN – MIKE DEIS

# CTPG 2011 WORK PLAN



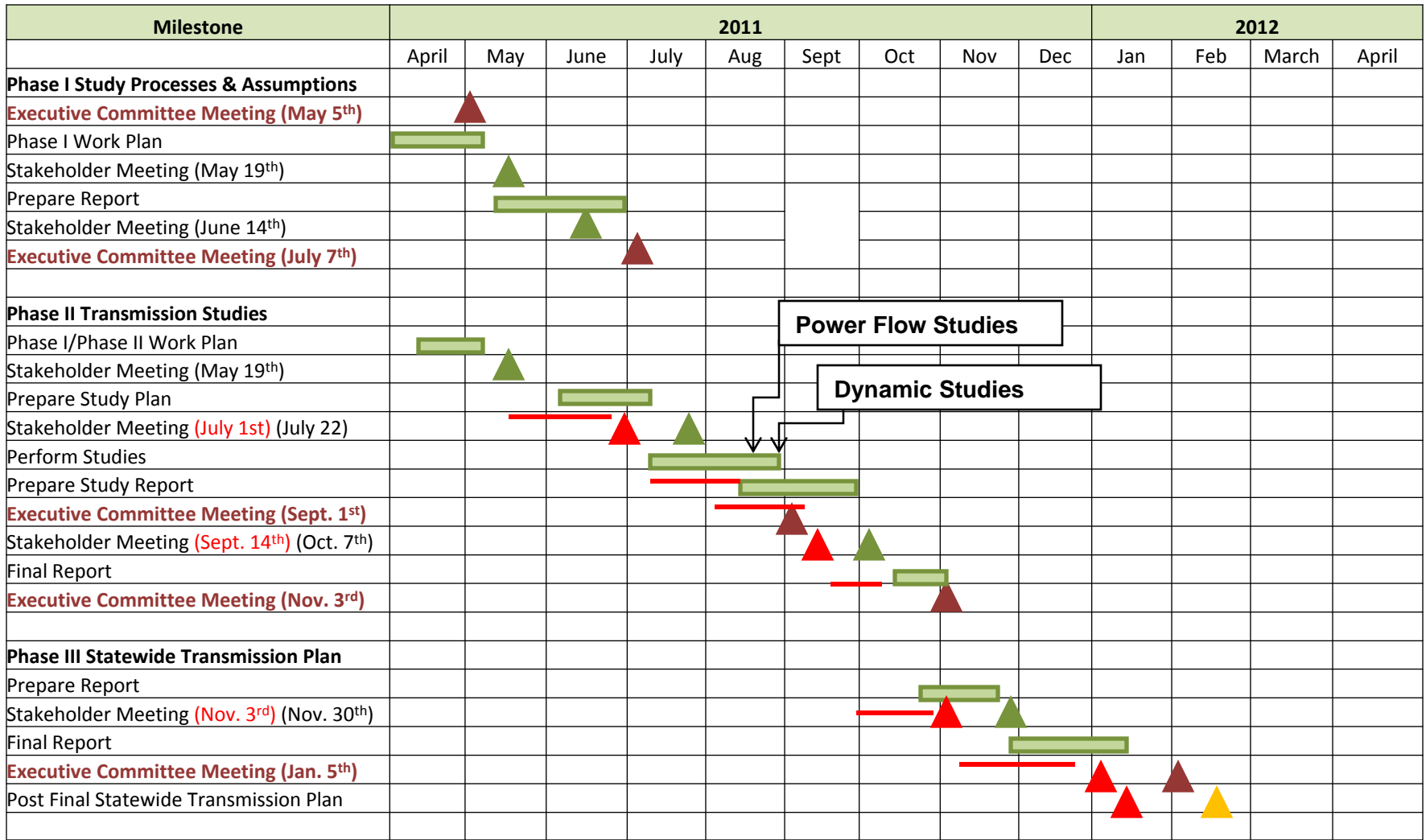
# 2011 CTPG WORK PLAN PHASE I

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- Phase I Deliverables:
  - Verify Modeling of Existing Renewables
  - Determine OTC Assumptions
  - Determine Re-dispatch Methodology
  - Determine Path Flow Assumptions
  - Update Net Short
  - Develop Foundation Base Case
  - Develop Dynamic Study Approach
  - Coordinate with TEPPC
  - Website Improvements



# 2011 WORK PLAN SCHEDULE



Power Flow Studies

Dynamic Studies

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# **JULY 22 STAKEHOLDER MEETING – MIKE DEIS**

# JULY 22 STAKEHOLDER MEETING

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- Conference Call (Possibly 2 Days)
- Review Phase I Conclusions and Recommendations
- Review Phase II Study Plan

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# **WEB SITE IMPROVEMENTS UPDATE – BEN BROWNLEE**

# WEBSITE IMPROVEMENTS

## The New Look

**CALIFORNIA TRANSMISSION PLANNING GROUP**

CTPG

HOME MEMBERS & PARTICIPANTS MEETINGS PLAN DEVELOPMENT ARCHIVED DOCUMENTS CONTACT FAQs

Executive Committee

Stakeholder

### OVERVIEW

The California Transmission Planning Group is engaged in joint transmission planning and coordination in transmission activities to meet the needs of California consistent with FERC Order 890.

The CTPG was formed as a result of discussions facilitated by FERC to address California's transmission needs in a coordinated manner that would respect various business models. The CTPG includes transmission owners with an obligation to serve and transmission operators, and these parties have the technical capability to perform detailed transmission planning.

CTPG is committed to developing a California state-wide transmission plan to meet the state's 33% by 2020 renewable portfolio standard (RPS) goal. This transmission plan will seek to leverage a diverse portfolio of renewable energy generation technologies (wind, geothermal, hydro, biomass and solar) available to supply projected electricity demand in California from now to beyond 2020. In this effort CTPG is utilizing the Renewable Energy Transmission Initiative (RETI) conceptual plan as a starting point.

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Quick Links

# WEBSITE IMPROVEMENTS

The screenshot displays the website's navigation menu and main content area. The navigation menu includes links for HOME, MEMBERS & PARTICIPANTS, MEETINGS, PLAN DEVELOPMENT, ARCHIVED DOCUMENTS, CONTACT, and FAQs. The MEETINGS dropdown menu is expanded, showing Executive Committee and Stakeholder. The ARCHIVED DOCUMENTS link is highlighted in orange. The FAQs link is highlighted in red. A green box highlights a set of icons for email, print, and PDF conversion. A large blue box highlights the right sidebar, which contains a mailing list sign-up form, a Privacy Policy | User Agreement link, and a Quick Links section with links to the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), Western Electricity Coordinating Council (WECC), California Renewable Portfolio Standard (RPS), and Renewable Energy Transmission Initiative (RETI).

**Re-designed Menus and Helpful Links**

**E-mail, Print, and/or PDF Conversion**

**Frequently Asked Questions**

**Archived Old Postings**

Overview  
The California Transmission Planning Group is providing joint transmission planning and coordination in transmission activities to meet the needs of California consistent with FERC Order 890.

The CTPG was formed as a result of discussions facilitated by FERC to address California's transmission needs in a coordinated manner that would respect various business models. The CTPG includes transmission owners with an obligation to serve and transmission operators, and these parties have the technical capability to perform

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Quick Links

- Federal Energy Regulatory Commission (FERC)
- North American Electric Reliability Corporation (NERC)
- Western Electricity Coordinating Council (WECC)
- California Renewable Portfolio Standard (RPS)
- Renewable Energy Transmission Initiative (RETI)

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# WEBSITE IMPROVEMENTS

## Tabulated Postings

STAKEHOLDER MEETINGS

Date	CA Location	Agenda	Minutes	Handouts	Stakeholder Feedback
May 19, 2011		Agenda Download		Presentation Slides	Tom Isham: Comments & Response Reti Net Short Update  CEC Staff:
February 28, 2011	Teleconference			Presentation Slides	Save the F Comments Spreadshe  California's Comments  Joyce Dilla  Eagle Crea  BAMx: Cor

CTPG EXECUTIVE COMMITTEE MEETINGS

Date	CA Location	Agenda	Minutes	Handouts
December 1, 2011	San Diego, SDG&E			
November 3, 2011	Pomona, SCE			
October 6, 2011	Sacramento, SMUD			
September 1, 2011	San Francisco, PG&E			
August 4, 2011	San Diego, SDG&E			
July 7, 2011	Sacramento, SMUD			
June 2, 2011	CANCELLED			
May 5, 2011	San Francisco, PG&E	Download		TSC Report  2011 Phase 1 Work Plan
April 7, 2011	San Diego, SDG&E	Download		TSC Report
March 3, 2011	Folsom, CalSO	Download	Download	TSC Report
February 3, 2011	Pomona, SCE	Download	Download	
January 6, 2011	San Francisco, PG&E (Open to public)	Download	Download	

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# TEPPC UPDATE – CRAIG CAMERON



# TEPPC ACTIVITY UPDATE

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- WECC Ten-Year Regional Transmission Plan
  - Comment Period Ended June 26, 2011
    - CTPG Response:
      - Reflect the full range of economic benefits for proposed inter-regional transmission projects
      - Most inter-regional transmission projects uneconomic compared to alternative of using existing grid for new renewables outside of CA
    - POUs Response
    - WestConnect
- 2011 Study Program
  - Approved May 24, 2011
  - Elements of 2011 Study Program

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# NEXT STEPS – MIKE DEIS

# NEXT STEPS

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- Complete and post Phase II Study Plan
- Conduct July 22<sup>nd</sup> Stakeholder Meeting
- Modify Phase II Study Plan If Necessary
- Prepare Base Cases
- Complete Power Flow Studies
- Complete Dynamic Studies
- Begin Phase II Report

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Thank you!

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