Technical Steering Committee Report

CTPG Executive Committee Meeting
December 1, 2011

Agenda

- General Update – Mo Beshir
- 2011 Study Report Stakeholder Comments – Jan Strack
- 2011 Statewide Transmission Plan Methodology – Mike Deis
- 2011 CTPG Work Plan – Mike Deis
- Next Steps – Mike Deis
- 2012 CTPG Study Plan – Mike Deis

General Update

- TSC and Technical Study Team conducted 8 conference calls in October and November. Meeting topics included:
  - Review of study results
  - Preparation for November 4th Stakeholder meeting
  - Stakeholder Comments
- TSC conducted in-person meeting on October 17th for the kick-off of Phase 3, Preparation of the 2011 Statewide Transmission Plan
- TSC conducted a stakeholder meeting on November 4th to receive input on the 2011 Study Report (30 attendees in person, 20 on phone)
- TSC has provided study cases to requestors
- TSC is currently preparing the 2011 Statewide Transmission Plan Methodology

2011 STUDY REPORT STAKEHOLDER COMMENTS – JAN STRACK

Bay Area Municipal Transmission Group (BAMx)

Comments

- CTPG creates “need” by stressing paths, then Identifies new XSMN to mitigate standard violations
- No cost estimates for proposed mitigation
- Generator redispatch is mitigation option
- Amount of renewables in Mountain Pass and Kramer CREZs does not support identified XMSN upgrades

Responses

- Only two out of nine scenarios “stressed” path flows prior to adding renewables
- CTPG does not identify a broad-range of mitigation solutions, therefore
- No reason to develop comparative cost estimates for new XMSN or redispatch solutions
- Mountain Pass upgrades address limits of weak 115 kV tie between Ivanpah and existing Coolwater substations
  - Generation tripping RAS may also be effective mitigation
- Review of Public Policy scenario (250 MW in Kramer CREZ) indicates minor standard violations in Kramer area for N-0 conditions
  - CAISO-approved 230 kV Coolwater-Lugo line would eliminate need to expand the existing RAS to trip more generation for N-1
- Other scenarios have more renewables in Kramer CREZ (593 MW to 2381 MW)

Great Basin HVDC

Comments	Responses
• Include Sierra Subregional Planning Group (SSPG) studies in CTPG's Phase 2 Study Report	• CTPG not involved in SSPG's studies, therefore will not include SSPG's studies in CTPG's study report
• Great Basin HVDC project mitigates standard violations that modeled Lassen Municipal Utility District (LMUD) project does not	• CTPG's 2011 study work did not attempt identify a broad range of mitigation solutions, including the Great Basin HVDC project • CTPG does not know whether Great Basin HVDC offers technical advantages over LMUD project
• CTPG should identify the Great Basin HVDC project as an "alternative" for mitigating standard violations	• CTPG's 2010 study work <u>did</u> evaluate the Great Basin HVDC project as an "alternative" • CTPG has not undertaken a broad assessment of potential mitigation solutions, hence CTPG takes no position on which alternative is best and therefore "needed"

TransWest Express (TWE)

Comments

- Include a scenario with 12,000 gWh (3,000 MW) of Wyoming wind delivered over TWE
- CTPG should coordinate with WECC TEPPC to reflect common assumptions and data
- CTPG's unwillingness to perform economic analysis is "fundamental shortcoming"

Responses

- CTPG's WOR Import w/50% Eldorado injection scenario has 3,621 MW injecting at Eldorado
- CTPG and TEPPC differ:
  - CTPG conducts technical analysis
  - TEPPC mainly focused on hourly economic grid simulation
- CTPG and TEPPC roughly common:
  - WOR Import w/50% Eldorado injection scenario assumes 9,161 gWh injected at Eldorado
  - TEPPC assumes 12,000 gWh of renewable generating potential moved from CA to Wyoming
- CTPG leaves economics to project sponsors, BAs and jurisdictional regulatory entities
- TEPPC's economic analysis indicates TWE is:
  - Economic or uneconomic depending on whether the relocation of 12,000 gWh of renewables from CA to Wyoming depends on TWE project
  - TEPPC's economic grid simulation modeling suggests no thermal overloads if 12,000 gWh were relocated without the TWE project

TransWest Express (cont.)

Comments	Responses
• CTPG should incorporate findings from Northern Tier Transmission Group (NTTG) 2010-2011 XMSN plan	• CTPG is not involved in NTTG's studies; therefore will not incorporate findings from NTTG's transmission plan in CTPG's study report
• CTPG should coordinate with SWAT/WestConnect Eldorado Valley Study Group	• CTPG recognizes the value of coordinating with other transmission planning groups and will explore options for such coordination in connection with the development of CTPG's 2012 work plan
• CTPG should determine amount of renewables that existing WOR path can accommodate, then identify mitigation that allows more resources to be added	• Would be an academic exercise since renewable development portfolios suggest existing WOR capability supports achievement of CA's 33% RPS requirement o Significant existing West of River import capability o Some fossil-fired decrements to accommodate renewables are electrically east of Eldorado tends to reduce east-to-west path flows
• Study Public Policy scenario and Central California scenario under spring and autumn conditions	• Results of spring and autumn studies could reveal standard violations along Path 15. • Will consider such studies for the 2012 work plan.

Kern County

Comments

- Kern County provided CTPG with Kern County's comments on the CEC's 2011 Integrated Energy Policy Report (IEPR) document entitled "*Draft Renewable Power in California: Status and Issues Report*"

Responses

- CTPG appreciates Kern County's interest in developing renewables in Kern County
- CTPG welcomes Kern County's support for new transmission that is determined to be needed to accommodate these resources
- All of CTPG's renewable development portfolios contain renewables in Kern County

Clean Line & Centennial West

Comments

- CTPG's renewable development portfolios could be expanded to include additional renewable resources in desert Southwest

- TEPPC's 10-year XMSN plan notes that DC lines offer "significant cost savings"

Responses

- CTPG's WOR Import w/50% Palo Verde injection scenario has 6,287 MW injecting at southern NV, central AZ and New Mexico
- Given existing XMSN configuration in desert Southwest, this can be viewed as an indirect way of assessing imports into California from areas such as New Mexico
- Even at this level of injection, no standard violations along WOR path
  - Significant existing West of River import capability
  - Some fossil-fired decrements to accommodate renewables are electrically east of Colorado River tends to reduce east-to-west path flows

- DC lines may potentially be economic mitigation for standard violations
- TEPPC's economic analysis indicates Centennial West project is:
  - Economic or uneconomic depending on whether relocating 12,000 gWh of renewables from CA to New Mexico depends on the project
  - TEPPC's economic modeling suggests no thermal overloads if 12,000 gWh relocates without the project

Critical Path Transmission

Comments

- AV Clearview XMSN Project obviates need for:
  - New Llano 500 kV substation
  - Adding 500 kV capability at Kramer substation
  - 500 kV Kramer-Llano line
  - CAISO Board-approved 230 kV Coolwater-Lugo line
- AV Clearview project will save California ratepayers “hundreds of millions of dollars”
- Ability to build AV Clearview project by December, 2016 means developers can obtain Investment Tax Credit (ITC) by December, 2016 deadline

Responses

- Project sponsors, jurisdictional regulatory entities with responsibility for establishing “need,” and BAs will determine whether net benefits of the AV Clearview project exceed those of other alternatives
  - Such that AV Clearview project is “needed”
- No study showing life-cycle cost savings
- No way to verify savings
- Analysis of other alternatives for mitigating standard violations in Kramer area needed to determine whether AV Clearview project is best way of allowing renewable developers’ to qualify for ITC
  - Expanding existing RAS in the Kramer area might be a timely and effective alternative

Critical Path Transmission (cont.)

Comments

- CTPG is "obligated" to include the AV Clearview in its pre-renewable base cases
  - FERC Order 890: CTPG provides the "de facto" regional input to the CAISOs' Transmission Planning Process (TPP)
  - FERC's October 20, 2011 Order: CAISO's Revised Transmission Planning Process (RTPP) "requires" CAISO to include "superior" alternatives in CAISO's transmission plan
    - CTPG would be "actively working counter to the intent of FERC" if "superior" projects not included in CTPG's conceptual transmission plan

Responses

- Critical Path Transmission misunderstands obligations and scope of CTPG's work
  - CTPG not contending it's compliant with all FERC Order 890 principles
  - CTPG not intending to seek FERC approval as a formal regional planning organization pursuant to FERC Order 1000
  - CTPG is not jurisdictional to any regulatory entity and therefore is not "obligated" or "mandated" to include AV Clearview, or any other project, in its work
  - CTPG does not provide the "de facto" regional input to the CAISOs' Transmission Planning Process (TPP)
  - CAISO is obligated under its FERC-approved tariff to conduct its own independent TPP
  - CTPG does not identify a broad-range of feasible alternatives and does not conduct economic comparisons among alternatives
    - CTPG does not know what the "superior" alternative for mitigating standard violations would be; therefore
    - CTPG cannot be viewed as "actively working counter to the intent of FERC"

Critical Path Transmission (cont.)

Comments

- Without AV Clearview project developers will not qualify for the ITC prior to the December, 2016 expiration
  - Solar generation in the Mohave Desert will not be built

Responses

- CTPG's studies focus on XMSN that supports achievement of 33% RPS in year 2020
- In developing CTPG's 2012 work plan, CTPG will consider whether to explore the timing of new transmission prior to year 2020

2011 STATEWIDE TRANSMISSION PLAN METHODOLOGY – MIKE DEIS

REVIEW OF
2010 STATEWIDE TRANSMISSION PLAN METHODOLOGY

2010 Statewide Transmission Plan

- The CTPG introduced a three step approach to developing the CTPG Statewide Transmission Plan
  - ➢Step 1: Identified "High Ranked CREZs" using commercial interest
    - CPUC Discounted Core
      - ✓IOUs PPA under CPUC review by 6/1/2010
      - ✓Permit application data adequate by 3/1/201
    - CTPG Queue Portfolio
      - ✓Have or in process of signing Interconnection Agreements
      - ✓Posted financial security in ISO Cluster process

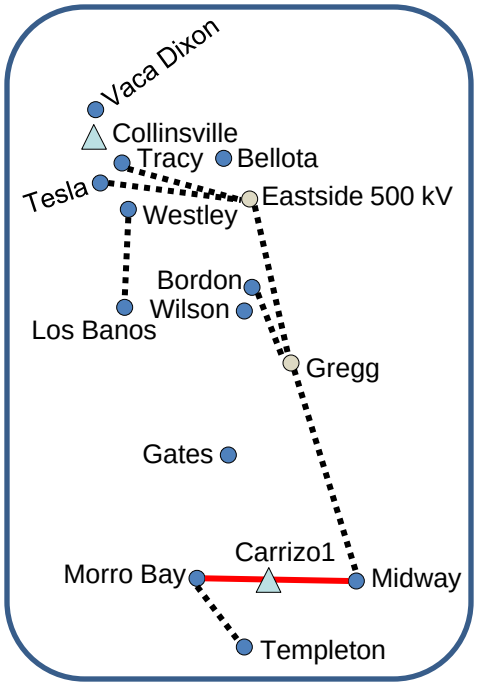
2010 High Ranked CREZs

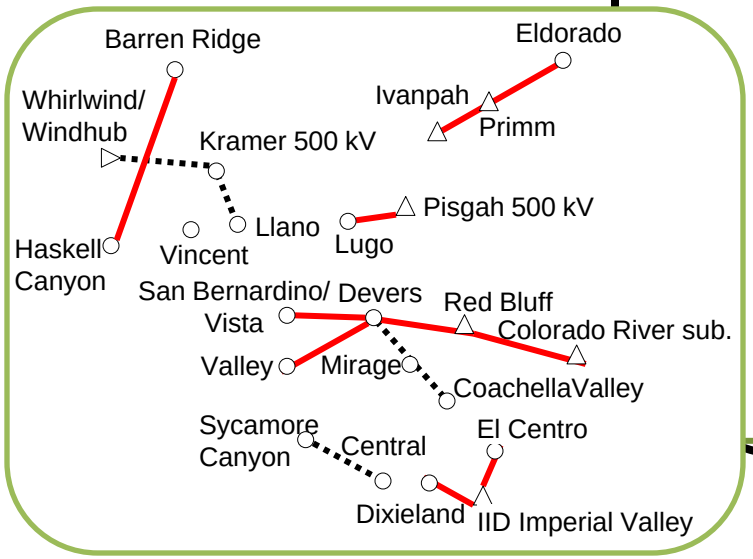
CREZ	% Discounted Core In Queue
Carrizo North/South	94
Imperial South	100
Mountain Pass	100
Palm Springs	100
Pisgah	100
Riverside East	100
Solano	100
Tehachapi	100
Round Mountain	100

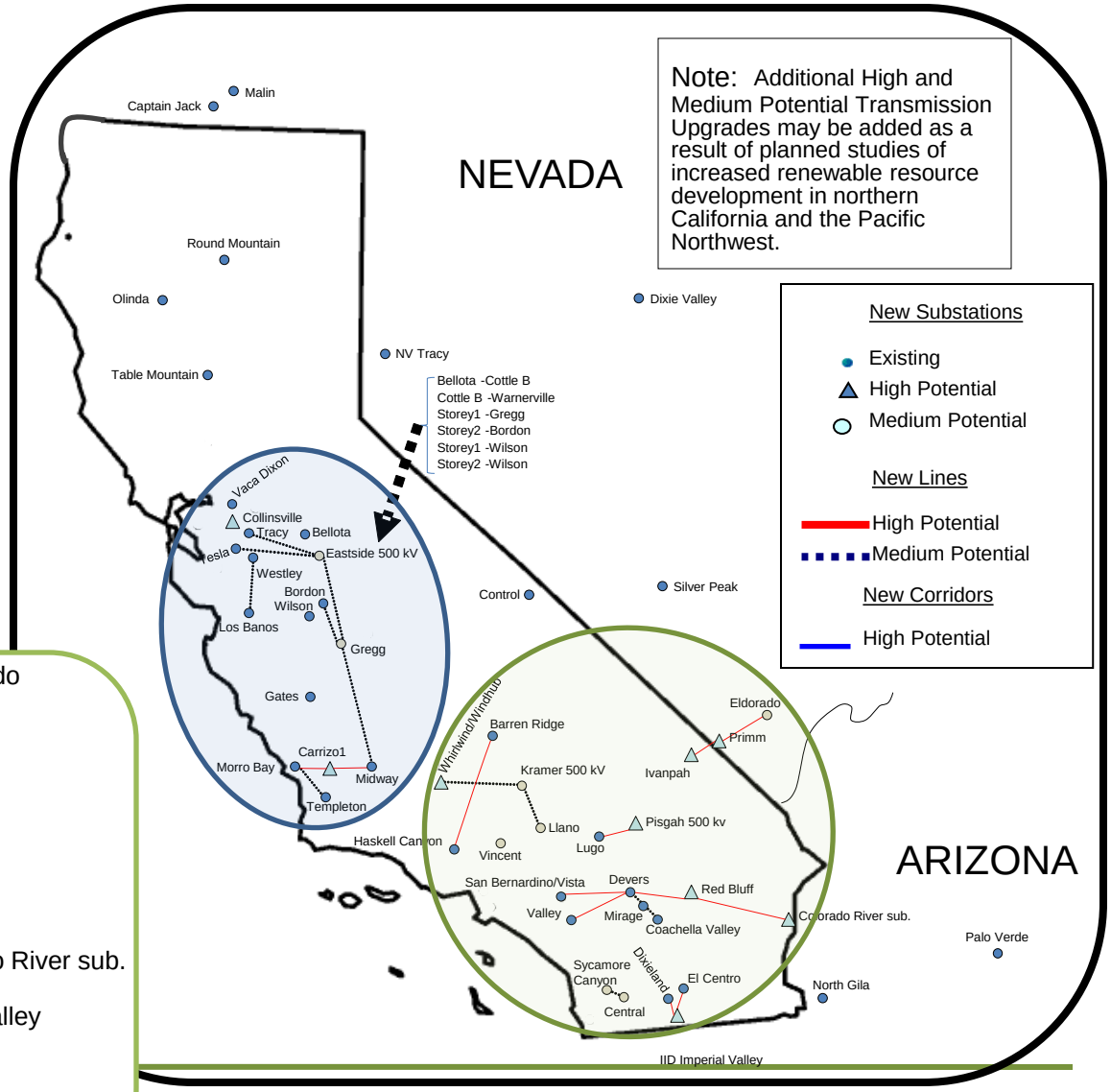
2010 Statewide Transmission Plan

- Step 2: Identified "High Potential" and "Medium Potential" Transmission Elements
  - ✓Identified transmission elements associated with High Ranked CREZs
    - High potential elements transmit the greatest amount of energy from the identified CREZs to load centers for the study assumptions (Gen-Ties, Gen-Collectors)
    - Medium potential elements transmit a lower amount of energy from the identified CREZs or are needed to deliver a large group of CREZs to load (Back-bone)
  - ✓Compiled list of "High Potential" and "Medium Potential" transmission elements

2010 CTPG Statewide Transmission Plan
High and Medium Potential Transmission Upgrades and Corridors







2010 State-Wide Transmission Plan

- Step 3: Identify "High Potential Transmission Corridors"
  - The CTPG has chose to identify "High Potential Transmission Corridors" for future study for the following reasons:
    - There remains considerable uncertainty regarding the precise location and amount of renewable resources
    - Load serving entities are still finalizing procurement decisions as the regulations and rule making surrounding renewable energy credits (REC) and green house gas reductions are developed
    - The existing purchase power agreements (PPA) may be insecure
      - ✓ Inability to meet some scheduling terms
      - ✓ PPAs may contain milestones that if not achieved render the contract terms invalid

2010 State-Wide Transmission Plan

- "High Potential Transmission Corridors" Continued:
  - Provides California's load serving entities with potential future procurement options beyond the "High Commercial Interest CREZ"
  - Recognizes the potential for renewable resource projects that may be developed faster and for less cost
  - Recognizes the potential for reduced total procurement costs, i.e., combined generation and transmission costs

2010 State-Wide Transmission Plan

- "High Potential Transmission Corridors" Continued:
  - Will sustain a competitive renewable resource development and procurement environment as final procurement decisions are made by the State's load serving entities
  - The CTPG believes that additional renewable resource options should be explored because California will have additional renewable resource needs beyond 2020 and to address future GHG reduction polices

High Potential Trans. Corridor Selection Criteria

- ***Criteria No. 1*** – The transmission corridor is associated with out-of-state transmission additions or upgrades currently being considered by other WECC planning entities for the delivery of renewable resources into California
  - ***Reason:*** WECC planning entities should continue to work together to plan for and identify mutual solutions for satisfying respective renewable energy goals

- ***Criteria No. 2 -*** The transmission corridor is associated with out-of-state transmission additions or upgrades that are known to be supported by federal and/or state government(s) for the purpose of developing and exporting renewable resources to California
  - ***Reason:*** The success of completing out-of-state renewable energy projects and transmission infrastructure that may contribute to the potential export of renewable energy to California is contingent on the support of local and state governments

High Potential Trans. Corridor Selection Criteria

- ***Criteria No. 3 –*** The development of transmission additions or upgrades within the transmission corridor will facilitate a renewable resource portfolio for California that has geographical and weather (wind and sun) diversity
  - ***Reason:*** Renewable energy geographical and weather diversity
  - ***Reason:*** State's renewable resource portfolio is less likely to be adversely impacted by unplanned electric system disturbances or by localized weather patterns.
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- ***Criteria No. 4 –*** The development of transmission additions or upgrades within the transmission corridor will support the delivery of energy to California from out-of-state entities that are either developing or planning for the development of renewable resources well beyond their own needs.
  - ***Reason:*** Gauges the commitment of the regions outside of California to develop renewable energy resources beyond that required for these regions' own needs in order to export to California.
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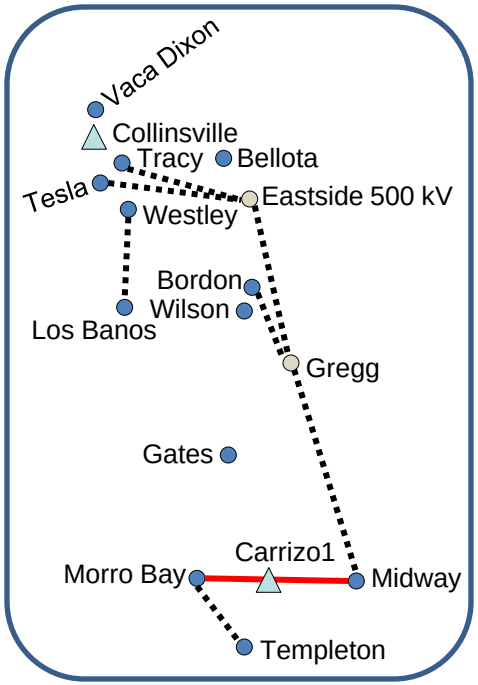
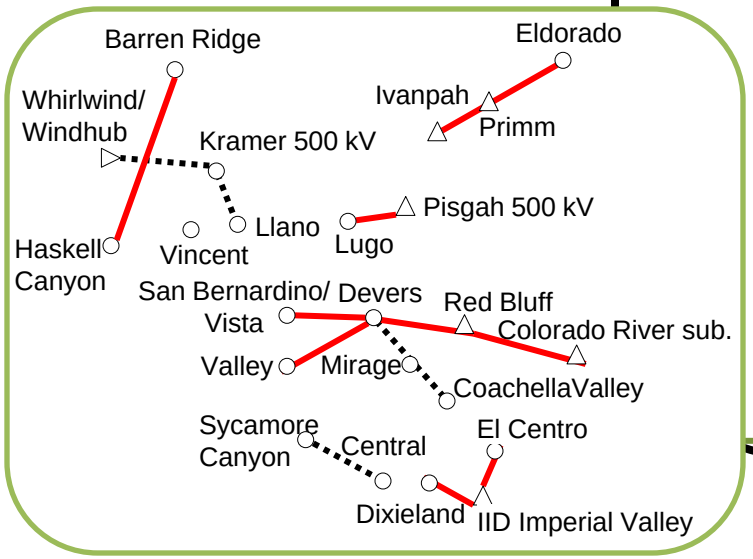
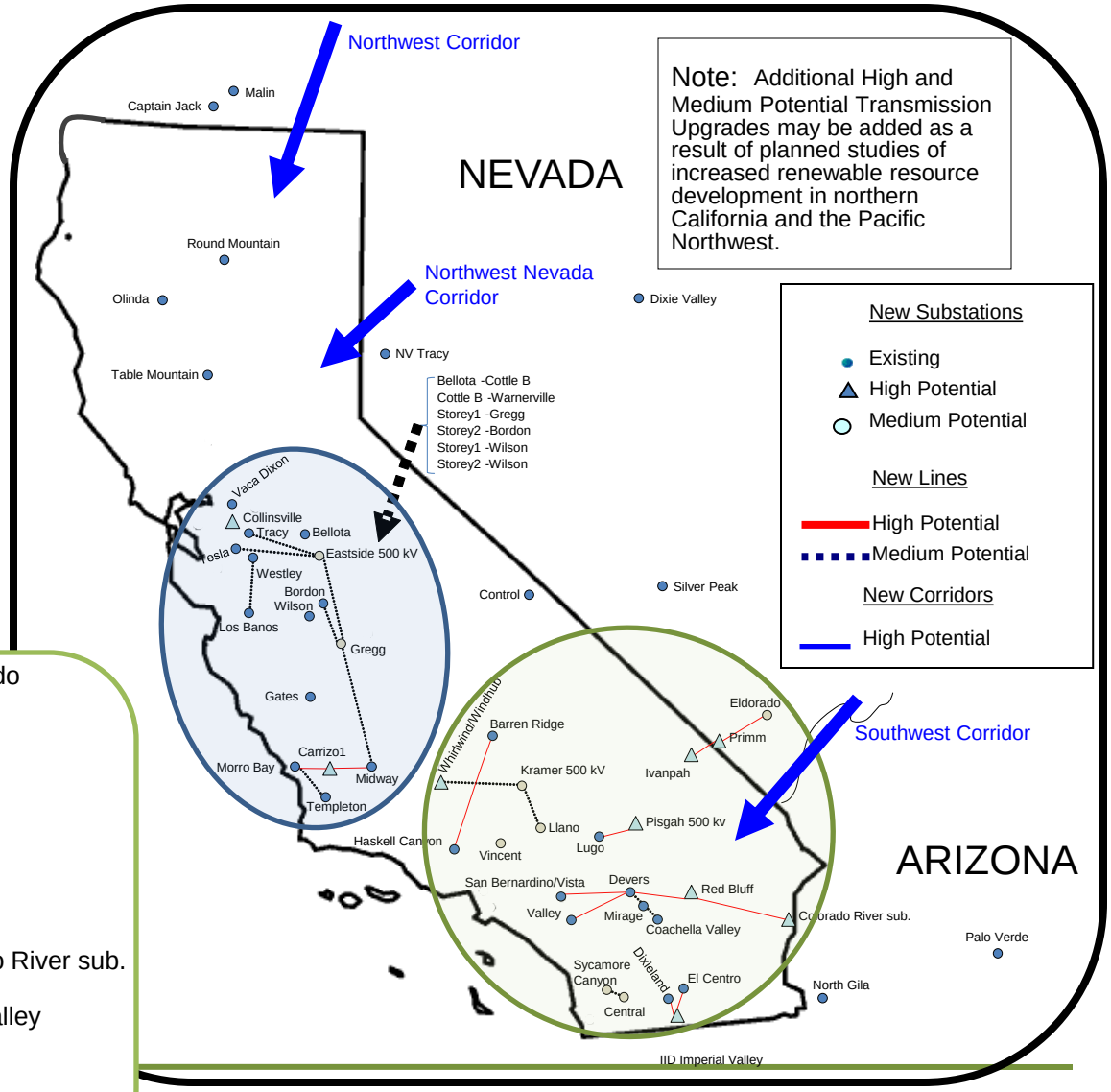
High Potential Trans. Corridor Selection Criteria

- ***Criteria No. 5 –*** The development of transmission additions or upgrades within the transmission corridor will provide access to areas that have a successful record of renewable resource development.
  - ***Reason:*** A measure of the likelihood that the renewable energy projects being considered will actually be completed. Interconnection and permitting approval and financing.

2010 CTPG Statewide Transmission Plan
High and Medium Potential Transmission Upgrades and Corridors







PROPOSED
2011 STATEWIDE TRANSMISSION PLAN METHODOLOGY

2011 Statewide Transmission Plan Methodology

- Repeat 2010 3-Step Approach
  - Update “High Ranked CREZs” utilizing queue data
  - Update “High and Medium Potential” transmission elements utilizing 2011 Study Results
  - Review “High Potential Corridor” determination

- Update BA Transmission Planning Information

2011 Statewide Transmission Plan

- Step 1: Identify "High Ranked CREZs" using commercial interest
  - CPUC Discounted Core
    - ✓IOUs PPA under CPUC review by 6/1/2010
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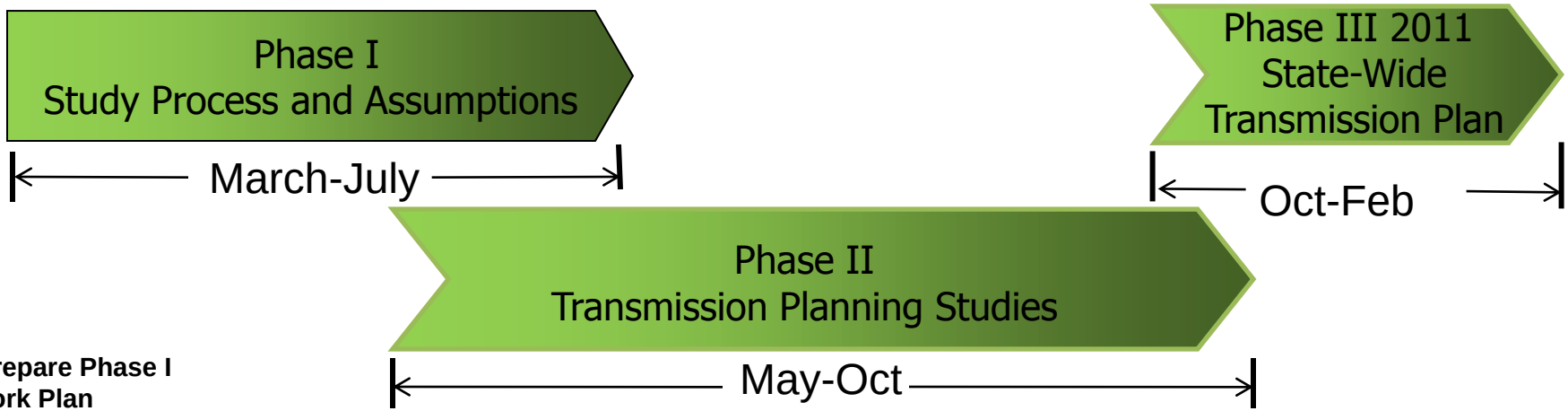
San Bernardino-Lucerne	100
San Diego-South	100
Solano	100
Techachapi	100

2011 CTPG WORK PLAN – MIKE DEIS

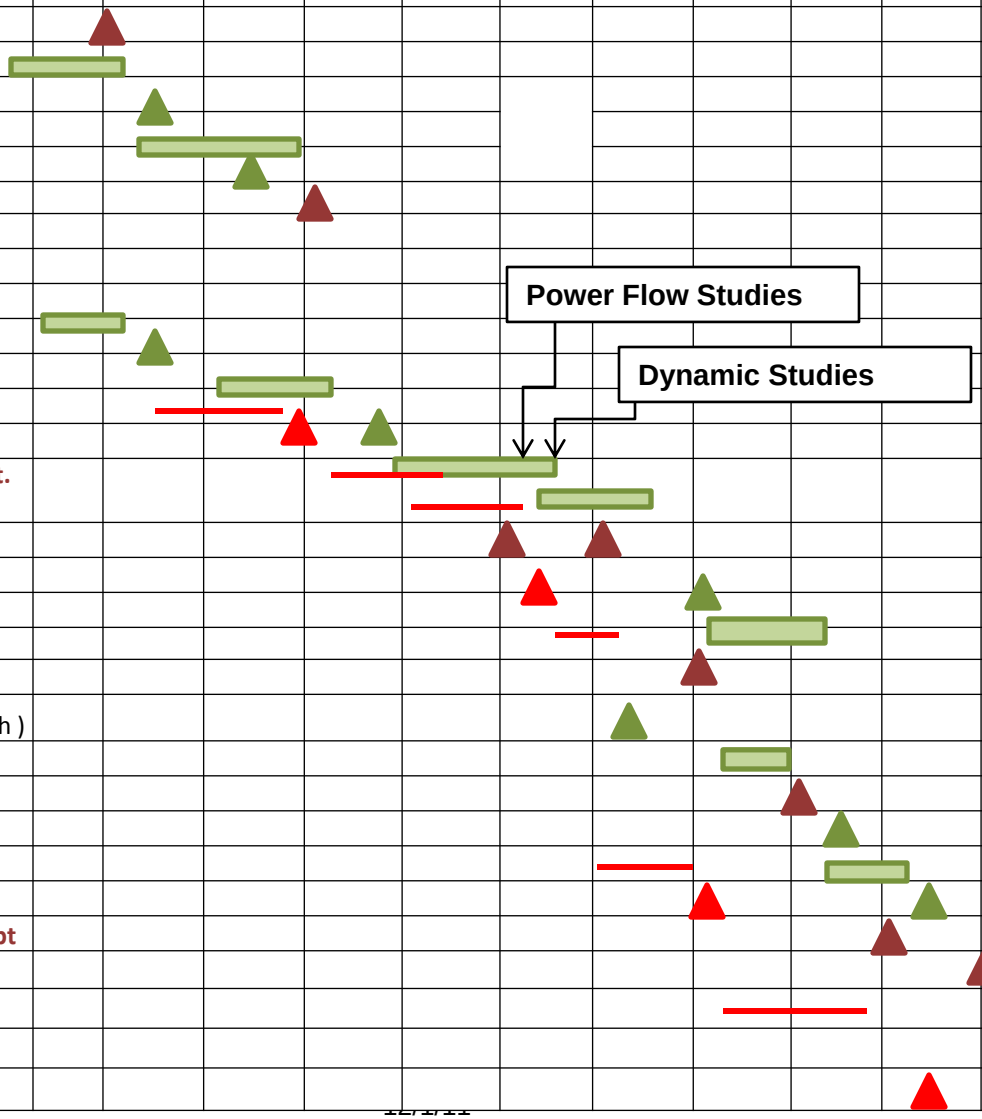
CTPG 2011 Work Plan



- **Prepare Phase I Work Plan**
- **Determine Base Case Approach**
- **Verify Existing Renewables**
- **Incorporate OTC Assumptions**
- **Review Path Flow Assumptions Prior To Dispatch of Renewables**
- **Update Net Short**
- **Review Re-dispatch Methodology**
- **Review Dynamic Stability Study Approach**
- **Coordinate with TEPPC**
- **Prepare Phase II Work Plan**
- **Develop Renewable Portfolios/Scenarios**
- **Prepare Study Plan(s)**
- **Update Renewable Development Information**
- **Perform Studies**
- **Refine the Determination of the High and Medium Potential Transmission Needs and Corridors**
- **Identify 2011 State-Wide Transmission Plan Elements**
- **Identify 2011 Lessons Learned**
- **Begin Preparation of 2012 Work Plan**

2011 Work Plan Schedule

Milestone	2011									2012			
	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April
Phase I Study Processes & Assumptions													
Executive Committee Meeting (May 5th)													
Phase I Work Plan													
Stakeholder Meeting (May 19th)													
Prepare Report													
Stakeholder Meeting (June 14th)													
Executive Committee Meeting (July 7th)													
Phase II Transmission Studies													
Phase I/Phase II Work Plan													
Stakeholder Meeting (May 19th)													
Prepare Study Plan													
Stakeholder Meeting (July 1st) (July 22)													
Perform Studies													
Prepare Study Report													
Executive Committee Meeting (Sept. 1st/October 6th)													
Stakeholder Meeting (Sept. 14th) (Nov. 4th)													
Final Report													
Executive Committee Meeting (Nov 3rd)													
Phase III Statewide Transmission Plan													
TSC Meet to Discuss Methodology (Oct.17th)													
Prepare Methodology													
Executive Committee Meeting (Dec. 1st)													
Stakeholder Meeting (Dec. 15th)													
Prepare Report													
Stakeholder Meeting (Nov. 3rd) (Jan. 15th)													
Executive Committee Meeting (Jan. 5th) Opt													
Executive Committee Meeting (Feb. 2nd)													
Final Report													
Executive Committee Meeting (Mar. 1st)													
Post Final Statewide Transmission Plan													



NEXT STEPS – MIKE DEIS

Next Steps

- Post Final Study Report, ~December 15th
- Post 2011 Draft Statewide Transmission Plan Methodology, ~December 7th.
- Conduct stakeholder conference call to receive input on the proposed methodology, ~December 15th
- Prepare the 2011 Draft Statewide Transmission Plan, ~January 10th
- Stakeholder meeting will be held to receive input on the 2011 Draft Statewide Transmission Plan, ~January 20th
- Executive Committee will consider the 2011 Draft Statewide Transmission Plan for approval, ~February 2nd

2012 STUDY PLAN – MIKE DEIS

Thank you!