

## DOCKETED

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# Renewable Energy Transmission Initiative v2.0

Environmental and Land Use Technical Group

County Meeting

July 21, 2016

Brian Turner

RETI 2.0 Project Director

California Natural Resources Agency



**California Public  
Utilities Commission**



**California Energy  
Commission**



**California ISO**

# Agenda for Workshop

1. Orientation to Renewable Energy Transmission Initiative 2.0 and Transmission Assessment Focus Areas (TAFAs)
2. Orientation to Environmental and Land Use Technical Group and DataBasin tools
3. Roundtable Discussion with County Representatives
4. Public comment and next steps

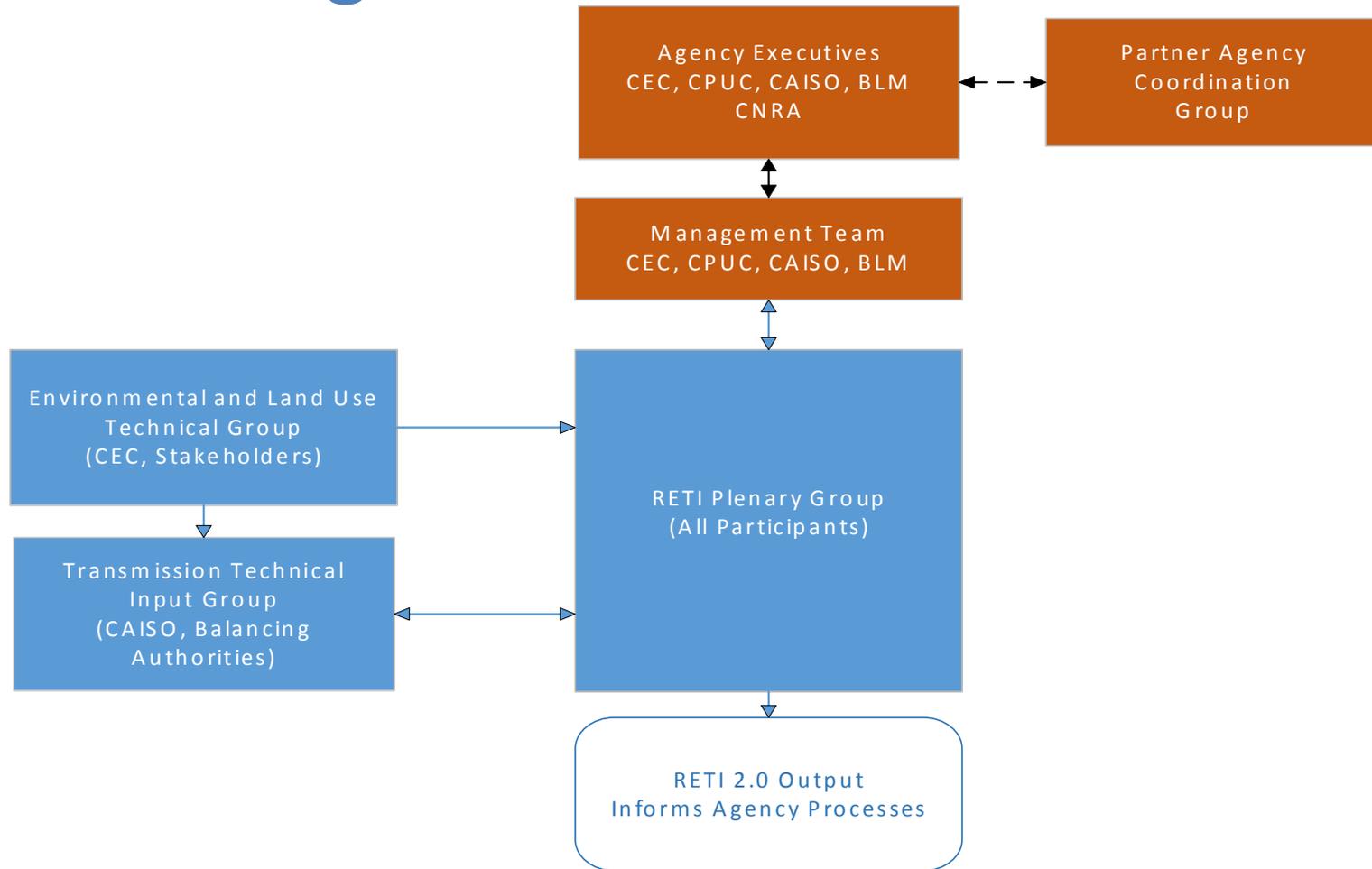
# RETI 2.0 Background

# Renewable Energy Transmission Initiative

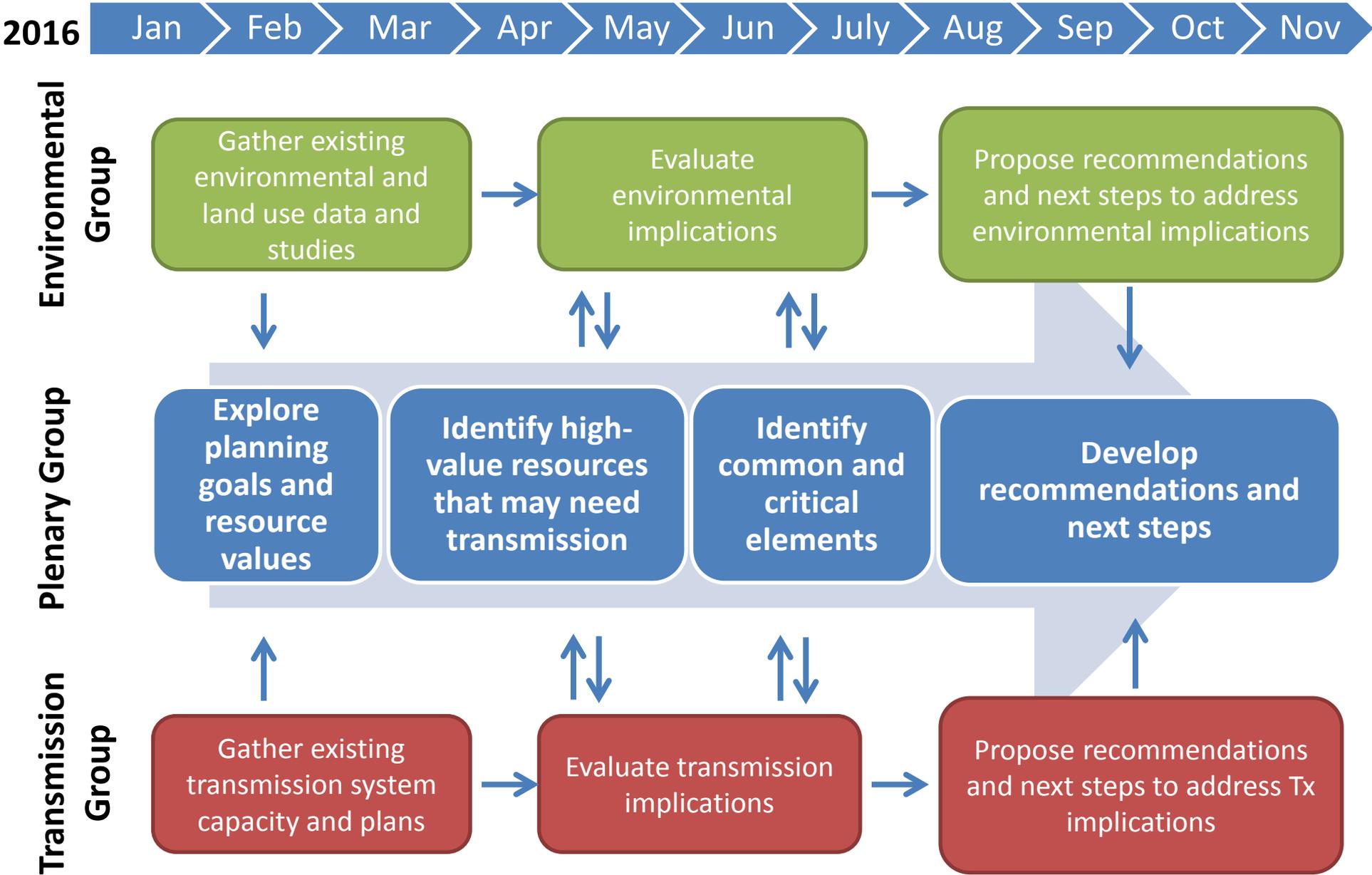
## v2.0

- Cooperative project of four state and one federal agency
- 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

# Organizational structure



# RETI 2.0 Process and Timeline



# Transmission Assessment Focus Area: Approach

Explore  
planning goals  
and resource  
values

Identify high-  
value resources  
that may need  
transmission

1. How much renewables might we need?
  - Bookend scale of renewable need by 2030
  - Sources include IEPR, Pathways
2. Which resources might be important by 2030?
  - Review resource costs and values in 2030 context to identify resources and zones of potential value for 2030
  - Sources include industry and stakeholder comments, academic and government studies
3. How much renewables might come from different areas?
  - Bookend range of renewable resources from specific areas that may be developed by 2030
  - Sources include comments, studies
4. Might this level of renewables require new transmission?
  - Match resource ranges to existing transmission capacity and identify where resource range exceeds transmission capacity
  - Sources include TPP and WECC studies, stakeholder comment

# Proposed Focus Area List

## 1. In-state resources

- California Desert
  - Tehachapi
  - Victorville/Barstow
  - Riverside East
  - Imperial Valley
- San Joaquin Valley
  - Modesto to Bakersfield
- Northern California
  - Solano and East Bay
  - Sacramento River Valley
  - Lassen & Modoc

## 2. Import/Export Paths

- Eldorado/Mead/Marketplace
- Palo Verde/Delaney
- California-Oregon Intertie
- Central and Northern Sierra

## 3. Out-of-State Projects

- WY and NM wind
- NV and AZ solar
- NV geothermal
- NW wind and geothermal
- OOS “Delivery” projects
- OOS “Network” projects

# In-State Resources Focus Areas Summary

# Tehachapi

Tehachapi & Kramer  
SuperCREZ(s)

RPS Calculator 6.1 PPA

- Bioenergy
- Geothermal
- Solar PV
- Solar Thermal
- Wind
- Various

CEC Projects In Development 2016

- ▲ Biomass/Landfill Gas
- ▲ Geothermal
- ▲ Solar PV
- ▲ Solar Thermal
- ▲ Wind

CAISO 2016 (Locations approx)

- Biomass
- Geothermal
- Solar PV
- Solar Thermal
- Wind
- Other

Existing Substations

- ✕ 230 kv
- ✕ 345 kv
- ✕ 500+ kv

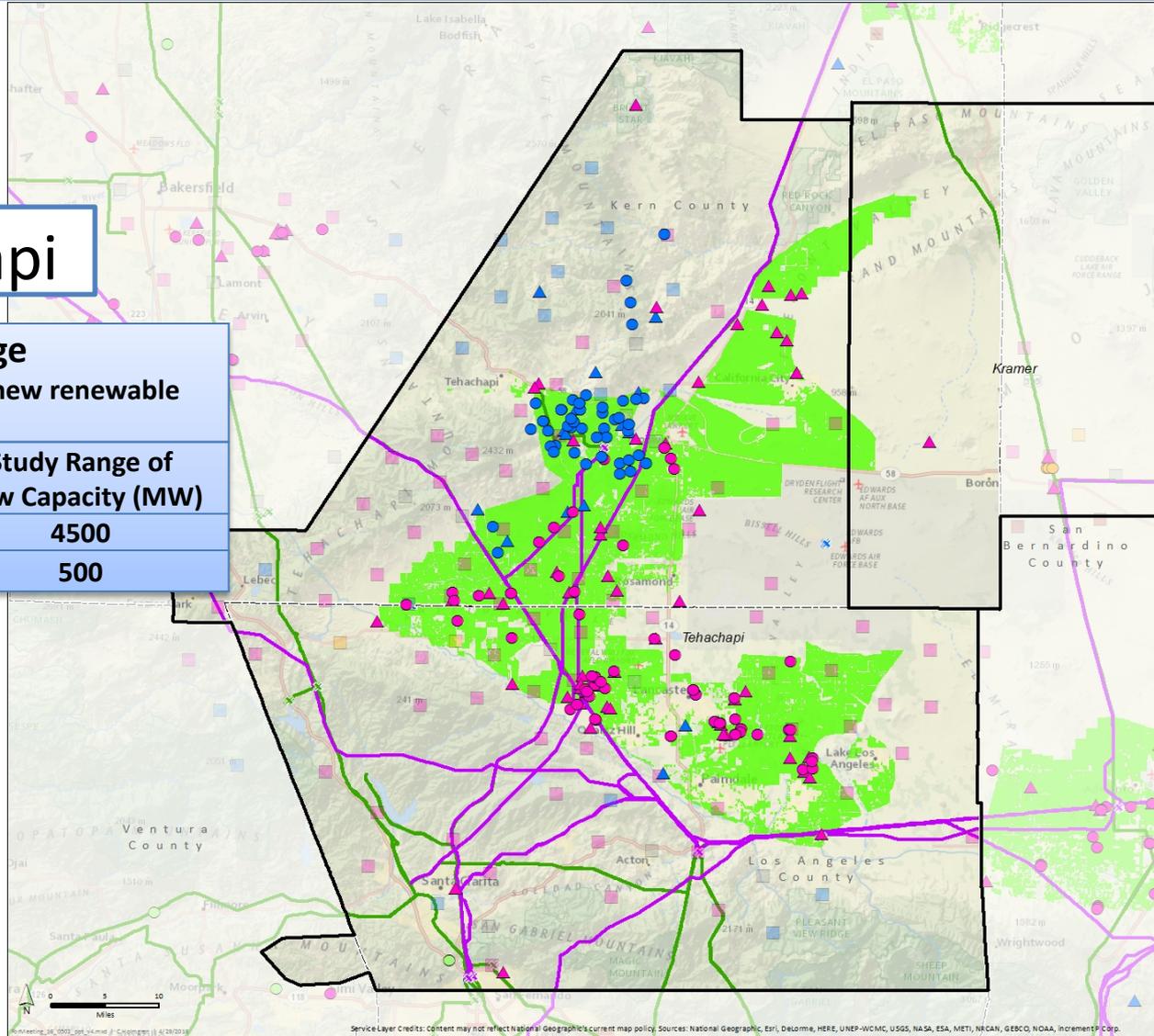
Existing Transmission

- 230 - 344 kv
- 345 - 499 kv
- 500+ kv
- DRECP DFA Boundaries



# Tehachapi

Study Range	
Hypothetical additions of new renewable resources	
Resource	Study Range of New Capacity (MW)
Solar	4500
Wind	500

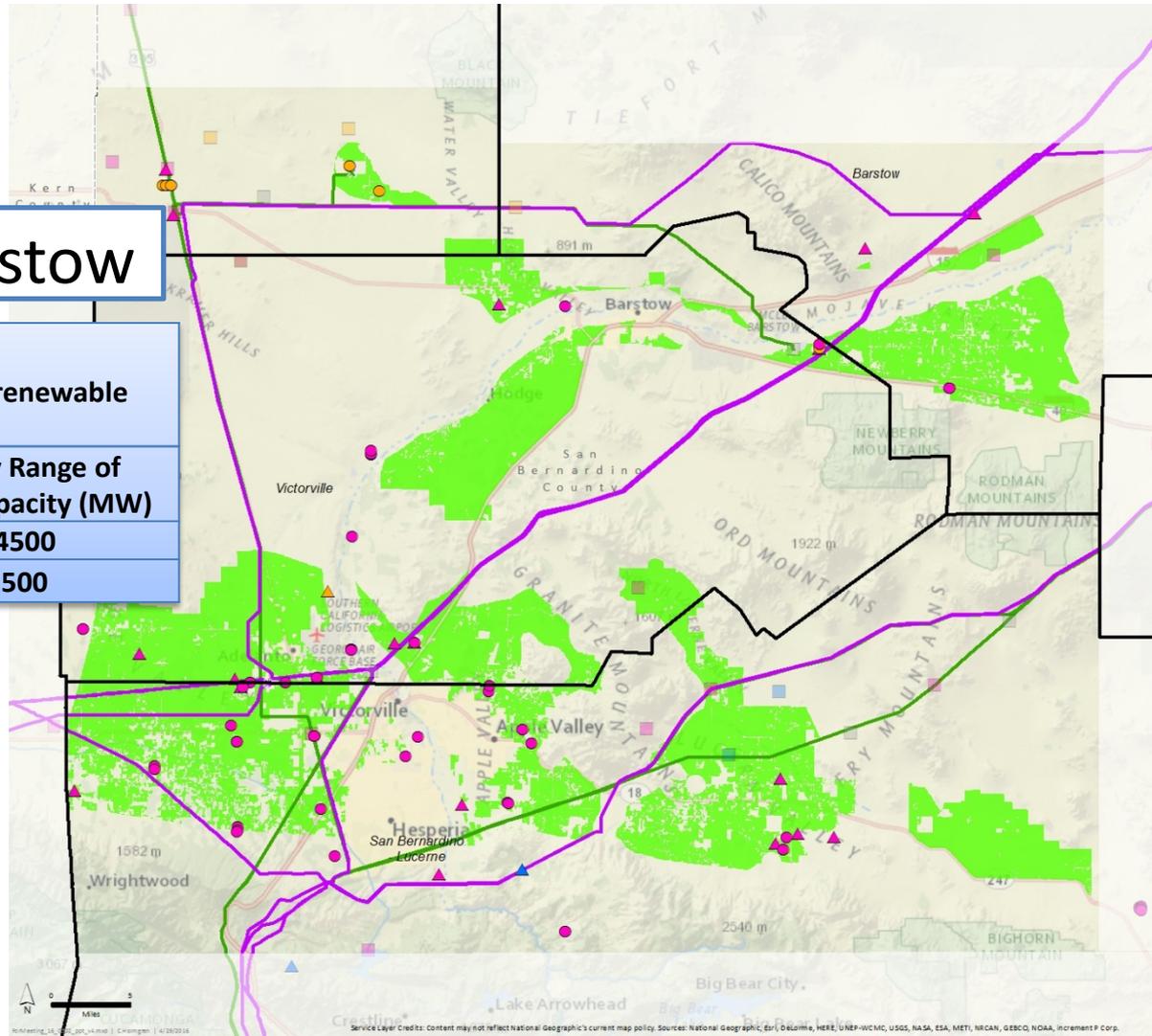


# Victorville/Barstow

## Study Range

Hypothetical additions of new renewable resources

Resource	Study Range of New Capacity (MW)
Solar	4500
Wind	500



## Victorville Victorville, Barstow & San Bernardino - Lucerne SuperCREZ(s)

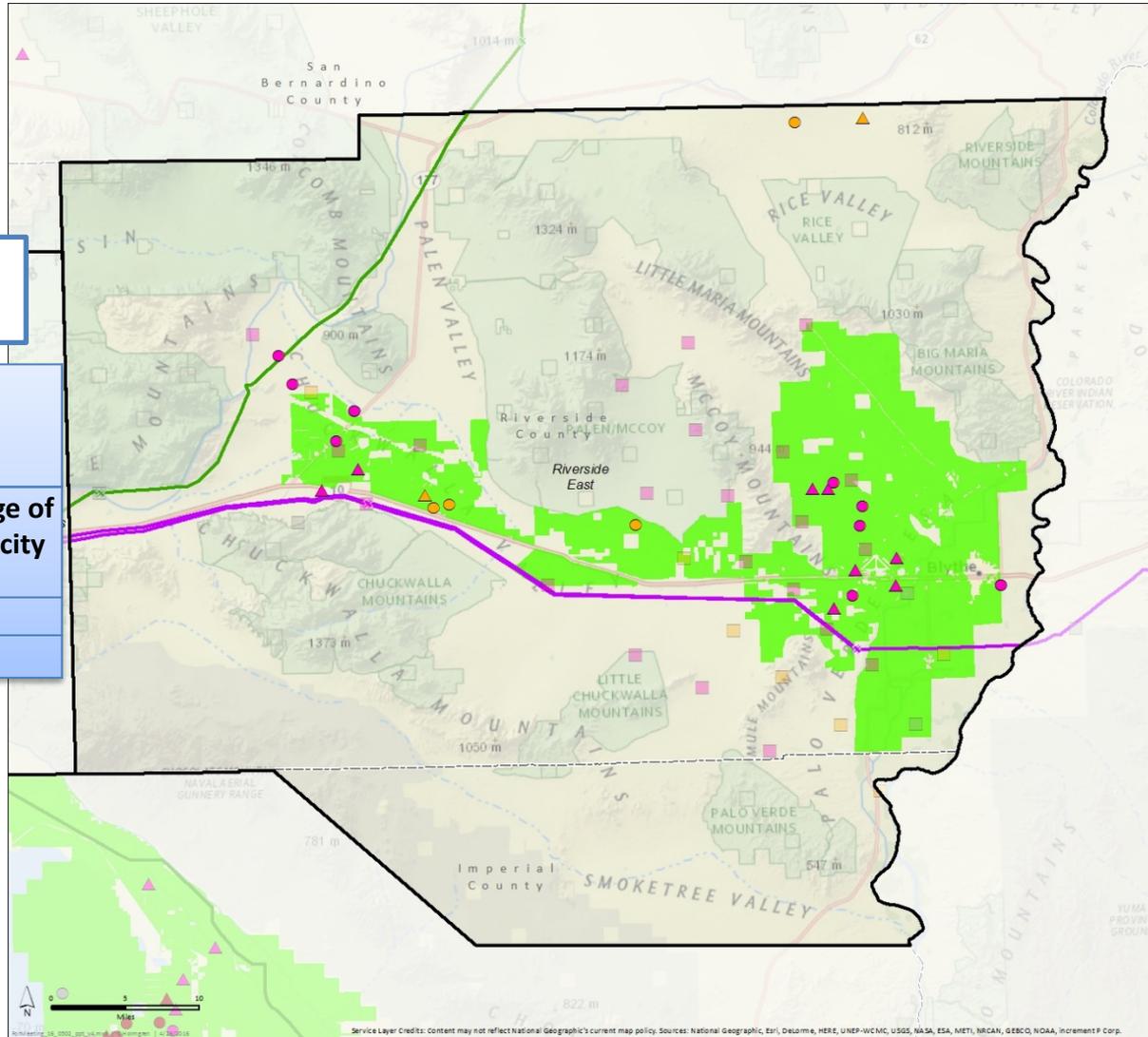
- RPS Calculator 6.1 PPA
  - Bioenergy
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Various
- CEC Projects in Development 2016
  - Biomass/Landfill Gas
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
- CAISO 2016 (locations approx)
  - Biomass
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Other
- Existing Substations
  - 230 kv
  - 345 kv
  - 500+ kv
- Existing Transmission
  - 230 - 344 kv
  - 345 - 499 kv
  - 500+ kv
- DREC DFA Boundaries



# Riverside East

**Study Range**  
Hypothetical additions of new renewable resources

Resource	Study Range of New Capacity (MW)
Solar	4,000
Wind	1000



## Riverside Riverside East SuperCREZ

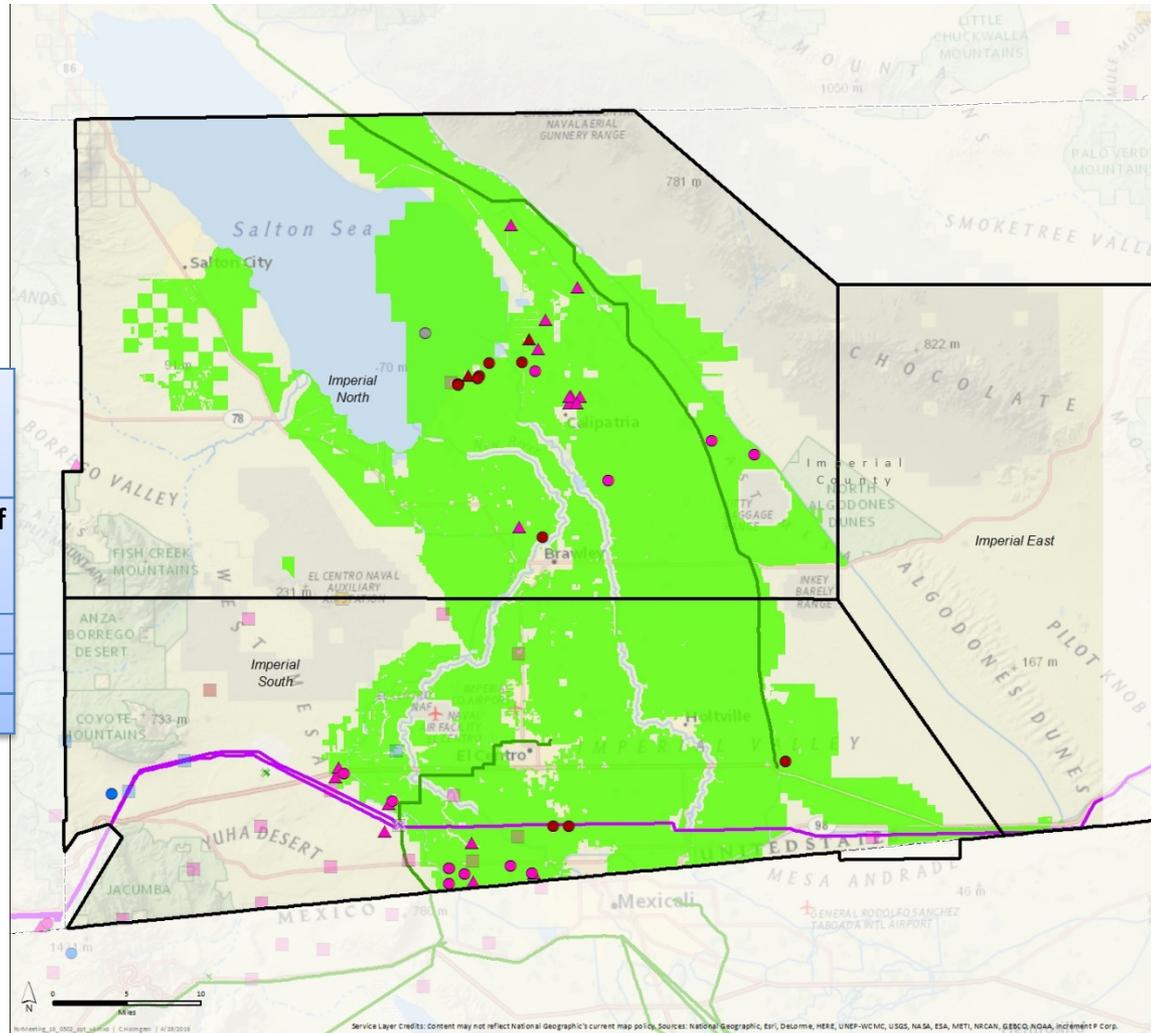
- RPS Calculator 6.1 PPA**
  - Bioenergy
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Various
- CEC Projects In Development 2016**
  - Biomass/Landfill Gas
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
- CAISO 2016 (locations approx)**
  - Biomass
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Other
- Existing Substations**
  - 230 kv
  - 345 kv
  - 500+ kv
- Existing Transmission**
  - 230 - 344 kv
  - 345 - 499 kv
  - 500+ kv
- DREC DFA Boundaries**



# Imperial Valley

**Study Range**  
Hypothetical additions of new renewable resources

Resource	Study Range of New Capacity (MW)
Solar	3500
Wind	500
Geothermal	1000



## Imperial Valley

Imperial North, Imperial South & Imperial East SuperCREZ(s)

- RPS Calculator 6.1 PPA
- Bioenergy
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Various
- CEC Projects In Development 2016
- ▲ Biomass/Landfill Gas
  - ▲ Geothermal
  - ▲ Solar PV
  - ▲ Solar Thermal
  - ▲ Wind
- CAISO 2016 (Locations appx)
- Biomass
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Other
- Existing Substations
- ✕ 230 kv
  - ✕ 345 kv
  - ✕ 500+ kv
- Existing Transmission
- 230 - 344 kv
  - 345 - 499 kv
  - 500+ kv
- DRECP DFA Boundaries

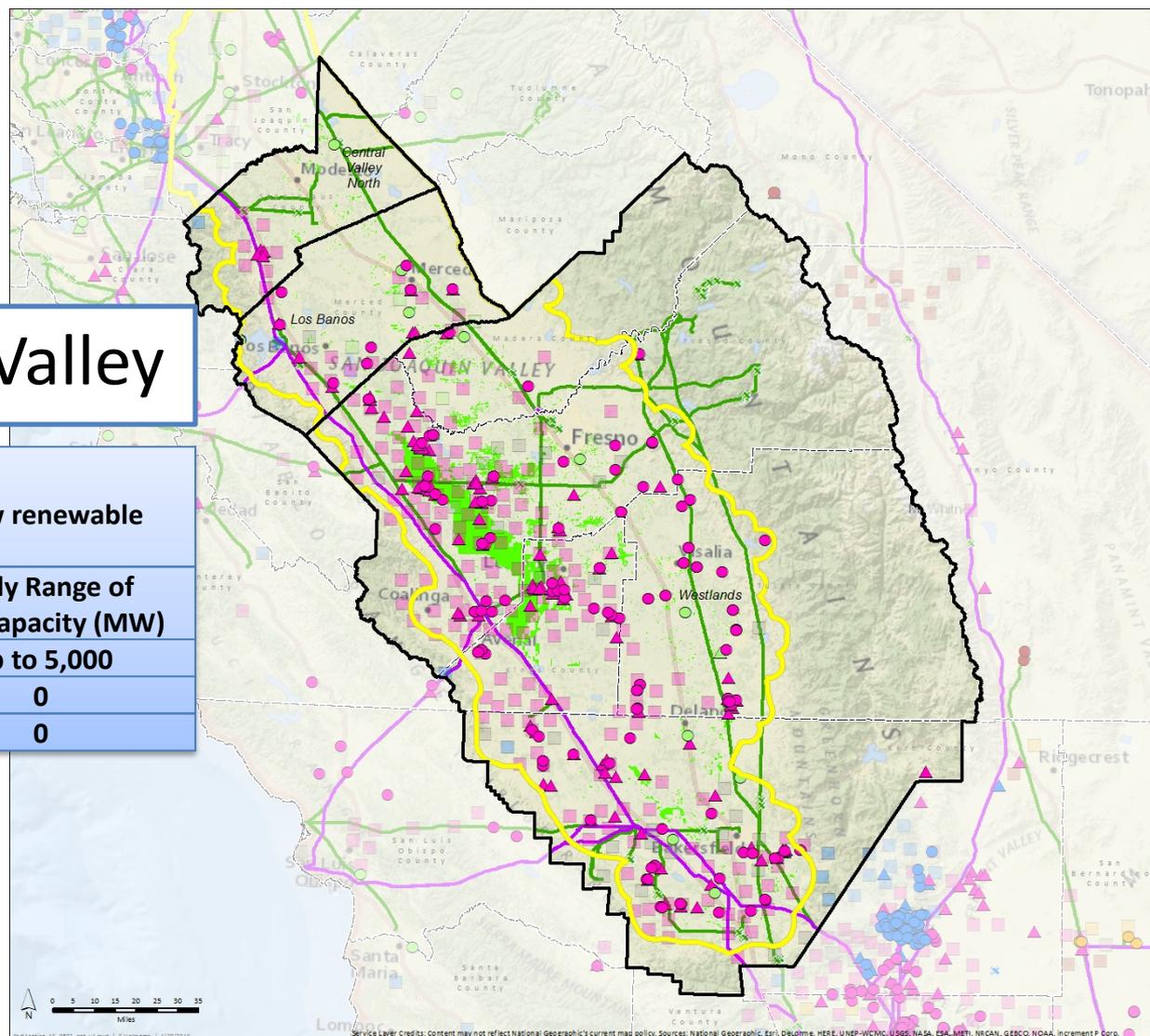


# San Joaquin Valley

## Study Range

Hypothetical additions of new renewable resources

Resource	Study Range of New Capacity (MW)
Solar	Up to 5,000
Wind	0
Geothermal	0



## San Joaquin Valley

Westlands, Central Valley North & Los Banos SuperCREZ(s)

- RPS Calculator 6.1 PPA
  - Bioenergy
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Various
- CEC Projects In Development 2016
  - ▲ Biomass/Landfill Gas
  - ▲ Geothermal
  - ▲ Solar PV
  - ▲ Solar Thermal
  - ▲ Wind
- CAISO 2016 (locations approx)
  - Biomass
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Other
- Existing Substations
  - ✕ 230 kV
  - ✕ 345 kV
  - ✕ 500+ kV
- Existing Transmission
  - 230 - 344 kV
  - 345 - 499 kV
  - 500+ kV
- San Joaquin Least Conflict Solar Lands
  - San Joaquin Valley Final
  - Solar Stakeholder Boundary

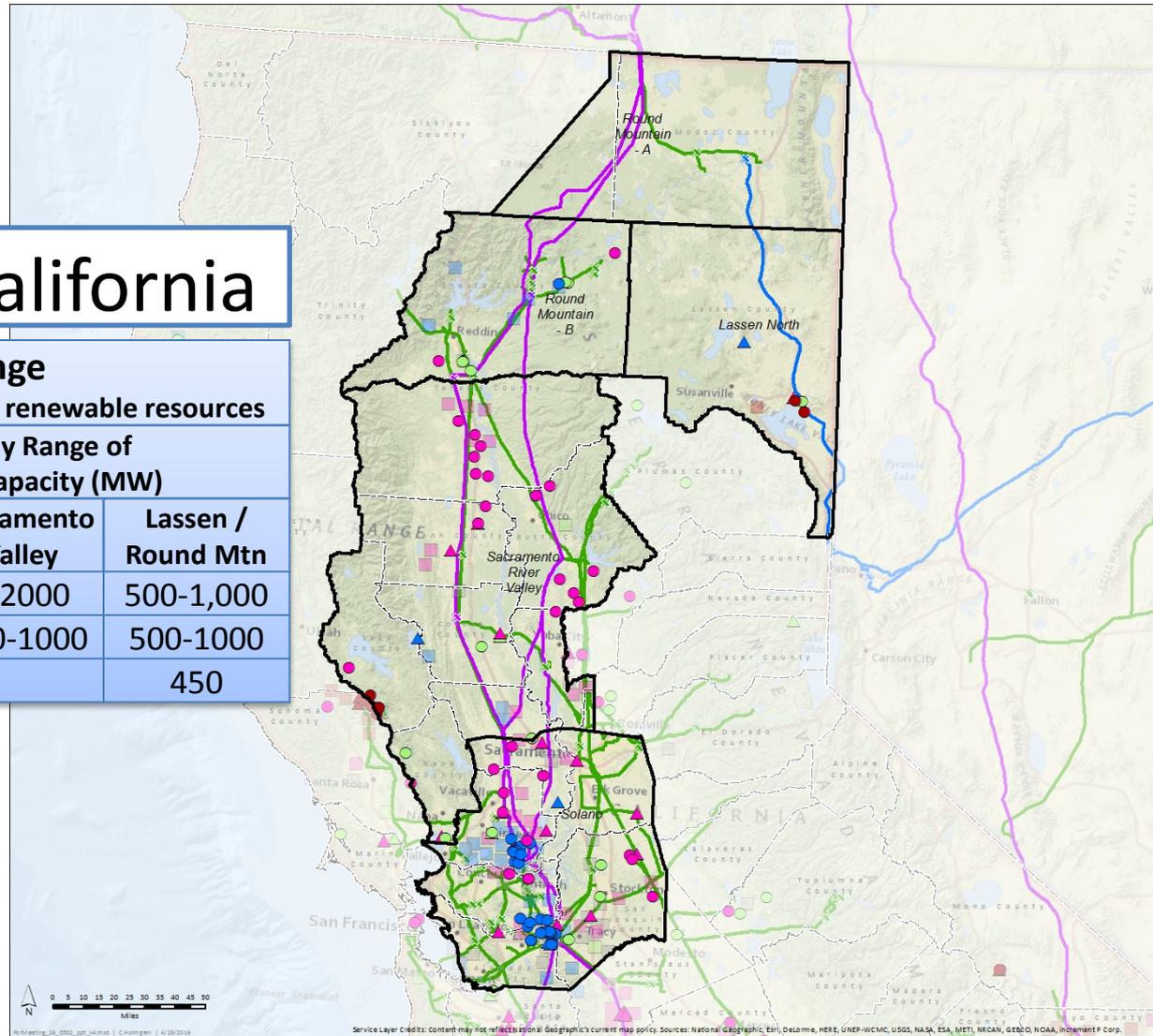


# Northern California

## Study Range

Hypothetical additions of new renewable resources

Resource	Study Range of New Capacity (MW)		
	Solano	Sacramento Valley	Lassen / Round Mtn
Solar	1-2,000	1-2000	500-1,000
Wind	500-1000	500-1000	500-1000
Geo			450



## Northern CA

Lassen North, Round Mountain A & B, Sacramento River Valley & Solano SuperCREZ(s)

- RPS Calculator 6.1 PPA
  - Bioenergy
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Various
- CEC Projects In Development 2016
  - Biomass/Landfill Gas
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
- CAISO 2016 (locations appx)
  - Biomass
  - Geothermal
  - Solar PV
  - Solar Thermal
  - Wind
  - Other
- Existing Substations
  - 230 kV
  - 345 kV
  - 500+ kV
- Existing Transmission
  - 230 - 344 kV
  - 345 - 499 kV
  - 500+ kV



# Discussion questions for counties

1. General status and trends re: land use planning for renewable energy in your county?
2. How is utility-scale renewable energy reflected in your county's general plan?
3. Do you have zoning, ordinances, overlays, districts, or other types of locational preferences and/or development standards for utility-scale wind? solar? geothermal?
4. Are there environmental/biological issues that in your opinion strongly impact renewables development? (is there GIS data that we currently do not have?)
5. Are there agricultural issues that in your opinion strongly impact renewables development?
6. What has been your planning agency's experience with large-scale renewable development proposals?
7. Has there been significant work in the county around electric transmission planning or development?
8. Have you been involved in any planning efforts by other entities (tribes, military, utilities, others) around renewables planning?
9. What would you recommend as useful next steps the state could undertake to facilitate the planning of renewables and transmission in your county (if any)?