

## DOCKETED

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# Renewable Energy Transmission Initiative v2.0

## Western Outreach Project

Las Vegas, NV workshop

September 1, 2016

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California Public  
Utilities Commission



California Energy  
Commission



California ISO

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# RETI 2.0 objectives and structure, California renewable energy goals, Transmission Assessment Focus Areas, and the Western Outreach Project

# Renewable Energy Transmission Initiative v2.0

## Objectives

- Statewide, non-regulatory planning effort to help meet statewide GHG and renewable energy goals.
- Explore combinations of renewable generation resources in California and throughout the West that can best meet goals
- Build understanding of transmission implications of renewable scenarios, and identify common transmission elements
- Identify land use and environmental opportunities and constraints to accessing these resources
- Accelerated, agency-driven, high-level assessment to inform future planning and regulatory proceedings

# RETI 2.0 Policy Context

## Governor's Executive Order B-30-15 – and now SB 32

- Established **40% GHG reduction goal by 2030**
- Mandates state agencies to **pursue with all statutory authority**

## Clean Energy and Pollution Reduction Act of 2015 – SB 350

- CPUC and CEC increase **Renewable Portfolio Standard** from 33% by 2020 to **50% by 2030**
- Require **resource optimization** and an **Integrated Resource Planning (IRP) process**
- Ensure **utility progress toward economy-wide 40% GHG reduction goal by 2030**
- Encourages **widespread Transportation Electrification**

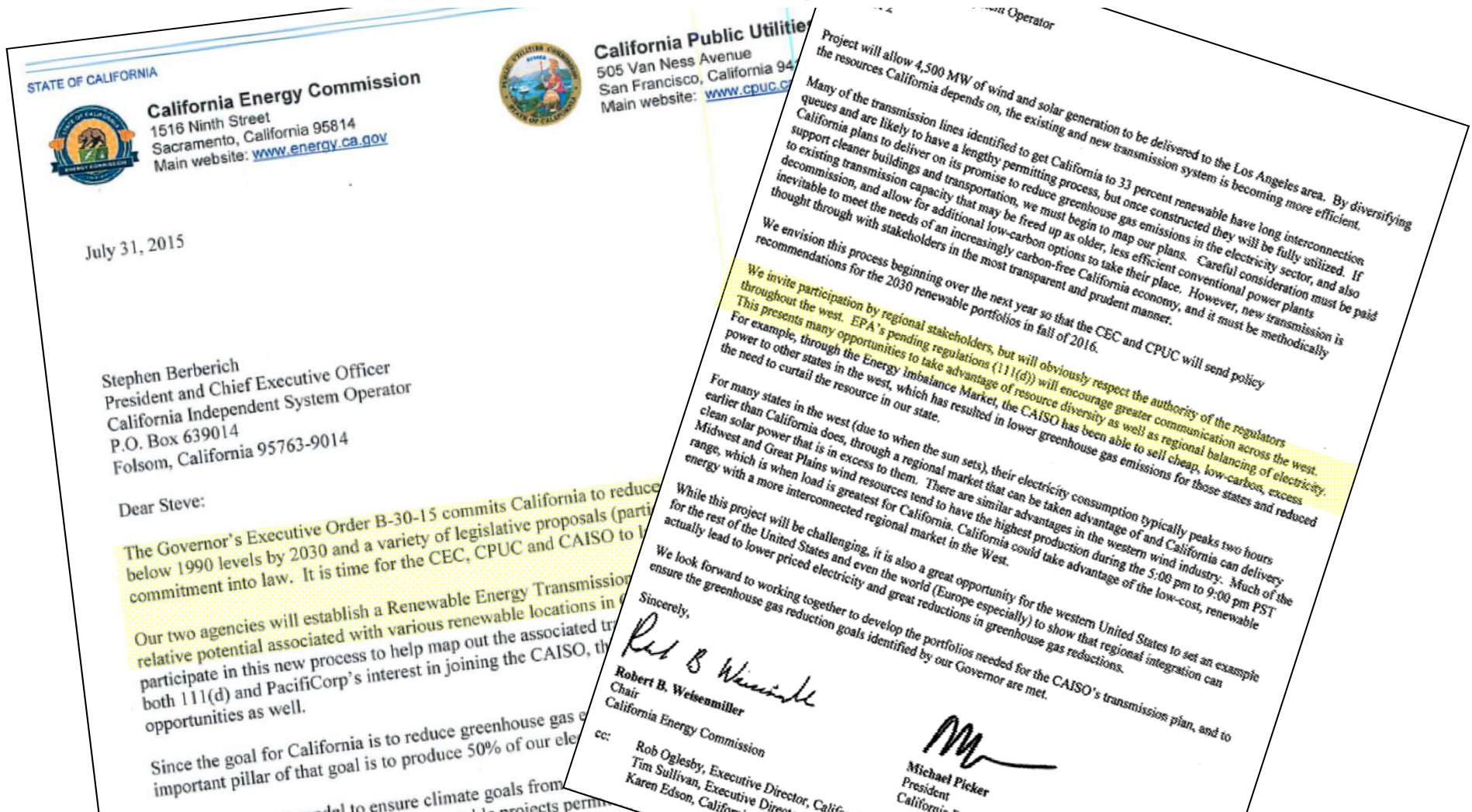
## California Independent System Operator Transmission Planning

- Transmission Planning complete for 33%; “considerable work” necessary to plan for 50%
- FERC Order 1000 Interregional Transmission Planning
- Regional expansion proposal ongoing

## Western developments

- Clean Power Plan
- Federal renewable energy tax credit extension
- State (OR, WA, NV, etc) RPS and GHG policy developments
- FERC Order 1000 Interregional Transmission Planning

# RETI 2.0 Policy Context



# RETI 1.0 and 2.0

## RETI 1.0

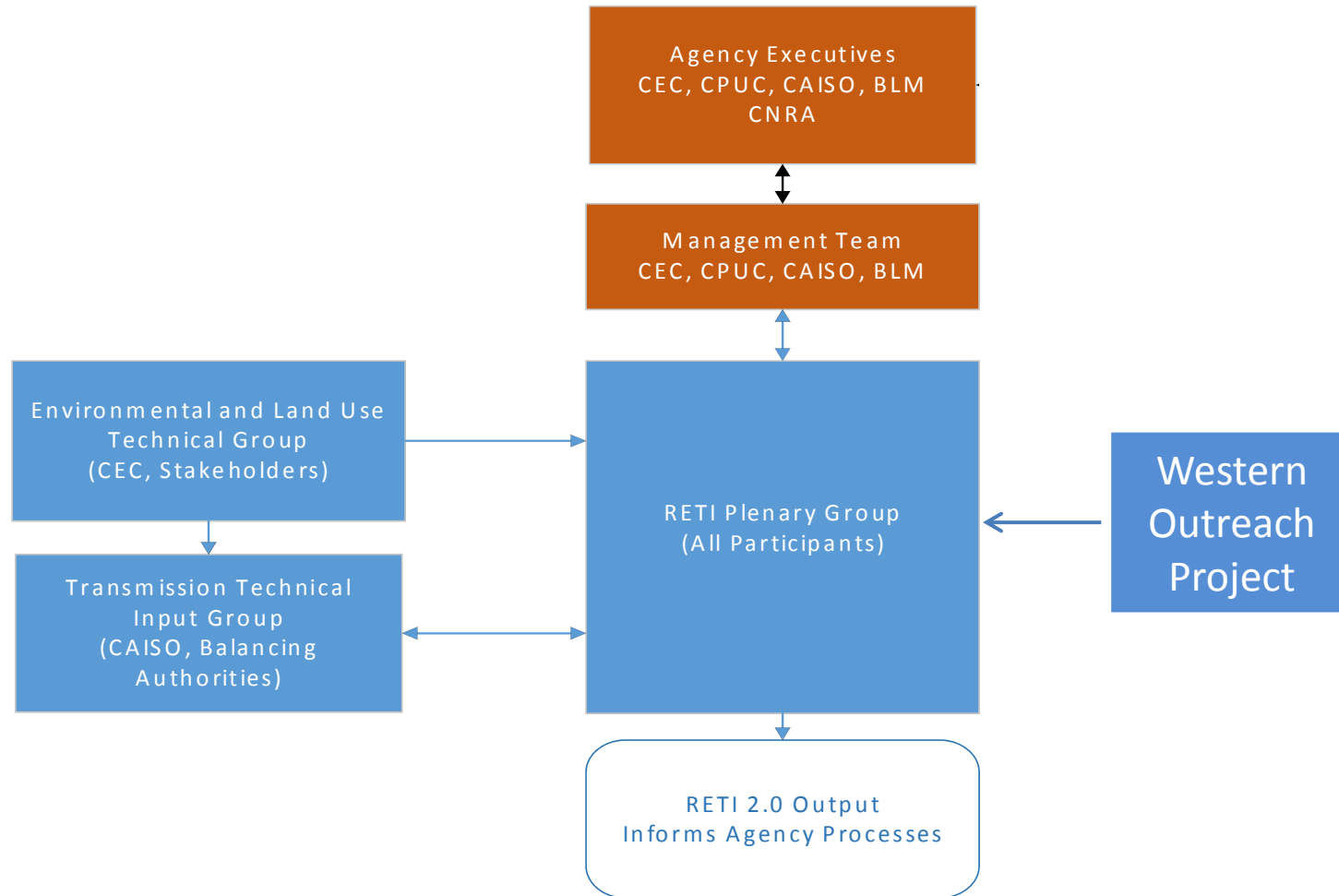
- 2008-2010 Stakeholder-driven process when CA RPS going from 20% to 33%
- Built exhaustive GIS/economic model of renewable resource potential and cost
- Identified numerous potential transmission options
- Institutionalized in CPUC RPS Calculator and CAISO Policy-driven Transmission Planning

## RETI 2.0

- Accelerated, agency-driven, RETI reprise
- Leverage existing studies – no new models
- Emphasis on long-term resource portfolio optimization and GHG reduction in Western context



# RETI 2.0 Organizational structure



STATE OF CALIFORNIA



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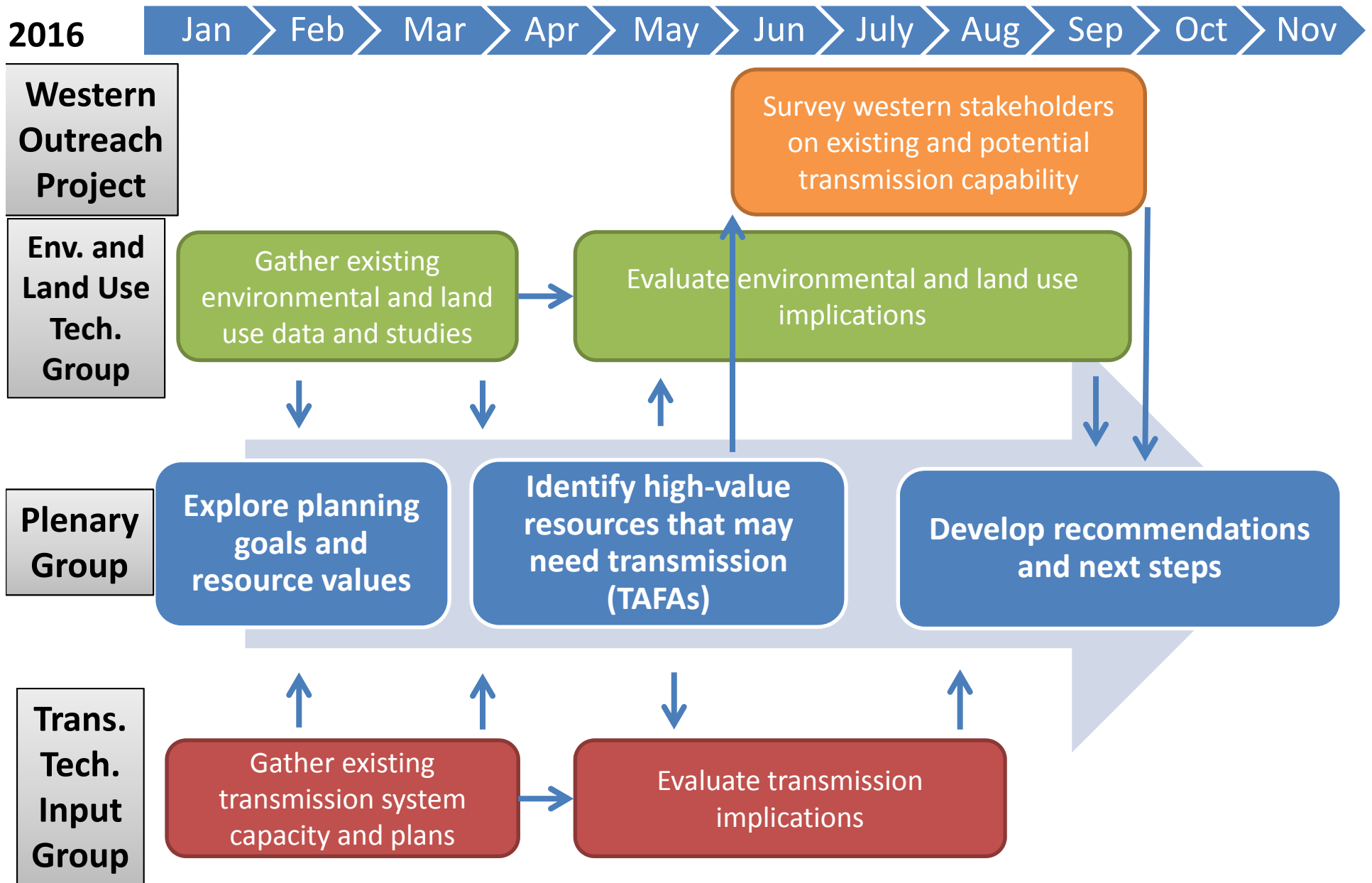
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# RETI 2.0 Process and Timeline



# Transmission Assessment Focus Area: Approach

Explore  
planning goals  
and resource  
values

1. How much renewables might we need?
2. Which resources might be important by 2030?

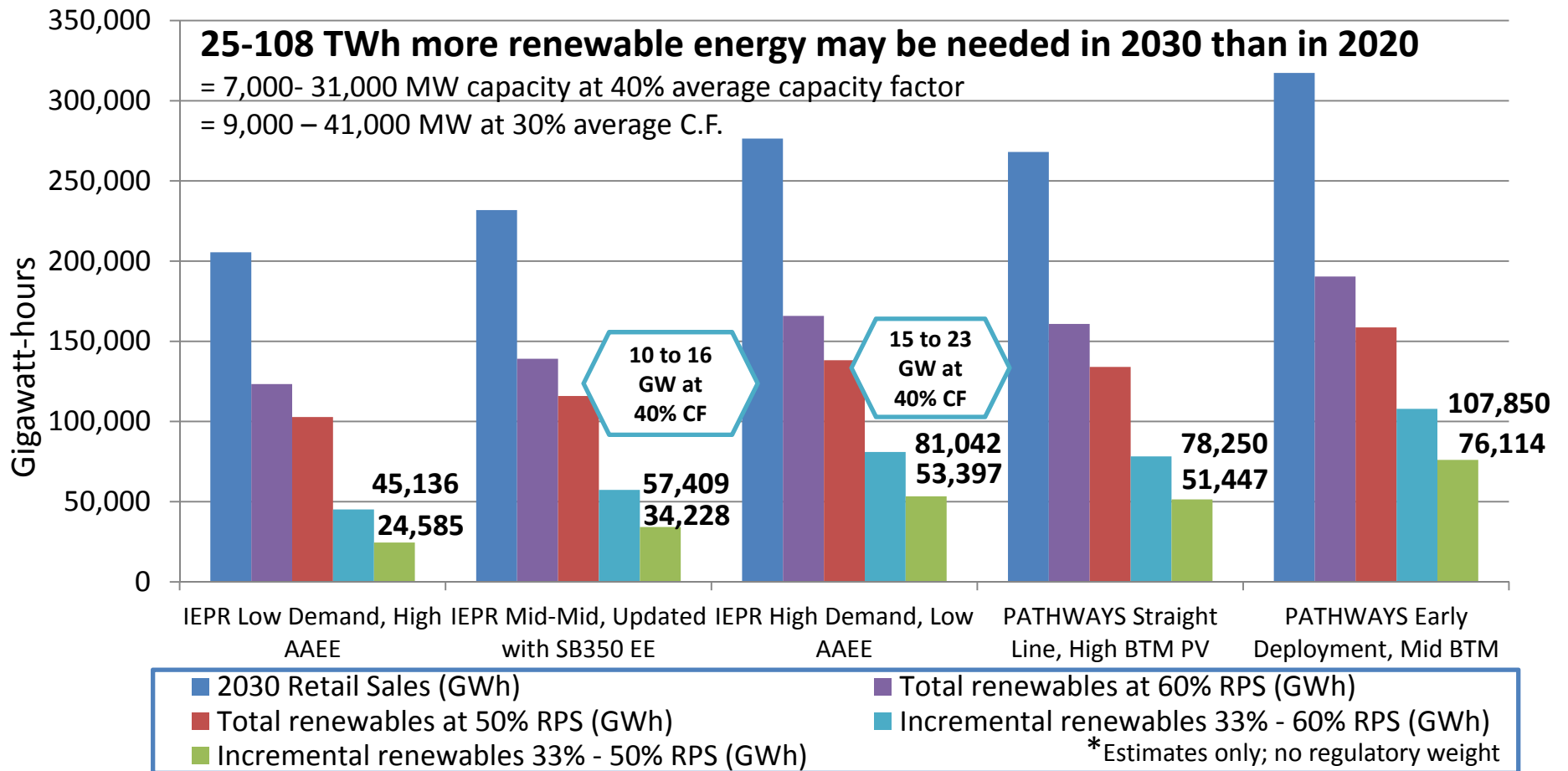
Identify high-  
value resources  
that may need  
transmission

3. How much renewables might come from different areas?
4. Might this level of renewables require new transmission?

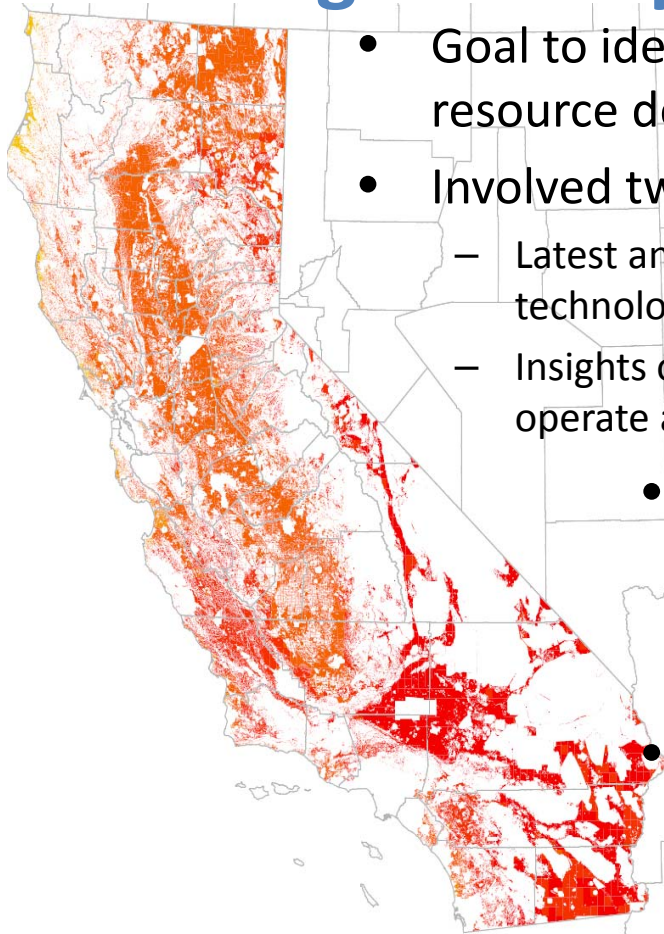
# How much renewable energy might California need to meet 2030 goals?

- Used projections of total statewide electricity demand, RPS compliance “net short”, and GHG compliance scenarios to estimate incremental renewable energy demand by 2030 beyond the renewable energy projected to meet 33% in 2020
- No regulatory weight or status; Used to scale the hypothetical renewable energy demand from individual Transmission Assessment Focus Areas
- Primary data sources:
  - California Energy Commission’s Energy Demand Forecast, extrapolated to 2030 and adjusted to approximate SB 350 energy efficiency goals
  - California PATHWAYS modeling project performed for California agencies by Energy & Environmental Economics (E3) in 2014-15
- Critical variables:
  - Energy efficiency, behind-the-meter solar PV, electric vehicles and other electrification
  - 40% economy-wide GHG reduction could require equivalent of 55-60% RPS

# Potential 2030 Renewable Energy Demand under different scenarios



# Which renewable resources, and where, might be important to reach 2030 goals?



- Goal to identify locations of potential large-scale renewable resource development that could help meet 2030 need
- Involved two basic questions:
  - Latest and greatest on costs and value of different renewable technologies in different areas
  - Insights on the portfolio of different resources that may be necessary to operate a majority-renewables grid at lowest cost
- Collected data from:
  - Agency and academic databases
  - Commercial (developer and utility) interest
  - Analyses of long-term portfolios
- Built off of existing studies
  - 2014 Desert Renewable Energy Conservation Plan
  - 2016 San Joaquin Valley Solar Convening

# Resource Conclusions

- Low cost solar is ubiquitous in California, but raises long-term integration challenges
  - Many integration options
  - Geographic and technology diversity and exports are among the cheapest
- Many of best in-state wind areas have been developed
  - For remaining in-state wind areas, determining environmental feasibility and transmission access is a priority
- Geothermal may offer important benefits by 2030 but costs and benefits need further work
  - Transmission access one important component
- Environmental and land use constraints tend to favor in-state solar and out-of-state wind
- Broad support for further assessment of Out-of-state resources
  - High-quality, low-cost resources with complementary profiles
  - Quality and timeliness of data does not match in-state
  - Options for access by existing transmission largely un-assessed
  - Export options very important

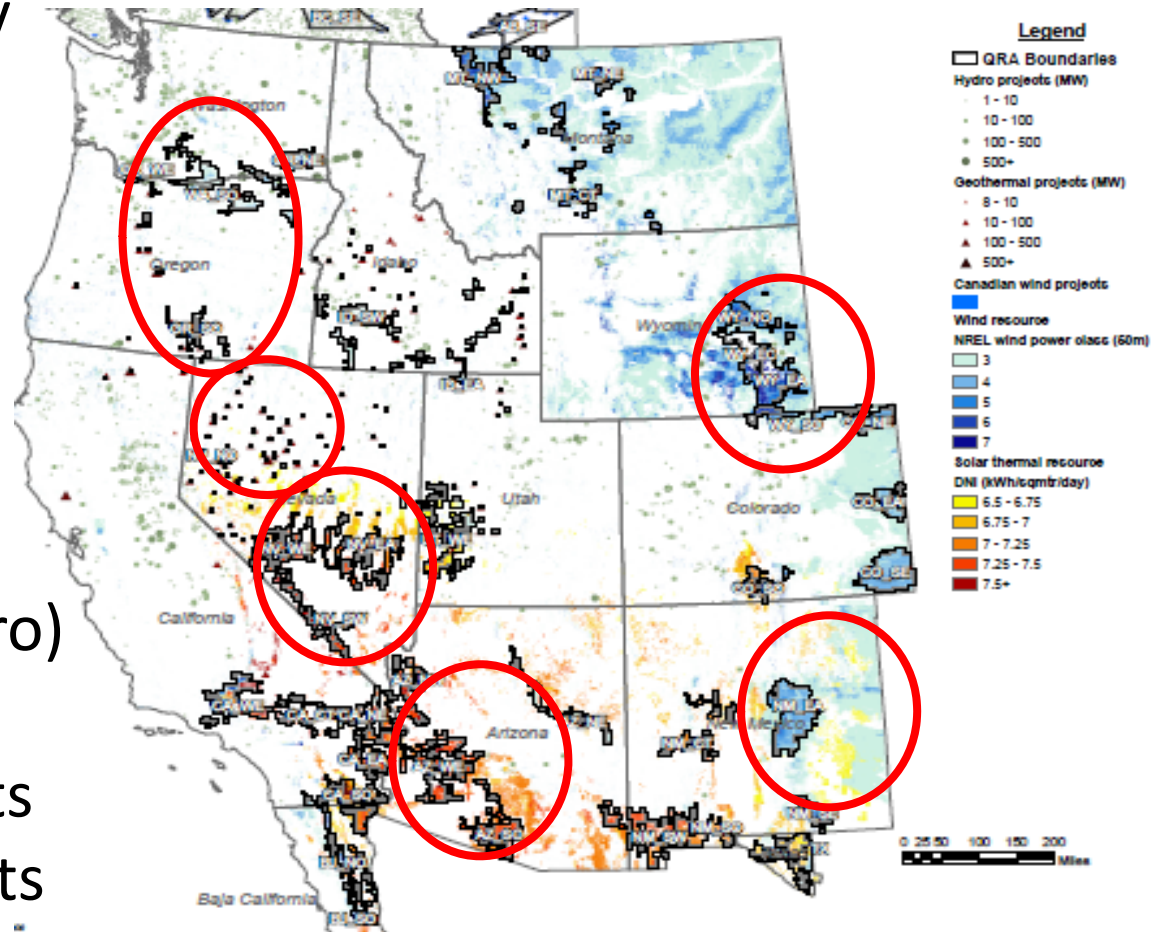
# In-state TAFA Map



# Western TAFAs

Areas/Issues identified by stakeholders

- WY and NM wind
- NV and AZ solar
- NV geothermal
- NW wind and geothermal
- Resource changes in other states (coal, hydro)
- Markets for CA surplus
- OOS “Delivery” projects
- OOS “Network” projects





# Western Outreach Project

- Goals
  - Understand western renewable energy resources, markets, and development
    - Status, costs, activity, prospects
  - Understand renewable energy trading opportunities between California and West
    - Complementary daily and seasonal patterns
    - Changing generation mix and transmission utilization
  - Understand needs, options, and costs for transmission to realize opportunities
    - Capability of existing capacity, institutional improvements, and non-wires alternatives
    - California and system-wide impacts of proposals for new transmission and environmental/land use implications
- Issues
  - California RPS Compliance and California ISO expansion
    - RETI 2.0 is primarily about the physical infrastructure of transmission, not about how renewable energy is treated in compliance in any state's RPS or GHG policy, nor about the operation of the transmission system. To the extent reasonable, stakeholders are asked to provide input that is focused on the capability of the physical transmission system, noting where relevant the impact that existing RPS compliance issues or potential ISO expansion could have on the practical capability of the transmission system.
  - Geographic Scope
    - Geographically, the focus questions for the western outreach project should be thought to refer to the availability/deliverability of renewable resources to/from the major import/export paths into/out of California

# Western Outreach Project

- Organization
  - Western Interstate Energy Board-led and staffed
    - Participation by National Association of State Energy Officials
  - Contract assistance by Energy Strategies
  - Steering Committee of state officials from AZ, CO, MT, NV, WA, and CA
  - Funding from Energy Innovation LLC and NASEO
- Process
  - Prepared and released set of “Focus Questions” (on today’s agenda)
  - Conduct two workshops to explain goals and initiate discussion of Focus Questions
  - Solicit written comments on Focus Questions (submit by September 8 to [tcarr@westernenergyboard.org](mailto:tcarr@westernenergyboard.org))
  - WIEB and Energy Strategies prepare report, structured around Focus Questions, that includes summary of comments, notes common elements, and draws conclusions where possible
- Deliverable
  - RETI 2.0 Western Outreach Project final report by September 30, 2016
  - Published by WIEB, available for stakeholders throughout West
  - Becomes an input into California’s broader RETI 2.0 report, expected in November 2016