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California Energy Commission
STAFF REPORT

Environmental and Land Use Information to Support the Renewable Energy Transmission Initiative (RETI) 2.0 Process

RETI 2.0 Environmental and Land Use Technical Group

California Energy Commission
Edmund G. Brown Jr., Governor

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ABSTRACT

In September 2015, the California Natural Resources Agency, California Energy Commission, California Public Utilities Commission, California Independent System Operator, and the U.S. Bureau of Land Management California Office initiated the Renewable Energy Transmission Initiative 2.0 (RETI 2.0) to simplify the long-range planning, interagency coordination, and stakeholder engagement necessary to support statewide greenhouse gas reduction and renewable energy goals. In November 2015, the agencies held a joint workshop that described these three working groups: the Plenary Group, the Environmental and Land Use Technical Group, and the Transmission Technical Input Group. The two technical groups advise the Plenary Group regarding the implications of Transmission Assessment Focus Areas by analyzing appropriate technical data sets and collaborative stakeholder outreach.

This Energy Commission staff report summarizes the work of the Environmental and Land Use Technical Group and provides information regarding environmental and local land-use planning implications of renewable energy and transmission development in Transmission Assessment Focus Areas using available, existing geographic data sources. Within the Environmental and Land Use Technical Group, there are multiple work tracks to assemble information suitable for assessing the focus areas. The environmental track involves planning-level analysis of biological and other related environmental data. The land use track consists of gathering and sharing input from counties and data regarding local land-use planning. Environmental and Land Use Technical Group work also focuses on consultation with Native American tribes.

Keywords: Renewable Energy Transmission Initiative, Environmental and Land Use Technical Group, environmental, Data Basin, renewable energy, greenhouse gas, renewables portfolio standard, wind energy, solar thermal, photovoltaic, geothermal, biomass, climate change, landscape-scale planning, *Desert Renewable Energy Conservation Plan*, San Joaquin Valley Identification of Least-Conflict Lands for Solar PV Development, transmission, Transmission Planning Process

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Environmental and Land Use Technical Group Overview

In September 2015, the California Natural Resources Agency (CNRA), California Energy Commission (Energy Commission), California Public Utilities Commission (CPUC), California Independent System Operator (California ISO), and the U.S. Bureau of Land Management (BLM) California Office initiated the Renewable Energy Transmission Initiative 2.0 (RETI 2.0) to simplify the long-range planning, interagency coordination, and stakeholder engagement necessary to support statewide greenhouse gas reduction and renewable energy goals. RETI 2.0 is a proactive, statewide, non-regulatory planning forum intended to identify the constraints and opportunities for new transmission to access and integrate new renewable energy resources and help meet these goals.

In November 2015, the agencies held a joint workshop on the proposed organizational structure and work plan for RETI 2.0. This organizational structure established three working groups: the Plenary Group, the Environmental and Land Use Technical Group (ELUTG), and the Transmission Technical Input Group (TTIG). The Plenary Group identifies the RETI 2.0 planning goals, resource potential, transmission assessment focus areas (TAFAs),[1] and conclusions and recommendations. The two technical groups advise the Plenary Group regarding the implications of TAFAs through the analysis of appropriate technical data sets and collaborative stakeholder outreach. The overall charge of the ELUTG is to assemble and make available the most relevant existing geographic data and recommend how to best use these data to summarize the potential environmental and local land-use planning implications of renewable energy and transmission development. The role of the TTIG is to document the capacity of the existing transmission system to support additional renewable development, and to identify the potential need for new transmission investments to access and integrate additional renewables and to support a majority-renewables grid.

Within the ELUTG, there are multiple work tracks to assemble information suitable for assessing the TAFAs. The environmental track involves planning-level analysis of biological and other related environmental data. The land-use track consists of gathering and sharing input from counties and data regarding local land-use planning. ELUTG work also focuses on consultation with Native American tribes regarding TAFAs to gather input on tribal land and cultural resource concerns. Later sections of this report discuss each of these work tracks in detail.

1 The RETI 2.0 Plenary Group identified several Transmission Assessment Focus Areas (TAFAs) within California where significant quantities of additional renewable energy resources could potentially be developed to meet California's renewable energy goals.

Objectives and Methods

The primary work of this technical group consisted of selecting the spatial data relevant to the RETI 2.0 planning exercise, evaluating data completeness, identifying data gaps, and determining next steps to fill data gaps and build on existing data. The ELUTG incorporated and built off the science, data, and analyses from other landscape planning processes to identify the most appropriate data and information needed to evaluate locations for renewable energy development and related transmission. In addition to the 2008 Renewable Energy Transmission Initiative, these include the *Desert Renewable Energy Conservation Plan (DRECP)* and the San Joaquin Valley Least-Conflict Planning for Solar PV.

Identified primary objectives for the ELUTG included the following:

- Identify, compile, document, and make available statewide data (and westwide, as much as possible) relevant to renewable energy and transmission planning.
- Discuss and recommend methods to use the assembled data to assess areas and combinations of areas to evaluate environmental sensitivities and land-use considerations.
- Make recommendations on data gaps and next steps.

With technical and science support from the Conservation Biology Institute (CBI)[2] and agency staff, the Energy Commission led an environmental and land-use stakeholder process aimed at compiling available data, evaluating the existing data, and recommended how to best use the results. Through a series of public workshops, smaller group Web conference meetings, and staff outreach/collaboration, the project team compiled and vetted the assembled environmental and land-use data while building on work that has been done for the DRECP, the San Joaquin Valley Least-Conflict Planning for Solar PV and other relevant local planning processes. A list of ELUTG participants and additional information on the environmental and land-use stakeholder process are provided in the next chapter.

Initially, ELUTG work focused on using existing information and assembling the additional data needed to assess, at a landscape-scale, the biological conservation value for species and agricultural value statewide. The group assembled land-use planning information, including an update of protected lands and other land-use restrictions, and existing county-level general plan land-use information. In addition, out-of-state environmental and land use data were compiled. CBI created the RETI 2.0 Gateway on Data Basin (https://reti.databasin.org) as a platform for compiling and sharing all spatial data sets relevant to RETI 2.0. The gateway is discussed in the next section.

2 The Conservation Biology Institute provides scientific expertise to support the conservation and recovery of biological diversity in the natural state through applied research, education, planning, and community service. (See http://consbio.org/.)

After the potentially relevant data were assembled in the gateway, staff and CBI vetted the data through ELUTG Web conference meetings and expert consultation. This iterative process led to the identification of focus data sets for reporting on environmental/land-use implications of the TAFAs. The ELUTG identified and refined a reporting format to capture key aspects of the environmental data summary for the specific areas evaluated. CBI developed this reporting format into the Environmental/Land Use Reporter tool on the gateway. This map-based tool enables a user to define and evaluate areas of interest in terms of the environmental and land-use profiles by summarizing numerous data sets into an organized reporting display. The reporting tool continues to undergo refinement and will be made available on Data Basin[3] at the completion of the RETI 2.0 process.

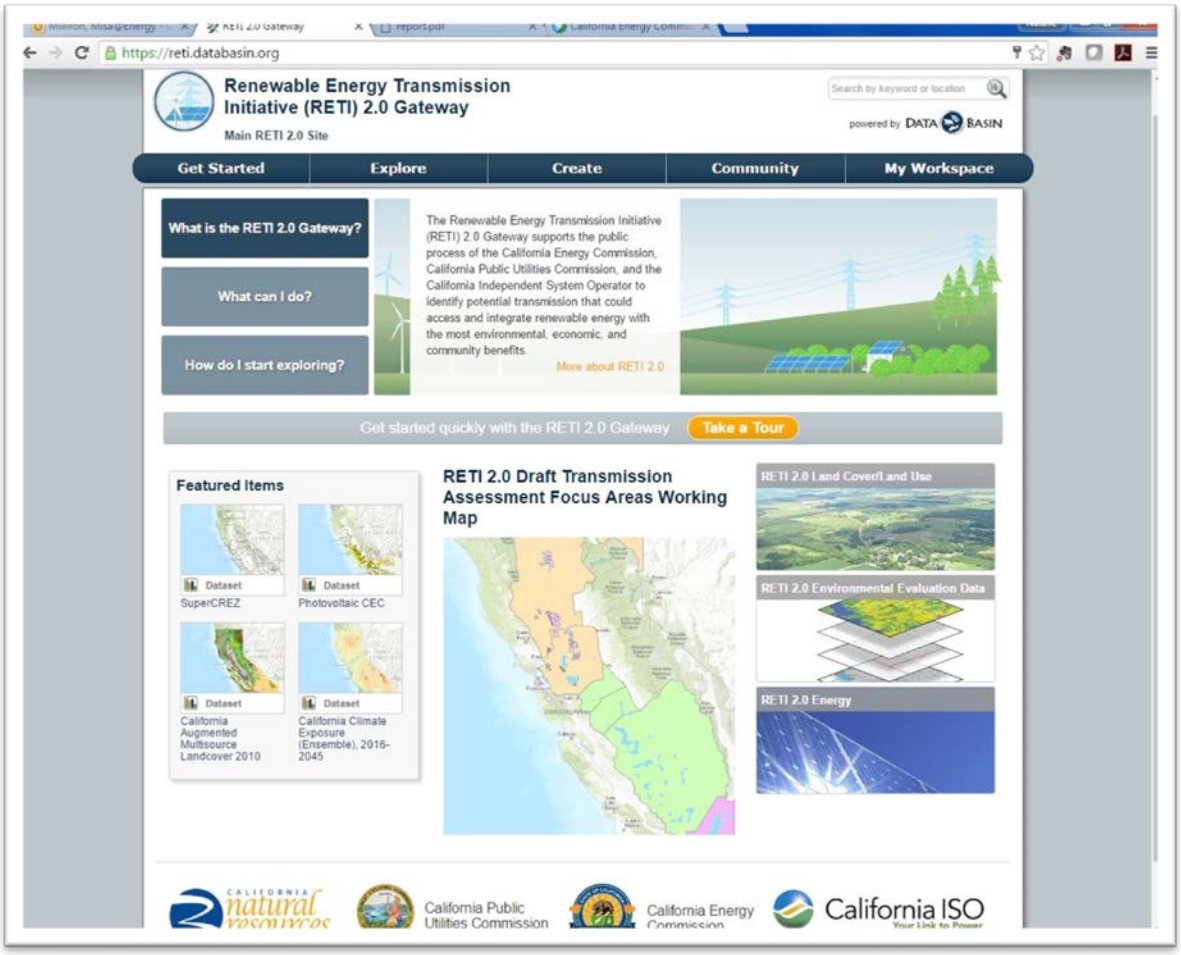
RETI 2.0 Gateway

The RETI 2.0 Gateway (https://reti.databasin.org) is a customized, map-based data sharing and collaboration platform based on Data Basin technology developed by CBI (Figure 1). The core of Data Basin is free to visitors and provides open access to thousands of scientifically grounded, biological, physical, and socioeconomic data sets. This user-friendly platform enables users with varying levels of technical expertise to:

- Integrate a wide range of data into a single location.
- Explore and organize the data and information in new ways.
- Organize nonspatial information and documentation.
- Obtain high levels of transparency regarding all system content.
- Publish or produce new data sets and maps.
- Work together in self-organizing groups.

3 Data Basin is a science-based mapping and analysis platform that supports learning, research, and sustainable environmental stewardship. (To access the RETI 2.0 gateway on Data Basin, see https://reti.databasin.org/)

Figure 1: Landing Page for the RETI 2.0 Gateway



Source: https://reti.databasin.org/

To support the RETI 2.0 process, the project team gathered more than 50 data sets into the gateway and organized them into meaningful folders (called galleries) for easy access and use by stakeholders. Figure 1 above shows the three galleries (Land Cover/Land Use, Environmental Evaluation Data, and Energy) on the right side. Each gallery contains numerous spatial data sets relevant to the topic identified in the headings. Having governmental and nongovernmental as well as DRECP and SJVS data sets organized into a single location proved useful for technical analysis and communication of data in the ELUTG and overall RETI 2.0 stakeholder processes.

In a few cases, the project team created or compiled new data sets (for example, a statewide terrestrial intactness layer) to fill some important gaps; others gaps remain unfilled (such as avian aerial risk). The acquired data ranged from basic spatial information (for example, infrastructure and current land use) to more complex model results (such as potential species distributions). The system allowed stakeholders to understand the input data better and provided the means to share it. All the spatial data used or generated from the RETI 2.0 process can be obtained on the gateway, where it will remain in the foreseeable future. It can be used to update information, refine

results, and support discussion of this topic, as well as to address other related planning and resource issues.

The gateway was also instrumental in supporting RETI 2.0 workshops, technical group meetings, and outreach efforts, during which the project team and stakeholders could review key data sets and maps together as a group and discuss them. For example, the project team used the platform in real time during ELUTG Web conference meetings to review data sets and refine the reporting format with stakeholders. This functionality in a group discussion helped clarify for attendees the value and limitations of the available data to support the planning effort while illuminating important data gaps.

Environmental Data Discussion and Review Process

The RETI 2.0 process was conducted through numerous public workshops with robust stakeholder participation. Four workshops focused on ELUTG outreach and vetting of approaches and products of RETI 2.0 environmental, land use/county, and cultural work. Two were held in late 2015 (November 23 and December 4) and focused on guiding questions, available data sets, planning products, and models for environmental and cultural work. The January 22, 2016, workshop continued the data discussion and presented a proposed approach for the environmental and land-use work. The July 21, 2016, workshop focused primarily on land use and county outreach.

These workshops provided a forum for discussion and public comment on ELUTG work. Many comment letters were received in the Energy Commission docket in response to the workshops. Themes from the written comments from stakeholders will be summarized in the RETI 2.0 final report. Written and verbal comments and questions helped refine ELUTG analysis approaches and fill in missing data.

Staff initiated a smaller, technical working group to focus specifically on the environmental work track of the ELUTG. In March 2016, staff sent a broad request using the public RETI list server for any interested parties to join this group. In addition to Energy Commission, CNRA, and CBI staff, about 40 individuals participated. See Table 1 for a list of organizations represented among the environmental group participants. An email distribution list was used to send information and schedule interactive Web conference meetings. Interim work approaches and products were discussed through these meetings. In addition, maps and data sets were reviewed using the gateway. Table 2 provides the small group meeting dates and the topics discussed at each.

Table 1: Organizations Represented at Small Environmental Group Web Conference Meetings Under the RETI 2.0 ELUTG

Aspen Environmental Group	Audubon California
Bureau of Land Management	California Department of Fish and Wildlife
California State Parks	Center for Biological Diversity
Committee for 245 Million Acres	Defenders of Wildlife
Department of the Interior	Dominion
Duke-American Transmission Company	Imperial Irrigation District
Independent Energy Producers Association	Large-scale Solar Association
Modesto Irrigation District	National Park Service
Natural Resources Defense Council	Northwest Energy Coalition
Pacific Gas and Electric	San Diego Gas & Electric
Stateside Associates	The Nature Conservancy
TransCanyon	Transwest Express LLC
U.S. Fish and Wildlife Service	Western Electricity Coordinating Council
Westlands Solar Park	Westwood Surveying and Engineering

Source: California Energy Commission

Table 2: Small Environmental Group Web Conference Meetings

Meeting Date	Topics
4/22/2016	Small group kick-off and introduction to work plan, environmental data sets, gateway, environmental profile report template draft
4/29/2016	Comments and questions on assembled data sets and work plan
6/3/2016	Demonstrate Gateway and review Environmental/Land Use Reporter format based on environmental profile report template
7/22/2016	Environmental/Land Use Reporter demo, data set questions, project clustering approach
7/29/2016	TAFA refinement and project clusters map

Source: California Energy Commission

Selection, Assembly, and Presentation of Key Data Sets

Energy Commission staff, working with CBI and members of the ELUTG, identified relevant data in three categories that are important to help identify and assess areas of high-value renewable energy resources and associated transmission. These include renewable energy resource-related data, including the work of previous studies and planning work; environmental data related to biological resources; and land-cover and land-use data. Data sets were selected based on experience gained from other renewable energy planning processes, as well as on agency/stakeholder collaboration. Those selected were considered of adequate quality to provide good representations of landscape-level environmental considerations for this process.

The assembled data are publicly available in the corresponding data galleries on CBI's Data Basin website, as discussed earlier. Agencies, stakeholders, and other interested parties may view and further evaluate these data sets easily by visiting the gateway (https://reti.databasin.org/).

The primary energy resource data include:

- RETI 2.0 proposed TAFAs.
- Energy project location data from the Energy Commission, CPUC, and California ISO.
- Selected wind projects for Northern California, as identified by the CPUC's Renewables Portfolio Standard (RPS) Calculator.
- BLM-verified potential geothermal lease areas.
- Known geothermal resource areas.
- Development focus areas (DFA) and variance process lands (VPL)[4] for the DRECP BLM Land Use Plan Amendment (LUPA).
- Energy Commission renewable energy projects.
- Annual average direct normal solar resource from the National Renewable Energy Laboratory.

The primary data sets for environmental evaluation include:

- Terrestrial landscape intactness.[5]

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4 *Variance process lands* (VPLs) in the DRECP BLM LUPA are lands are available for solar, wind and geothermal renewable energy development. Renewable energy projects on VPLs are neither streamlined, nor allowed incentives, and have a specific set of development standards. Renewable energy applications in VPLs will follow the variance process described in the Western Solar Plan Record of Decision (ROD), Section B.5. See the DRECP LUPA ROD for more information about VPLs.
http://www.drecp.org/finaldrecp/rod/DRECP_BLM_LUPA_ROD.pdf

5 *Terrestrial landscape intactness* refers to the measurement of ecological intactness of a given area where intactness is a quantifiable estimate of naturalness according to the level of anthropogenic, or human, influence based on available spatial data (for example, roads, mines, and agriculture). A description of the Terrestrial Landscape Intactness Model developed for the DRECP area is available at https://databasin.org/articles/f8e87140a56644e4a194dc53ec3ac714

- Protected areas including the Protected Areas Database of the United States (PAD-US) and conservation easements of California.
- California Department of Fish and Wildlife (CDFW) Areas of Conservation Emphasis.
- California Natural Diversity Database.
- Federally Designated Critical Habitat.
- Important Bird Areas of California.[6]
- Essential Habitat Connectivity Areas and Natural Landscape Blocks.[7]

The primary county land-use data sets include:

- Los Angeles County significant ecological areas and economic development areas from the Antelope Valley Specific Plan.[8] [9]
- Imperial County renewable energy overlay from the Renewable Energy Element of the county's general plan.[10]
- Inyo County solar energy development areas (SEDAs) from the county's general plan.[11]

In some cases, data sets were assembled into useful "logic models" using the open source Environmental Evaluation Modeling System,[12] which combines like data sets into a more useful Geographic Information System (GIS) layer that summarizes and presents the combined data. These combined data sets assembled for RETI 2.0 include a statewide terrestrial intactness model and a draft statewide agricultural values model.

Existing regional data sets for the DRECP Planning Area include the:

- Terrestrial intactness layer.
- Habitat connectivity and linkage layer.
- Conservation values layer.
- DRECP Covered Species layer that combines the modeled distributions of the 37 focal species in the DRECP Planning Area.

Existing regional data sets for the San Joaquin Valley Least-Conflict Planning for Solar PV include the:

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6 http://www.audubon.org/important-bird-areas/state/california.
7 https://www.wildlife.ca.gov/conservation/planning/connectivity/CEHC.
8 http://egis3.lacounty.gov/dataportal/2015/11/19/significant-ecological-areas-sea/.
9 http://egis3.lacounty.gov/dataportal/2015/06/25/economic-opportunity-areas/.
10 http://icpds.maps.arcgis.com/apps/Viewer/index.html?appid=c6fd31272e3d42e1b736ce8542b994ae.
11 http://www.inyoplanning.org/projects/REGPA.htm.
12 Tim Sheehan. 2016. Environmental Evaluation Modeling System (EEMS). In: Data Basin. (First published in Data Basin on Mar 2, 2016; Last Modified on Mar 6, 2016; Retrieved on Oct 10, 2016,) https://databasin.org/articles/e48fb1ac5ffe4454a324dff834de2ede.

- Conservation value layer.
- Agricultural value layer.
- Composite layer of "least-conflict" lands for potential solar development that was an output of the process. Least-conflict lands, as described in the report *A Path Forward: Identifying Least-Conflict Solar PV Development in California's San Joaquin Valley*,[13] are those lands identified by stakeholder groups during the SJVS Least-Conflict Solar Planning for Solar PV as having the least conflict from the perspective of each stakeholder group. The goal of the planning process was to use the least-conflict lands identified by each stakeholder group to find potential areas for solar PV development that each stakeholder group viewed as having the least conflict. Each stakeholder group prepared a map of its least-conflict areas, and these maps were uploaded to the San Joaquin Valley Gateway on Data Basin.[14] The San Joaquin Valley Gateway also includes a composite map showing those areas where the different stakeholder groups identify the same areas as having the least conflict.

Initial Development of Environmental Report Writer and the Environmental Profile Report

Energy Commission staff, working with CBI and members of the ELUTG, built an environmental report writer that uses a select subset of the available data assembled for RETI 2.0 and key data sets from the previous energy planning efforts in the DRECP Planning Area and the San Joaquin Valley. Developing this type of science-based analytical tool is consistent with the *Draft 2016 Integrated Energy Policy Report (IEPR)* and the Strategic Transmission Investment Plan Chapter of the *2015 IEPR*, as it promotes the proactive planning necessary to meet the state's renewable energy and GHG reduction goals. Such analytical tools are important to help stakeholders and decision makers understand and minimize the potential environmental effects associated with the locations of renewable energy projects and associated transmission.

The reporting tool is in a draft or "beta test" form that allows CBI to upload a GIS file that contains polygon areas that might represent potential generation areas with high renewable energy resource value and lines that represent potential new transmission corridors (Figure 2). Using this tool, CBI can generate an "environmental profile report" (Figure 3) for any identified set (or set combinations) of high value renewable energy resource areas and associated transmission. The environmental profile report lists the detail from the associated environmental data sets where the identified areas intersect or overlay the environmental data. In this way, the tool can report on environmental specifics for any area of interest that is identified and loaded.

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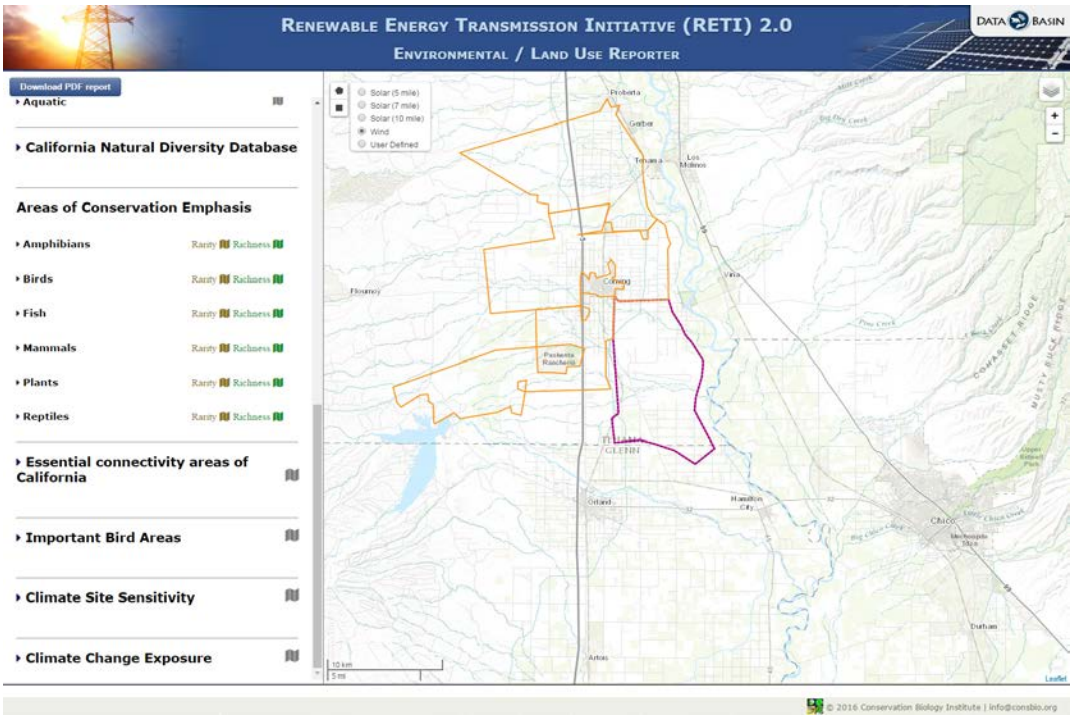
13 http://consbio.org/products/reports/path-forward-identifying-least-conflict-solar-pv-development-californias-san-joaquin-valley.

14 https://sjvp.databasin.org/.

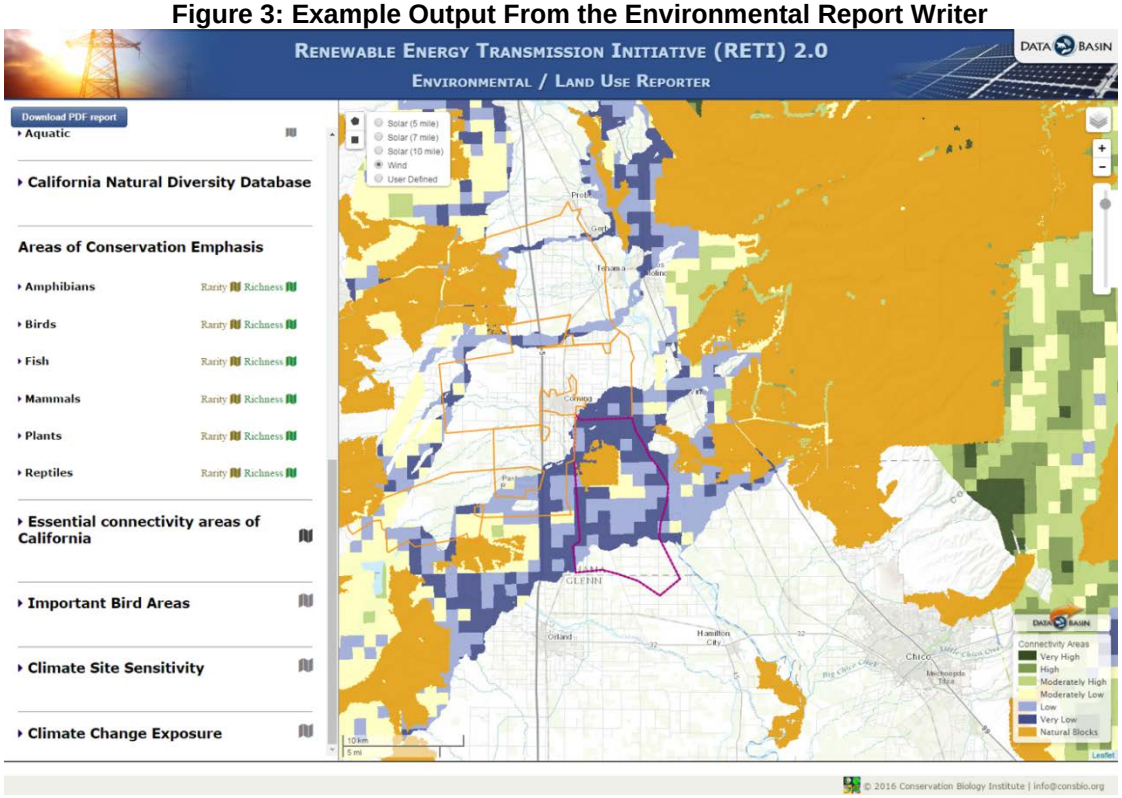
Figure 2: Renewable Energy Wind Resource Area Displayed in the Environmental Report Writer



Screenshot of the beta version of the environmental report writer in Data Basin that demonstrates how a wind energy resource area is identified for environmental analysis.

Source: Screenshot of the "beta" version of the environmental report writer, under development. Energy Commission and CBI.

Figure 3: Example Output From the Environmental Report Writer



Screenshot of the beta version of the environmental report writer in Data Basin that demonstrates the output from the analysis of the wind energy resource area is identified in the previous figure.

Source: Screenshot of the "beta" version of the environmental report writer, under development. Energy Commission and CBI.

In the draft form, the environmental report writer focuses on reporting the environmental data sets; it does not report data in the draft statewide agricultural model or the county land use and general plan data sets.

The environmental report writer reports information from the following statewide data sets that were assembled for the RETI 2.0 process:

- Protected areas
- Terrestrial landscape intactness
- Federally designated critical habitat
- Species occurrence and status
- Detailed species richness and rarity information
- Essential Habitat Connectivity Areas of California
- Important Bird Areas of California
- Climate site sensitivity
- Climate change exposure

Where more detailed regional information is available from previous renewable energy planning work, the specific regional information is also reported, in addition to the information from the statewide data sets. For the DRECP Planning Area, regional information from the following data layers is also in the reporting:

- DRECP Conservation Values Model
- Specific DRECP regional habitat and linkage layer
- DRECP Covered Species layer

For the area examined by the San Joaquin Valley Least-Conflict Planning for Solar PV process, the assessment tool uses the Least-Conflict Solar Composite data layer.[15] This data layer represents areas suitable for solar photovoltaic (solar PV) development as identified by stakeholders during the planning process as having both low environmental conflict on agricultural lands and low conflict with important habitats and important areas for sensitive species. The tool is set up to report on the acreage of least-conflict land in an area identified for assessment. The least-conflict areas identified by stakeholders during the planning process are included in the environmental report writer. These areas may be appropriate for future development from a stakeholder perspective but may not represent all areas where development is possible. The ELUTG is incorporating the least-conflict solar composite data layer into the environmental report writer as an initial step toward identifying appropriate areas for renewable energy development in the San Joaquin Valley. Going forward, the environmental report writer will be able to access spatial layers from San Joaquin Valley Least-Conflict Planning for Solar PV, and any future assessments of the San Joaquin Valley using the environmental report writer will draw on additional spatial data not constrained to those least-conflict areas identified.

Staff clarifies that the *identification* of least-conflict lands in the San Joaquin Valley is different than the *designation* of DFAs on BLM-managed land in the BLM DRECP LUPA. The San Joaquin Valley Least-Conflict Planning for Solar PV process was a nonregulatory stakeholder process to identify areas for solar PV development that did not result in changes to rules or policies. On the other hand, the BLM DRECP LUPA was a regulatory process that resulted in the designation of 10.8 million acres of BLM-managed land in the desert, including 388,000 acres as DFAs and 4.2 million acres as conservation.

The environmental profile reports for each area can be summarized to give an overview of the potential environmental implications (for example, conflicts or areas of overlap with important environmental elements) to produce a high-level assessment of potential

15 The San Joaquin Valley Least-Conflict Planning for Solar PV process included consultation with Native American tribes and as described in the "Tribal and Cultural Resource Considerations" section of this report, the tribes identified lands that may be in conflict with tribal cultural values but are not identified in the Least-Conflict Solar Composite data layer. The Least-Conflict Solar Composite data layer is available here: https://sjvp.databasin.org/maps/5c48a4f590524758ac14d07970842769/active.

renewable energy generation areas or to evaluate alternative combinations of areas and any associated new transmission needs. The information can also provide insight on what environmental considerations may need to be assessed if a particular location is being considered for project development.

Various energy and transmission planning processes produce sets of specific geographic areas of high renewable resource value, which may be considered as potential energy generation areas. These features can be easily loaded into the tool and quickly assessed against the various assembled environmental data sets, including a real-time "on-the-fly" look at specific areas. The tool then produces a detailed PDF report to capture and document the assessment (Figures 2 and 3).

Users can also examine and pull information from the statewide data sets portions of area profile reports and use this information to characterize the potential environmental implications for various regions of the state or to compare potential environmental implications from a statewide perspective.

The environmental report writer functions in the beta form and can be used to evaluate areas and provide environmental profile reports for any set of renewable energy resource areas and potential transmission corridors that are identified. The functional limitations of the report writer (as described in this report) are listed below:

1. The report writer uses a select subset of the existing data sets identified and assembled by the ELUTG.
2. The report writer data sets used in the beta version of the tool are limited to the environmental data sets.
3. The report writer is not yet available on Data Basin for public use, so any evaluations must be run by Energy Commission and CBI staff in-house.

Data and Information Gaps

A primary data gap in available environmental information is on foraging movement and migratory pathways for avian species (that is, birds and bats). Birds and bats are especially susceptible to mortality at wind turbine facilities. Birds, especially large raptors, have potentially high risk of collision with operating wind turbines. Bats suffer mortality due to the effect of barotrauma (injury caused by a change in air pressure). Because of the high potential risk of mortality to these sensitive species, it is essential that energy planning uses best available scientific information to focus on identifying areas of biological importance for these species at a regional scale, and work to highlight the potential risks.

Even in the well-studied DRECP Planning Area, these data gaps in information on bird and bat movement limit the ability to assess and identify areas where wind turbines can be operated with minimum conflict. Best available data and information were used in the DRECP to describe the areas where potential implications of siting wind facilities were expected to be higher. In agricultural areas, crops and flooded fields often provide

important seasonal foraging or roosting habitats for many bird species. High insect populations may provide forage for insect-eating bird and bats, while rodent populations on agricultural and range lands are prey for raptor species. Research continues to provide additional information in this area, but much work needs to be done.[16]

This critical gap in information that would allow direct mapping of avian species movement means that planning activities must rely on mapping and interpreting the terrestrial components of important bird and bat habitat elements, which can function as indicators of areas where avian species may be moving to or from, in their daily foraging or annual movement cycles. Since staff cannot easily map avian species movement, researchers need to exercise extra caution in identifying the potential environmental implications for bird and bat species.

The ELUTG identified several approaches with additional existing data sets that could be useful in assessing the environmental implications of high-value wind resource areas. These include:

- Identifying or developing species models for key raptor species, such as golden eagle, or key migratory species, and determining how to best use them with available terrestrial datasets to infer potential implications.
- Identifying or developing regional datasets of known important bird areas such as flooded agricultural fields and specific crops that support known species.
- Working with Audubon to better understand the information associated with the statewide Important Bird Areas data set, and examining the association with other terrestrial habitat data sets, to improve the usefulness of the data set in identifying potential environmental implications.

16 See Chapters 4 and 5 of the *2016 Environmental Performance Report* for additional information on the types of environmental impacts associated with renewable energy development as well as the current state of research to better understand those impacts: http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-03/TN214098_20161018T145845_Staff_Report_Final_2016_Environmental_Performance_Report_of_Cal.pdf.

Concluding Remarks and Next Steps

The main goal for the ELUTG was to identify and recommend how the data collected in the RETI 2.0 process should best be used to examine the environmental implications for areas of potential high-value renewable energy resource areas and potential new transmission corridors.

Assembling data sets in the following biological categories seems appropriate for evaluating potential environmental implications at a high planning level:

- Information on species, both the number of species that may be encountered and their sensitivity
- Location of federally designated critical habitat
- Information regarding the conservation value of a particular area
- Information regarding the landscape intactness of natural lands and habitats
- Information regarding the presence of important or significant habitat connectivity areas

The assembly and examination of existing data sets and the development of key relevant data "logic" models provide a useful way to assess areas for potential environmental implications at a landscape level. This approach and the level of information for many environmental elements are sufficient for an early and high-level look to assess the environmental implications for potential renewable energy and transmission areas in regional and statewide energy planning context. The completion of a fully functional environmental report writer tool could provide a viable way to quickly and effectively use the existing data sets to evaluate potential new renewable energy resource and transmission development areas in a variety of infrastructure planning processes.

The available and relevant data sets and a fully functional environmental reporting tool can be used in many ways to inform energy and transmission planning. Potential examples are:

- Use by industry, project developers, and utilities for landscape-level site assessment when looking long term to site potential renewable energy generation and transmission.
- Use by stakeholders to evaluate potential suggestions or inputs to planning processes for energy generation and transmission planning, scenario analysis, and comparisons.
- Use by agencies engaged in planning to provide maps and environmental context to help identify and communicate potential environmental implications in identified planning areas, or to evaluate at a high level the specific environmental considerations and potential environmental tradeoffs that might be encountered in various planning scenarios.

Energy Commission staff, through its work with the ELUTG stakeholders identifies the following set of next steps for future work on and improvements to the data sets and features of the environmental report writer. Consistent with the *2016 Draft IEPR* and *2015 IEPR*, these next steps and recommendations can help advance the science and tools necessary to help stakeholders and decision makers proactively plan for renewable energy and transmission while minimizing potential environmental effects.

Next Steps

Data improvements to available data sets:

- Refine and complete the draft statewide agricultural values model.
- Update and revise the DRECP Planning Area Conservation Values Model for more general application to energy planning work.

Environmental report writer improvements:

- Develop a user interface and controls to allow users to load their own GIS layers for assessment.
- Revise report format, including presentation and organization of information.
- Add functionality to evaluate land-use and general plan data.
- Add functionality to summarize data automatically for a region.
- For the San Joaquin Valley:
    - Add the complete Agricultural Values Model into the report writer to allow for evaluation of all areas in the San Joaquin Valley, both within and outside of the identified least-conflict lands.
    - Add the complete Conservation Values Model into the report writer to allow for evaluation of all areas in the San Joaquin Valley, both within and outside of the identified least-conflict lands.

Recommendations:

- Complete and accurate data sets, data logic models, and the environmental reporting tool should be kept available online for use by agencies, stakeholders, and the public.
- Data sets should be periodically updated and data gaps filled to provide a basic set of information that can be used as an input to agency planning and regulatory processes.
- Agencies and stakeholders should work together to develop a functional Web-based, interactive environmental reporting tool that uses the data assembled in landscape-scale planning processes, like RETI 2.0, so that the tool could be easily used in planning and decision making.

Tribal and Cultural Resource Considerations

This section identifies tribal and cultural resources considerations for renewable energy and transmission development in the RETI 2.0 planning area. The section documents CNRA and Energy Commission staff's consultation with tribal entities and presents tribal input concerning RETI 2.0.

Briefly stated, cultural resources are "those aspects of the environment—both physical and intangible, both natural and built—that have cultural value of some kind to a group of people." (King 2008:3). Cultural resource specialists commonly categorize those cultural resources that are considered historical resources into three broad classes: prehistoric, ethnographic, and historic.[17] Local, federal, and state laws, such as the California Environmental Quality Act, establish legal definitions for significant cultural resources and related management considerations.

Consultation With Tribes

For state agencies, the Governor's Executive Order B-10-11 encourages agency collaboration with California tribal governments.[18] The executive order directs state agencies to afford California Native American tribes—both federally recognized and unrecognized—the opportunity to "provide meaningful input into the development of policy on matters that affect tribal communities." The CNRA also has a policy that exhorts state agencies under its jurisdiction to provide California Native American tribes and tribal communities the opportunity to provide meaningful input into state agency plans and policies that may affect tribal communities (CNRA 2012). The Energy

17 *Prehistoric archaeological resources* are those materials relating to prehistoric human occupation and use of an area. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American cultures. In California, the prehistoric period began more than 12,000 years ago and extended through the 18th century until 1769, when the first Europeans settled in California.

Ethnographic resources are those materials and places important to the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, or Asian immigrants. They may include tribal cultural resources, traditional resource collecting areas, ceremonial sites, topographic features, value-imbued rural and urban landscapes, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources are variations of natural resources and standard cultural resource types. They are assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their life ways.

Historic-period resources are those materials, archaeological and architectural, usually associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include historical archaeological deposits, historic sites, structures, buildings, neighborhoods, traveled corridors, artifacts, or other evidence of human activity.

18 Governor's Executive Order B-10-11, September 19, 2011, available at https://www.gov.ca.gov/news.php?id=17223.

Commission uses a tribal consultation policy that implements the CNRA's consultation policy for Energy Commission programs and projects (Energy Commission 2014).

The CNRA and Energy Commission initiated consultation with California Native American tribes and tribal communities across the entire state by publishing a notice to the leaders of California Native American tribes and tribal communities on a public workshop scheduled for September 10, 2015 (Johnson 2015a). A representative of the Dry Creek Rancheria of Pomo Indians attended the September 10 workshop and provided comments. (See Tribal Input below.) On October 26, 2015, the Energy Commission sent notices to tribal leaders concerning a November 2, 2015, joint agency workshop (Johnson 2015b). Tribal leaders did not bring forward comments during the November 2 joint agency workshop.

Staff refreshed and refocused RETI 2.0 tribal consultation efforts once TAFAs were determined. Staff reinitiated tribal consultation with all tribes having ancestral territories that overlapped one or more TAFAs. A total of 90 tribes and tribal communities were located in the refined RETI 2.0 planning area (Turner and Gates 2016).

On July 15, 2016, CNRA and Energy Commission staff mailed letters to the 90 identified tribes. The letters summarized RETI 2.0, provided a map of the RETI 2.0 planning area, and invited tribes and tribal communities to consult. (See Turner and Gates 2016.)

Energy Commission staff followed the July 15, 2016, letters with telephone calls and emails to the tribal letter recipients. Staff placed phone calls and sent emails to the 90 tribes and tribal communities between August 2 and 15, 2016. Tribal input is summarized in the Tribal Input section below.

Cultural Resources in RETI 2.0 TAFAs

This section characterizes what staff knows about cultural resource issues in the RETI 2.0 TAFAs from other energy-related planning exercises and specific renewable energy projects previously approved by federal, state, or local agencies. The following discussion relies on staff's knowledge of previous studies and perusal of environmental impact analyses available on various government agency websites.

Northern California TAFA

Previous wind energy and geothermal development in the Northern California TAFA highlights issues related both to cultural resources and tribal concerns: impacts to biological resources, preservation of cultural landscapes and traditional life ways, and protection of Native American archaeology and burials. For example, the Pit River Tribe has divulged concerns about the environmental impacts of wind energy projects: bird mortality, particularly eagles, ospreys, ducks, and geese; disruption of other animals' migration patterns; physical, visual, and auditory intrusions on a significant cultural landscape; damage of archaeological resources and human remains; and compromised access to gathering areas for basketry materials (Elmore 2006; Shasta County 2007:3.5-

10–3.5-12; Tiley 2007). In addition, the Achumawi and Atsugewi (now represented primarily by the Pit River Tribe) have numerous power places near the Lassen County wind project areas (Olmsted and Stewart 1978: Figure 1).

Geothermal development at Medicine Lake Highlands, Siskiyou County, is a second example of conflict with the values of Pit River, Wintu, Yana Indians, and others. California and Oregon tribes have long used Medicine Lake Highlands as a place for healing, renewal, and prayer. The federal government designated Medicine Lake Highlands as a Native American Cultural Landscape and the Medicine Lake Caldera as a Traditional Cultural District eligible for listing in the National Register of Historic Places (NRHP). The extension of geothermal leases within the highlands was challenged in federal court and subsequently undone in recognition of Medicine Lake Highland's spiritual significance to tribes. (Murphy and Hayward 2009:1.)

San Joaquin Valley TAFA

In the San Joaquin Valley TAFA, a recent planning study sought information about the concerns that California Native American tribes and tribal communities have about solar PV development in the valley.[19] Through correspondence, meetings, webinars, telephone conversations, and the exchange of data among valley tribes, the Energy Commission, and the Governor's Office of Planning and Research, two significant bodies of information were developed. The first is a data set that describes some 213,000 acres of least-conflict solar PV development areas that avoid areas of known concern to the tribes consulted. The second body of information is an 11-point list of tribal recommendations for solar PV development in the San Joaquin Valley. (Gates and Roark 2016:42–46.) This list is reproduced immediately below.

1. In the valley and other areas long under cultivation, the current topography and condition of the landscape do not clearly predict the location of tribal and archaeological cultural resources. Tribes and local archaeologists, however, have found that the location of surficial and buried archaeological resources can be found in advance of project siting by conducting archival research, particularly in historical topographic and survey maps; conducting archival research in local histories and anthropological notes; conducting ethnographic and oral history inquiries with tribal people to identify areas of cultural sensitivity; and avoiding areas with rock outcrops.
2. Once cultural resources have been identified, tribes recommend that all project components be sited with appropriate buffer areas from the known exterior boundaries of the resources. Appropriate buffers should be established in close consultation with affiliated tribes to avoid impacts to cultural resources.

19 See *A Path Forward: Identifying Least-Conflict Solar PV Development in California's San Joaquin Valley* here: http://consbio.org/products/reports/path-forward-identifying-least-conflict-solar-pv-development-californias-san-joaquin-valley.

3. Tribes wish to develop “inadvertent discovery” burial agreements with lead agencies and solar developers prior to project construction.
4. Project avoidance of tribal cultural resources is preferable, where feasible.
5. Tribes request to be involved in project construction monitoring, as a form of mitigation measure, where avoidance is not feasible.
6. Decommissioning of renewable energy generation facilities, where applicable, must be conditioned to avoid damaging known cultural resources, require all project elements to be safely removed, and ensure that the land is restored to a natural state as much as practically possible.
7. Conservation easements in culturally sensitive areas may be an effective mitigation measure for impacts in other areas of tribal concern and may overlap with biological resource mitigation.
8. Communication with the correct tribal representatives is important for the respect of tribal sovereignty and the efficiency of the consultation process.
9. Of the 471,000 acres identified as least-conflict areas by the solar development, environmental conservation, and agricultural stakeholder groups, a total of 258,000 acres intersect tribal areas of concern.
10. Item 9 above highlights the importance of early consultation with tribes during future planning and project-specific development, as required under state and federal laws.
11. Solar development in the balance of least-conflict areas (213,000 acres) could still affect tribal resources or other cultural resources.

California Deserts TAFA

The most recent, large-scale planning effort in the California Deserts TAFA is the *DRECP*. The final environmental impact statement (FEIS) for the *DRECP* covered roughly 22 million acres of the California deserts. The FEIS development focus areas informed the project clusters identified in the California Deserts TAFA. Between 2011 and 2015, BLM and partner agencies held numerous tribal consultation meetings and workshops to address tribal interests (BLM 2015:III.9-16–III.9-18). In addition, Energy Commission staff is developing a tool for planning with respect to cultural resources.

BLM received tribal input along three broad lines: environmental review and consultation processes, cultural resources, and natural resources.

Tribal Concerns Expressed Through DRECP Consultations

Process Concerns

- **Consultation.** Consultation should be conducted early and often, and in an ongoing manner that is respectful of tribal sovereignty and heritage values, and that strives for meaningful dialogue.
- **Ethnography.** Tribes feel that their heritage values are not fully considered by cultural resources analysis that weighs heavily on archaeological expertise and methods. Some believe that mitigation also tends to ensue from narrow nonnative perspectives.
- **Document Review.** Tribes want access to cultural resources and other data sets to determine to what extent tribally valued resources are present, absent, or being considered during planning. Tribes also find that they are underfunded, understaffed, and overwhelmed with various project document review workloads.
- **Confidentiality.** Tribes want agencies and other cultural resources managers to employ high-quality protocols for keeping sensitive cultural resources and heritage value information out of the public purview. Tribes also maintain that confidentiality requirements should not be used to keep important information from tribal review.
- **Monitoring.** Tribes view tribal construction monitoring as a final effort to protect cultural resources that would otherwise be damaged by construction. Tribes want assurances that tribal monitoring is routinely required for approved projects and that monitoring protocols provide Native American monitors sufficient authority to adequately protect cultural resources of tribal value. There is also a secondary issue with the level of tribal monitor training that is not consistent across all tribes, as well as the need to balance tribal monitoring experience with monitors that are most closely affiliated with specific project areas.
- **Repatriation.** Tribes want avoidance of archaeological materials to be the primary method for mitigating these cultural resources. If avoidance cannot be achieved, then some tribes may prefer repatriation instead of long-term curation.
- **Access.** Tribal traditional practitioners want to maintain access, to the extent feasible, to sacred places to conduct cultural and religious practices.
- **Environmental Justice (EJ).** Tribes affiliated with project areas through ancestral or traditional use claim they are EJ populations because tribal people maintain longstanding ancestral and traditional-use practices and concepts connected to the environment and to their identities as Indian people, unlike other populations that do not have territories linked to their collective identities. Tribes are requesting that EJ studies be conducted to link tribal resources with tribal cultural practices and their need to perpetuate traditional cultures that rely upon intact landscapes. (BLM 2015: III-9.18–III.9-19.)

Tribal Cultural Resources

Traditional cultural properties for Native American communities may include natural landscape features, trail systems, places used for ceremonies and worship, places where plants are gathered for use in traditional medicines and ceremonies, places where artisan materials are found, and places and features of traditional subsistence systems, such as hunting areas. Given the nature of these resources, they may not necessarily be identified during conventional archeological, historical, or architectural surveys. As a result, the existence or significance of such locations often requires ethnographic input from the tribes viewing them as significant. (BLM 2015:III.9-20.)

Tribes are particularly concerned with cultural landscapes because landscape analysis can consider culture in holistic ways that move beyond discrete objects and bounded sites. The DRECP FEIS identified three examples of tribal cultural landscapes that exist in areas previously considered to be nonsensitive: the Salt Song Trail, Keruk Xam Kwatcan/Earth Figures Landscape, and Pacific to Rio Grande Trail Landscape. These cultural landscapes consist of physical marks on the land, both trail marks and natural land patterns, wayside locations where specific songs and other ceremonies are sung or conducted, springs, tanks, and wells, and culturally important plant and animal species. (BLM 2015:III.9-20–III.9-21.)

Cultural Resources

Cultural landscapes are not the exclusive concern of California Native American tribes and tribal communities. The California Deserts TAFA hosts historical-period cultural landscapes in addition to those of tribes. As an example, much of eastern Riverside County contains the remnants of the General George Patton's Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), the largest training ground for American troops during World War II. Comprising tank tracks, tent flats, live-fire maneuver areas, building foundations, camp sites, and airplane crash sites, the DTC/C-AMA has been designated as an NRHP and California Register of Historical Resources-eligible cultural landscape. (Energy Commission 2010:VI.C.16.)

Natural Resources

Some natural resources of concern to Native Americans include plants, animals, minerals, water, and natural settings. Natural resources are used for food, medicine, totem, aesthetic or spiritual purposes. Ensuring the spiritual efficacy of plant, animal, or mineral products requires adherence to proper traditional techniques critical to the perpetuation of indigenous cultures. (BLM 2015:III.9-22.)

An important component of Native American natural aesthetics is the relationship among landforms, skies, and traditional practitioners. Local, intermediate, and distant horizons provide a palpable context within which natural and cultural resources are understood in culturally integrated ways. (BLM 2015:III.9-22.)

Through its work as a partner agency on the DRECP, Energy Commission staff is developing a cultural resources sensitivity model for the DRECP Plan Area to provide a

tool that could allow Energy Commission staff and tribal government staff, renewable energy developers, and other agency personnel to better understand cultural resource sensitivity across the plan area.

Cultural Resources and Advanced Planning

Cultural resources staff at the Energy Commission compiled statistically representative data from the California Historical Resources Information System (CHRIS) and other sources into GIS. Staff applied geospatial models relevant to the distribution of cultural resources in the DRECP Plan Area to the raw data, such that the plan area is spatially ranked according to the variable likelihood to contain cultural resources.

The results can be displayed as a "heat map," in which color gradations represent the degree of cultural resource sensitivity or constraint across the DRECP Plan Area. (Red, for instance, represents areas known to contain numerous cultural resources or where such resources are expected.) Staff is vetting the modeling results with tribes and exploring how this tool can be used to help inform users of potential cultural resources sensitivity for high-level planning without the need for accessing confidential information.

Tribal Input

Those tribes that indicated interest in RETI 2.0 provided Energy Commission cultural resources staff with varied input. Their responses comprise data requests of the RETI 2.0 agencies, requests for additional and continued consultation, interest in tribal energy development, and environmental concerns (including tribal cultural resources). The responses fall into 12 classes.

1) Request for more detailed maps and RETI information: Five tribes.
2) Request for additional and continued consultation: Four tribes.
3) What does RETI 2.0 mean for energy development on tribal lands or specifically for tribal use? Five tribes.
4) Interest in an intertribal energy summit with agencies: One tribe.
5) What is the relationship between RETI 2.0 and the DRECP? One tribe.
6) Transmission project impacts on tribal cultural resources: Three tribes.
7) Concerns about agency follow-through on mitigation measures: Two tribes.
8) Need for better oversight of construction: One tribe.
9) Other environmental issues stem from transmission development (fire, groundwater quality, biological resources): Four tribes.
10) Advice needed on opportunities and mechanisms for tribal engagement on transmission development and consequences for cultural and environmental resources: One tribe.
11) Apprise tribes of changes to RETI 2.0: Two tribes.

12) General preference for reconductoring existing transmission lines over building new transmission lines: One tribe.

Concluding Remarks and Next Steps

This section of the report summarized tribal and cultural resources planning concerns in the RETI 2.0 planning area. CNRA and Energy Commission staff's tribal consultation efforts resulted in much input from tribes. (See previous subsection, *Tribal Input*.) The information communicated to staff relates to future transmission and other renewable energy development planning, future project-specific development and impact assessment, and consultation with CNRA and Energy Commission staff.

In the future transmission and renewable energy development planning category, staff will continue to consult with tribes and tribal communities, sharing more detailed information and maps as renewable energy planning advances. Staff is planning an intertribal summit, which might be conducive for discussing matters such as energy development on tribal lands, among other topics. Concerns related to future project-specific development and impact assessment—such as the impacts of transmission projects on tribal cultural resources, agency oversight and follow-through on mitigation measures, and transmission project effects on noncultural resources—will be discussed among tribes and state energy agencies on a project-by-project basis.

This brief review of tribal concerns and cultural resources issues pertinent to RETI 2.0 reveals a few common threads among the present planning process and previous planning initiatives within the RETI 2.0 TAFAs.

1. A recurring theme concerning California Native American tribes and tribal communities is that of frequent, early, and meaningful consultation between tribal entities and agencies.
2. Cultural resources identification efforts need to take into account traditional tribal land use and values, such that cultural landscapes and other cultural resources that have low or no archaeological presence on the landscape can be identified.
3. A third theme, related to the first, is apprising tribes of existing mechanisms and opportunities for engagement in advanced and project-specific planning.
4. Reconductoring existing transmission lines to the greatest feasible extent as one means of reducing impacts on natural, cultural, and tribal resources.[20]

Energy Commission staff observes that successful tribal consultation that respects the time and fiscal constraints facing tribes ensues from early, earnest consultation that includes rapid follow-up with specific or project-level information. In the context of RETI 2.0 planning, such follow-up would comprise a map or maps depicting potential transmission corridors. While early tribal consultation, even at the conceptual planning

20 *Reconductoring* a transmission line involves replacing the existing conductors with newer conductor designs with better design features and/or increased current-carrying capacity.

level, is necessary, often the best use of tribes' time and resources (and maximum benefit of the consultation) comes from providing tribes with specific information to which they can respond.

County Outreach Process and Land-Use Information

Through experiences with planning large landscapes for renewable energy, the state has learned that local land-use information can enhance the understanding of how and where future renewable energy and transmission may develop. RETI 2.0 included outreach to county governments within TAFAs to understand how local land use may affect development. The RETI 2.0 work plan, presented at the November 2, 2015, RETI 2.0 Joint Agency Workshop, indicated that RETI 2.0 would reach out to counties to gather county land-use information.[21]

The RETI 2.0 county outreach is based on existing relationships that the Energy Commission has with counties, especially those counties in the desert where the Energy Commission has worked with counties to permit renewable facilities and to develop and implement the DRECP. Using the TAFAs to prioritize outreach, RETI 2.0 developed a contact list of county planning staff from 28 counties. Figure 4 shows the TAFAs and counties that RETI 2.0 has targeted.

RETI 2.0 initially reached out to the 28 county planning staff in June 2016 through email to introduce RETI 2.0, schedule an overview webinar for counties, and to make counties aware of a July 21, 2016, ELUTG public meeting focusing on county land-use planning and RETI 2.0. In late June 2016, RETI 2.0 held two identical webinar meetings, about an hour each, specifically targeted to those 28 counties to describe RETI 2.0 and to request certain types of information from county planners.[22] Between both webinar meetings, eight counties participated in the informational sessions, and RETI 2.0 shared some preliminary questions to gather county information with the county webinar participants.[23] These preliminary questions formed the basis for final questions presented to counties at a July 21, 2016, ELUTG public meeting.[24]

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21 RETI 2.0 is a nonregulatory planning effort; however RETI 2.0 does incorporate some regulatory information, like county land-use designations. Where RETI 2.0 includes county information, it does so to demonstrate how such information might be used in future decision making for renewable energy and transmission infrastructure. RETI 2.0 presents what is publicly available from county governments and makes no determinations about the applicability of land-use rules and policies to any renewable energy or transmission project.

22 For a copy of the webinar presentation see http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN212059_20160701T152449_Environmental_and_Land_Use_Technical_Group_Outreach_to_County_P.pdf.

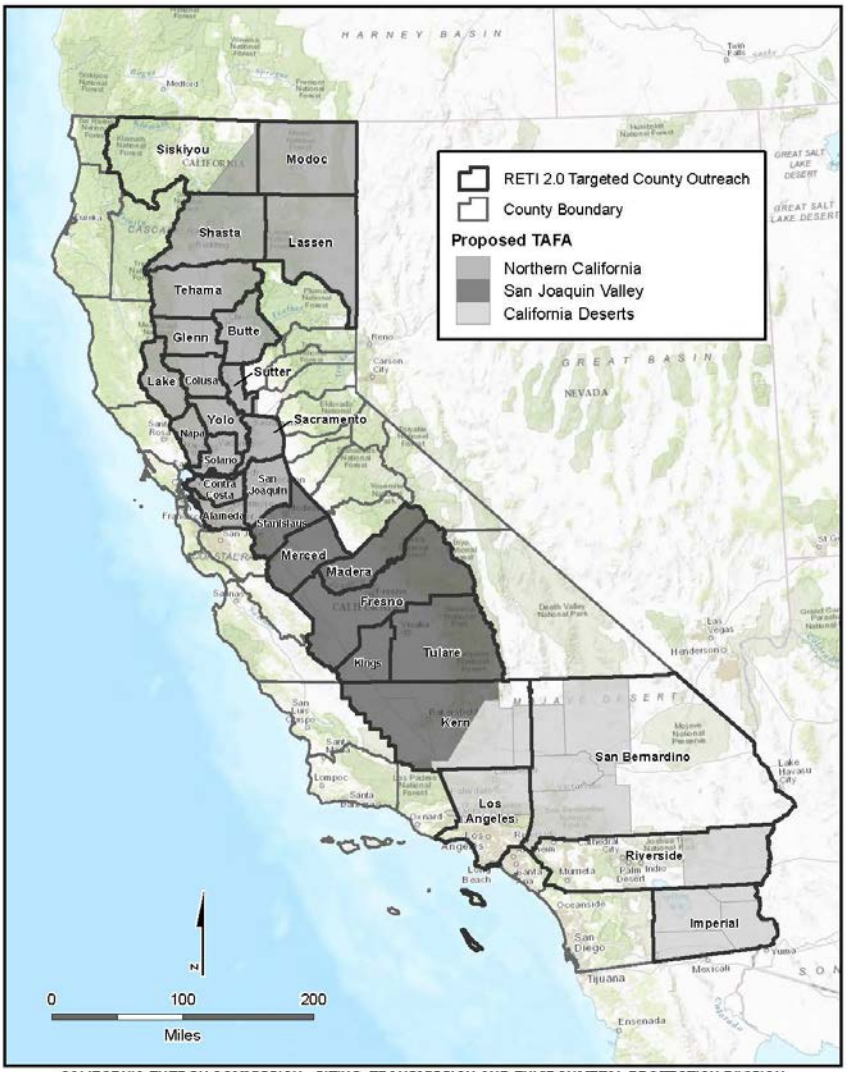
23 The counties of Imperial, Inyo, Kern, Modoc, Riverside, San Bernardino, and Tehama participated in the informational webinar meetings.

24 See slide 17 of the RETI 2.0 July 21, 2016, presentation to review the county outreach questions. http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN212376_20160721T103007_Brian_Turner_Presentation_for_ELUTG_County_Workshop.pdf

On July 21, 2016, the ELUTG held a public meeting focused on gathering county land-use information for renewable energy and transmission development. The counties of Imperial, Kern, Yolo, San Bernardino, and Lassen presented at the public meeting. The information presented by counties during the public meeting is integrated throughout this report.

In addition to gathering county information at the ELUTG public meeting, RETI 2.0 worked directly with counties through phone calls and email messages to gather additional county input, and information gathered from those conversations are captured where appropriate throughout this report.

Figure 4: Priority Counties for RETI 2.0 Outreach



California Desert Counties

A significant amount of renewable energy planning and development has occurred in the California desert, and the Energy Commission collaborates with counties in a variety of ways to plan and develop renewable energy, including the Energy Commission's work with counties on the DRECP, as well as supporting counties with two phases of Renewable Energy and Conservation Planning Grants (RECPG). Within the desert counties, a significant amount of information is being developed that can add certainty to where renewable energy projects may develop.[25]

This section of the report describes county information for those counties within the two desert TAFAs shown above in Figure 4. Not all of the counties shown in the desert TAFAs participated directly in the RETI 2.0 process. The counties of Imperial, Inyo, Kern, and Los Angeles provided geographic information that is described in each of their sections below. For a detailed description of county planning for renewable energy and transmission development in the DRECP area, see the individual county Web pages and fact sheets on the DRECP website: http://www.drecp.org/counties/.

Imperial County

Imperial County participated as a panelist at the March 2016 RETI 2.0 Plenary Group Meeting and presented at the July 2016 ELUTG public meeting.[26] During both presentations, the county shared its amendments to the county general plan to promote renewable energy and transmission development in the county. The county approved an update to its geothermal/alternative energy and transmission element in September 2015 and revised its existing geothermal ordinance of the county land use ordinance to implement the amended general plan element, including a renewable energy overlay zone.[27] The county also presented its update to the county conservation and open space element of its general plan. Both general plan amendments were supported through the Energy Commission's RECPG effort.[28] During its presentations to RETI 2.0, the county emphasized that renewable energy development brings economic and environmental

25 See the RECPG Web page for more information about the county planning grant program: http://www.energy.ca.gov/renewables/planning_grants/.

26 The County of Imperial was a panelist at the March 16, 2016, RETI 2.0 Plenary Group meeting and presented at the July 21, 2016, ELUTG public meeting. http://www.energy.ca.gov/reti/reti2/documents/.

27 See the Imperial County GP element here: http://icpds.com/CMS/Media/Renewable-Energy-and-Transmission-Element-2015.pdf.

28 See the Imperial County RECPG update http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN212370_20160720T151656_Imperial_County_Planning_Grant_Handout.pdf.

benefits to Imperial County, a portion of the state with an unemployment rate that is five times greater than the U.S. unemployment rate.[29]

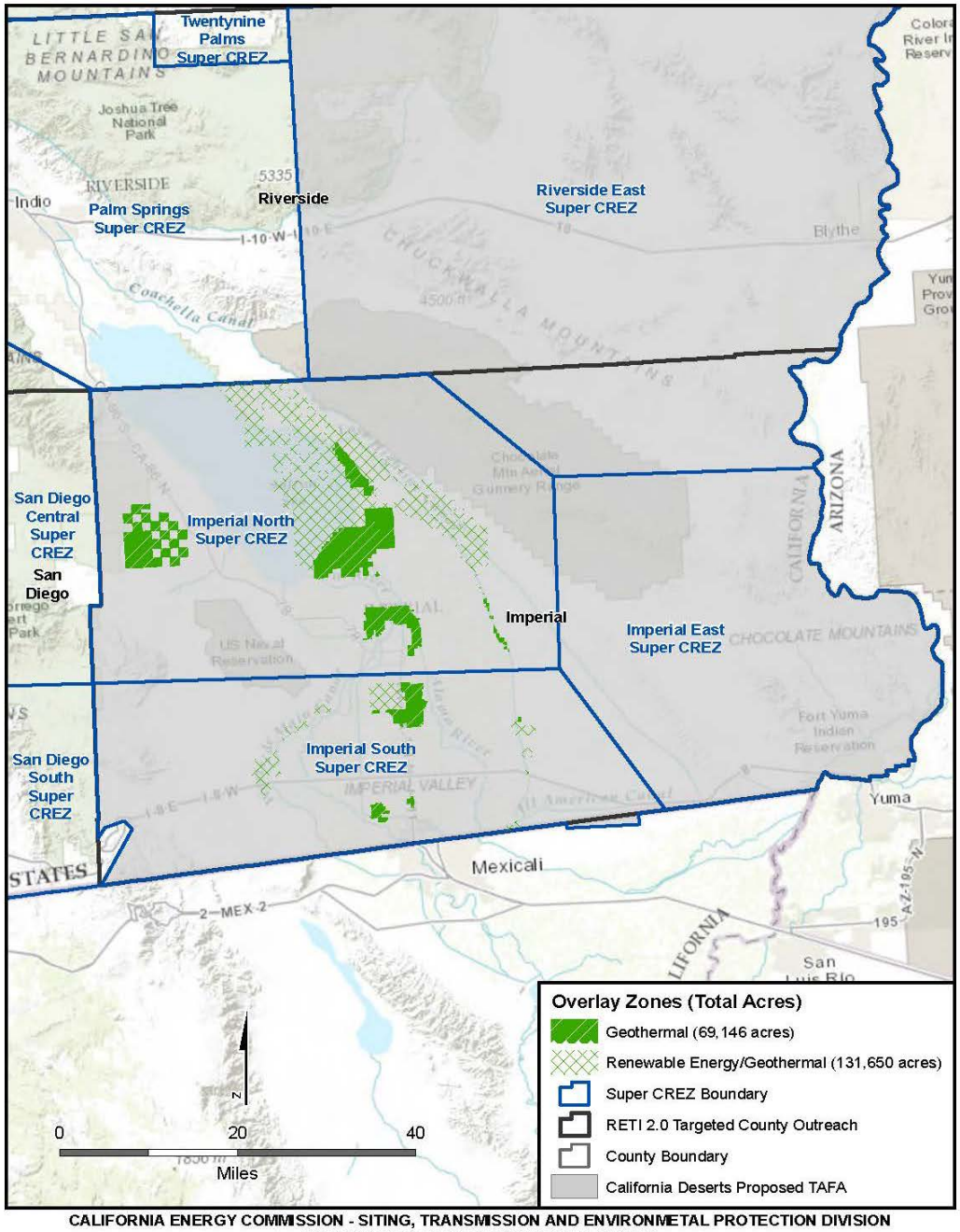
Figure 5 shows Imperial County's renewable energy overlay zone, the areas in which the county is encouraging renewable energy development.[30] The renewable energy overlay zone is concentrated in areas that the county has determined to be the most suitable for developing renewable energy facilities while minimizing the impact to other established uses. The overlay zones cover 200,796 acres and can accommodate a range of technologies (69,146 acres specifically for geothermal resources and 131,650 acres for a variety of renewable energy technologies).

The renewable energy overlay zones are much smaller than, but closely aligned with, the DFAs on private land within the county from the *2014 Draft DRECP*. The renewable energy overlay zones are smaller than the private land DFAs from the *Draft DRECP* because they reflect how the county refined the draft DFAs to reduce its footprint in a way that protects additional resources important to the county. For the ELUTG report, the county renewable energy overlay zones are the land-use designations being reported to describe development potential on private lands in Imperial County.

29 See Imperial County presentation at the July 21, 2016, ELUTG public meeting: http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN212369_20160720T151529_Imperial_County_Presentation.pdf.

30 Please see the Imperial County's website for additional information on how the county reviews development requests: http://www.icpds.com/?pid=549.

Figure 5: Imperial County Renewable Energy Overlay Zone



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: California Energy Commission & CPUC

RETI 2.0

Inyo County

As described, the initial RETI 2.0 desert TAFA did not include the Inyo/Kern Super Competitive Renewable Energy Zone (CREZ), which meant that no portions of Inyo County fell into a RETI 2.0 TAFA. In response to Kern County's request to add the Indian Wells Valley area to RETI 2.0, ELUTG added the Inyo/Kern Super CREZ to the report,

which encompasses Indian Wells Valley. As shown in Figure 6, the Inyo/Kern CREZ includes the southwestern portion of Inyo County and the northwestern portion of San Bernardino County

Inyo County attended public meetings during RETI 2.0; however, the county and RETI 2.0 did not directly coordinate because the county did not have land in a TAFA and Inyo County has completed extensive planning for renewable energy development. The Energy Commission and Inyo County have worked together to plan for renewable energy, both through the DRECP and the county's local planning. As such, the Energy Commission has current information on the status of renewable energy planning in Inyo County.

In March 2015, Inyo County finalized a renewable energy general plan amendment, which identified seven solar energy developing areas (SEDAs) in three solar energy groups within the county where utility-scale solar PV is allowed to be developed.[31] The county set a total developable acreage area for each SEDA and a maximum cap of 850 MW of development within all three solar energy groups.

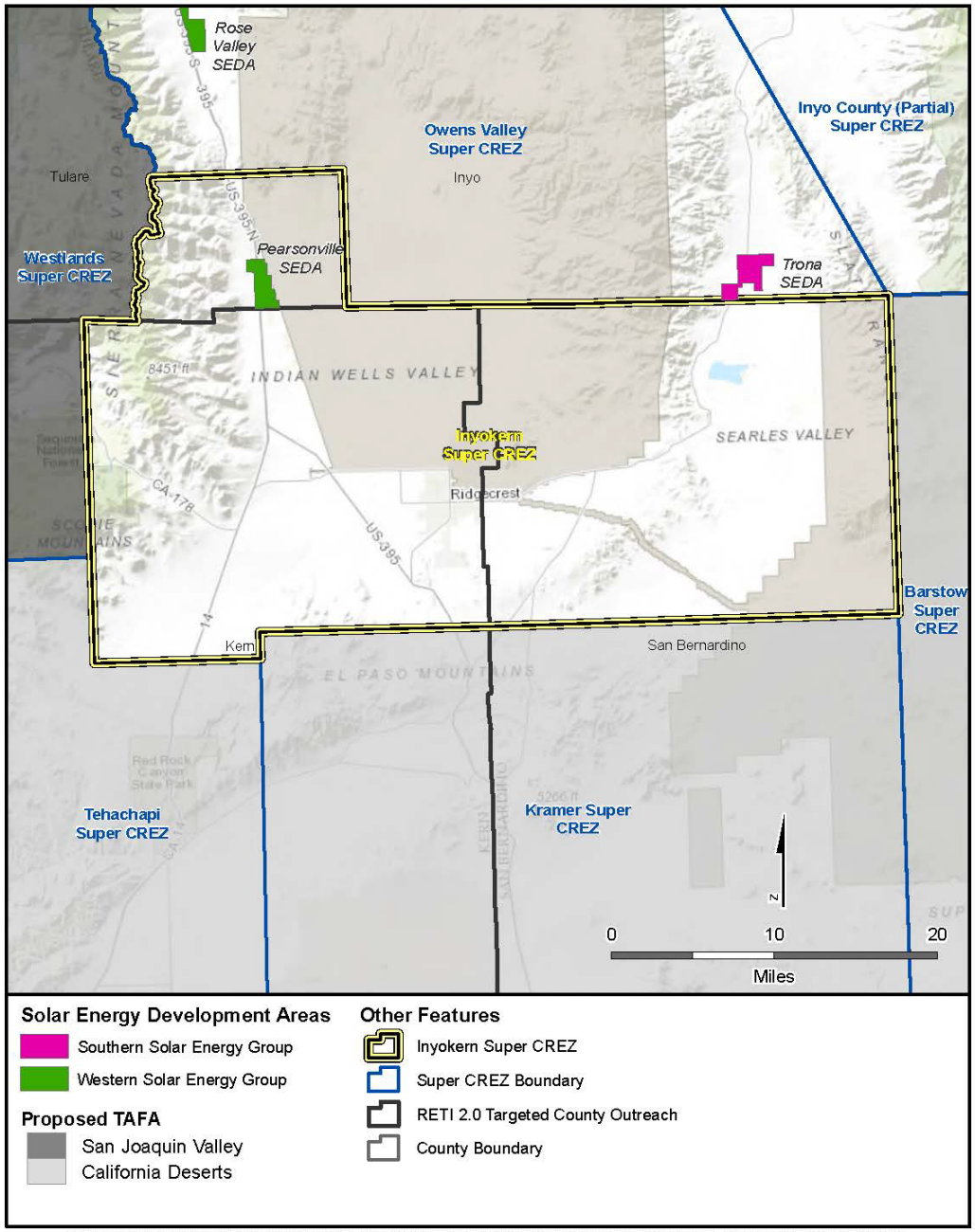
- Western Solar Energy Group has a 250-MW allowable capacity cap.
    - Laws SEDA is 120 acres.
    - Owens Lake SEDA is 1,500 acres.
    - Rose Valley SEDA is 600 acres.
    - Pearsonville SEDA is 600 acres.
    - Owens Valley Study Area is not a SEDA, and additional planning work is being conducted to determine the appropriateness of a SEDA designation. 1,500 acres.
- Southern Solar Energy Group has a 100-MW allowable capacity cap.
    - Trona SEDA is 600 acres.
- Eastern Solar Energy Group has a 500-MW allowable capacity cap.
    - Charleston View SEDA is 2,400 acres.
    - Sandy Valley SEDA is 600 acres.

Figure 6 shows the SEDAs throughout the southern portion of the county, organized by solar energy group. As shown, the Inyo/Kern CREZ portion of Inyo County includes the Pearsonville SEDA from the Western Solar Energy Group, and the Trona SEDA from the Southern Solar Energy Group is located just outside the border of the Inyo/Kern Super CREZ. The total number of developable acres in the Pearsonville SEDA is 600 acres and

31 See Table 3-1 from the Inyo County Errata to the final renewable energy and general plan amendment for a description of capacity and acreage caps for SEDAs: http://www.inyoplanning.org/general_plan/documents/FinalREGPA33015.pdf.

600 acres in the Trona SEDA. The SEDAs in the rest of Inyo County are outside the RETI 2.0 TAFAs.

Figure 6: Inyo County Solar Energy Development Areas



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: Inyo County & California Energy Commission

RETI 2.0

Los Angeles County

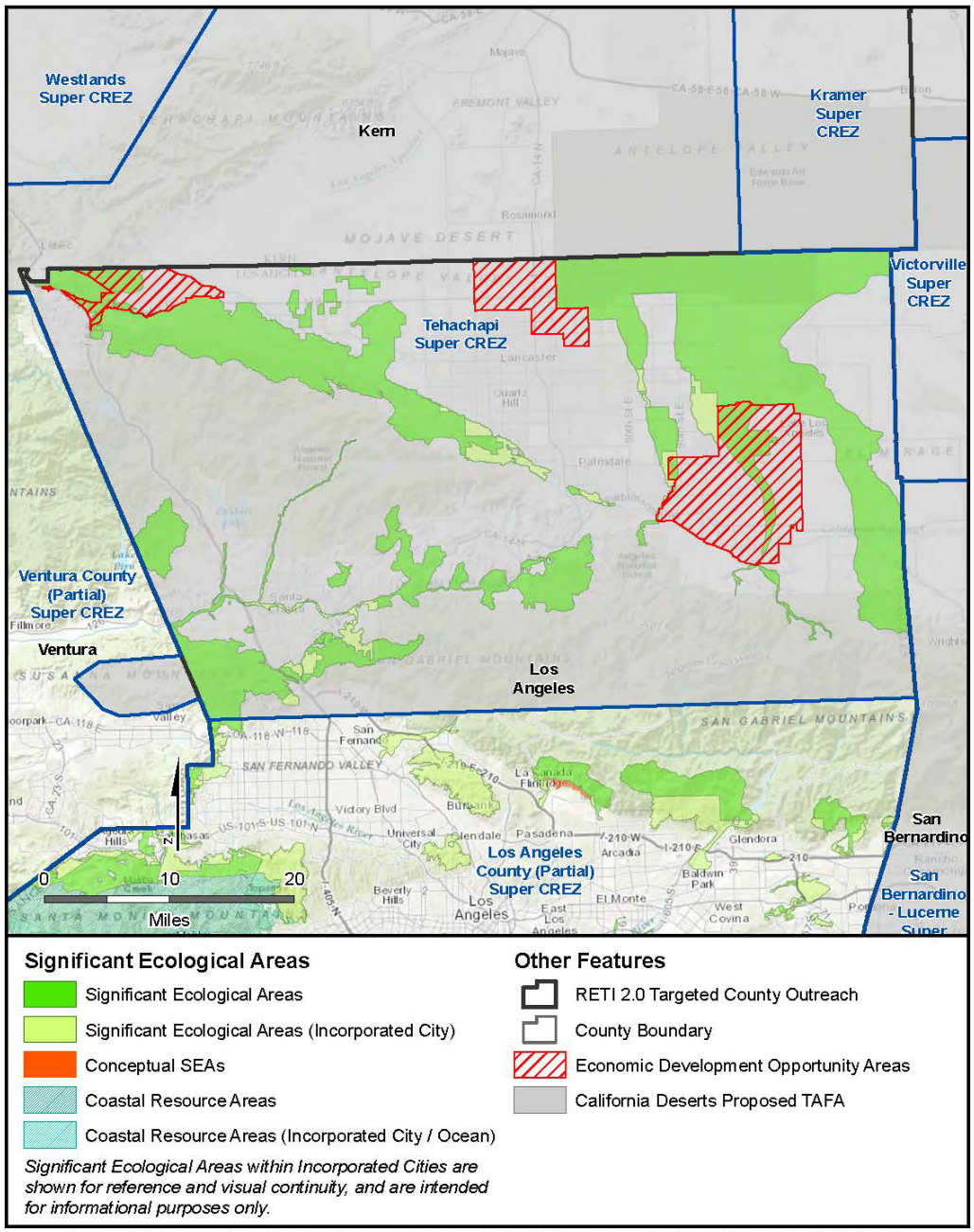
In a phone call on September 20, 2016, Los Angeles County planning staff members shared their county's experience with renewable energy and transmission development and described current land use planning and policies for renewable energy transmission in the county. On July 14, 2015, the Los Angeles County Board of Supervisors indicated its intent to adopt a renewable energy ordinance (REO) and certified the environmental document for the REO. Los Angeles County planning staff indicated that the county is conducting a final technical and legal review of the REO and plans to present the REO to the board for approval before the end of 2016. During the public hearing for the REO at the July 14, 2015, board meeting, the board also introduced a prohibition of utility-scale wind energy within the unincorporated portions of the county.

The county's REO will guide the future development of renewable energy in the unincorporated portions of the county. The REO, once it takes effect, will amend the Los Angeles County planning and zoning code (Title 22 of the L.A. County Code) with a new set of definitions, procedures, and standards for review and permitting of small-scale wind and solar energy systems and utility-scale solar systems.

In addition to the REO, the Antelope Valley Plan, for the northern portion of Los Angeles County, will influence how renewable energy develops in the Antelope Valley, a part of the desert TAFA with existing energy development and future commercial interest. According to Los Angeles County staff, the Antelope Valley Plan includes Policy COS 13.9, which prohibits ground-mounted utility-scale renewable energy facilities within SEA and economic opportunity areas (EOA). The Antelope Valley Plan describes areas in the valley where ground-mounted utility-scale renewable energy facilities are allowed with a conditional use permit, such as the county's heavy agricultural, commercial, and industrial zones.

Figure 7 shows the SEA and EOA designations within the Antelope Valley Plan in Los Angeles County where the county's land-use rules do not allow renewable energy development.

Figure 7: Los Angeles County Antelope Valley Plan Area SEA and EDO Designations



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION

SOURCE: http://egis3.lacounty.gov/dataportal/2015/11/19/significant-ecological-areas-sea/, http://egis3.lacounty.gov/dataportal/2015/06/25/economic-opportunity-areas/ & California Energy Commission

RETI 2.0

Kern County

Kern County officials also presented at the July 2016 ELUTG public meeting and shared their experiences and made recommendations for planning for future renewable energy development. During the ELUTG meeting the Kern County Planning Director updated the ELUTG that the county had permitted more than 11,000 MW of renewable energy and is looking to permit another 5,000 MW in the future.

Kern County summarized lessons learned, offered recommendations for ways that RETI 2.0 can work with counties to improve planning for renewable energy and transmission, and made a specific request to include the Indian Wells Valley in the RETI 2.0 analysis.

Incorporate Generator Interties Into Transmission Planning to Reduce Interconnection Congestion

Kern County has learned that developers can attempt to lock up land entrances to substations in areas with commercial development interest. Kern County recommends extending transmission planning into local intertie connections when substations are planned. Planning should be coordinated with local governments so that projects are able to "plug and play" into the grid. Corridors for interties should be prioritized with county roads first, dirt roads with public access easements second, and private land only if needed. The county recommends that RETI 2.0 explores what other counties are doing to plan for intertie corridors.

Incorporate Energy Storage Into Planning

Kern County is seeing growing interest in developing energy storage in the county, and the county is beginning to include energy storage within its renewable energy planning. Kern County recommends that RETI 2.0 consider how energy storage is incorporated into infrastructure planning.

Incorporate Groundwater Sustainability Into Energy Infrastructure Planning

Kern County also described its work to address critically overdrafted water basins in the San Joaquin Valley and the Indian Wells Valley. The county recommends that RETI 2.0 map the California Department of Water Resources Bulletin 118 critically overdrafted water basins because as new water plans are developed by local agencies to rebalance water use, it is possible that lands in agricultural production today will not be in the future and "ag land without water is called dirt," which might make these types of lands attract renewable energy development.[32]

In addition to describing a more general approach to including groundwater sustainability planning within broader infrastructure planning, Kern County also made a specific request to include the Indian Wells Valley in RETI 2.0. The county also

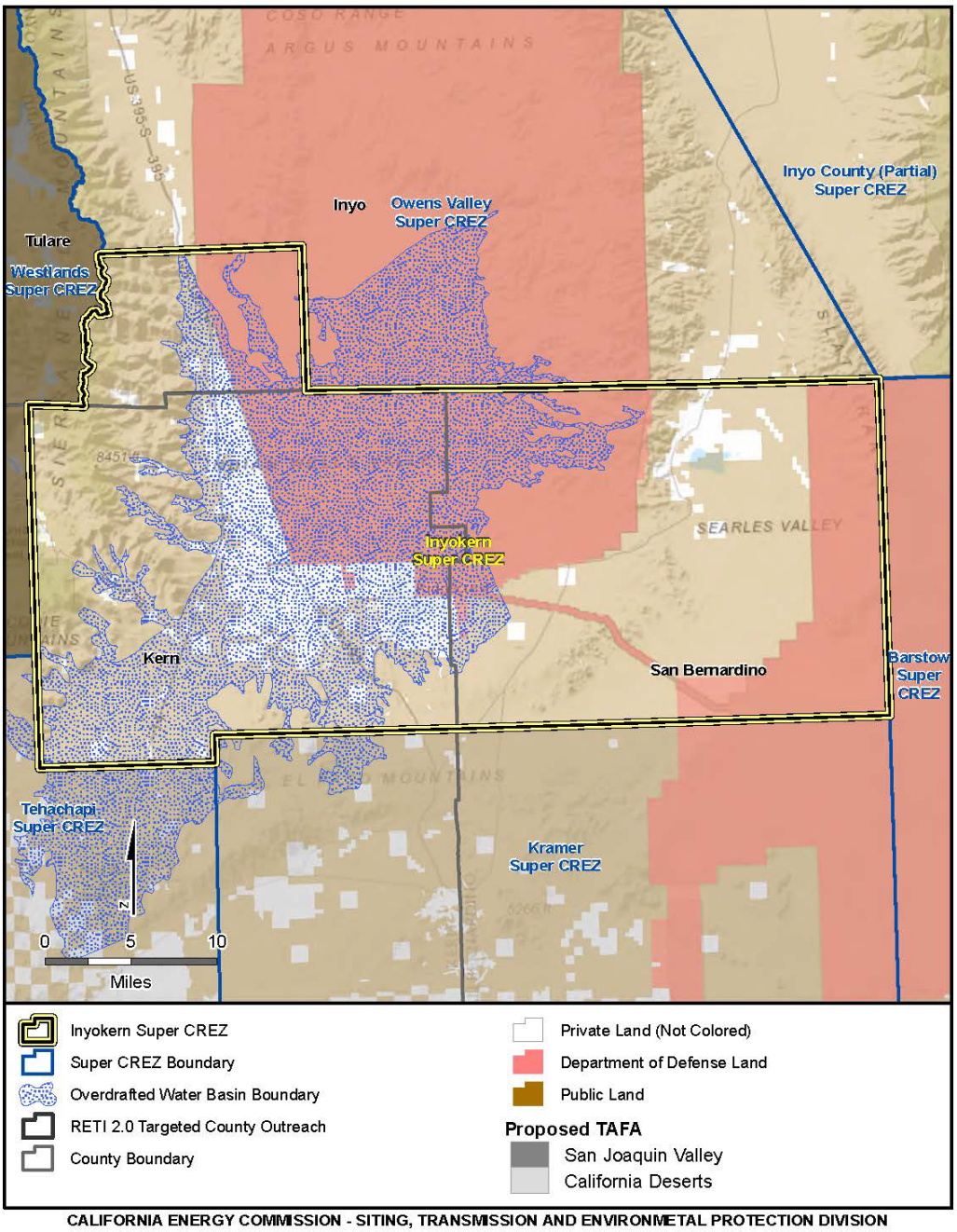
32 July 21, 2016, ELUTG workshop recording is available at http://www.energy.ca.gov/reti/reti2/documents/index.html.

submitted a comment letter to RETI 2.0 with this same request.[33] In the Indian Wells Valley, the county recently changed land uses to address overdraft concerns, and the county sees utility-scale solar energy as a possible land use solution to realize groundwater sustainability in the Indian Wells Valley. As described, the initial RETI 2.0 desert TAFA did not include the Inyo/Kern Super CREZ, which encompasses the Indian Wells Valley; however, the Inyo/Kern Super CREZ is included in ELUTG's report within the desert TAFA. The Indian Wells Valley offers an interesting opportunity for additional planning beyond RETI 2.0 because the valley is at a crossroads of implementing groundwater policy, developing renewable energy, and conserving important species and resources.

Figure 8 shows the Inyo/Kern CREZ of the desert TAFA along with private land within the Indian Wells Valley. The map also shows BLM LUPA designations, such as DFAs and conservation lands as well as Department of Defense lands within the CREZ. The map also includes additional areas outside the BLM land where renewable energy is not allowed to be developed. According to Kern County, there are 223,000 acres of private land within the Indian Wells Valley, mostly within the overdrafted water basin, surrounded by the BLM and Department of Defense lands.

33 In addition to Kern County's participation at the July 2016 ELUTG meeting, the county submitted a comment letter to the RETI 2.0 docket describing its request for the Indian Wells Valley: http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN211992_20160627T160721_Kern_County_Planning__Natural_Resources_Comments_Request_for_Tr.pdf.

Figure 8: Indian Wells Valley and Inyo/Kern Super CREZ



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMETAL PROTECTION DIVISION
SOURCE: California Energy Commission, Bureau of Land Management, California Department of Water Resources

RETI 2.0

San Bernardino County

San Bernardino County also participated in the July 21, 2016, ELUTG public meeting and updated the ELUTG that the county was initiating a 60-day public review period on a draft renewable energy and conservation element for its county general plan. County staff expects to present the draft element to the county's planning commission in

November 2016. The county is developing the element as a criteria/standards-based land-use plan and is not identifying areas specifically for renewable energy. Because the county is still in the public review process for its general plan element, the ELUTG is not including specific land-use information from San Bernardino County.[34]

In addition to San Bernardino County planning staff's participation at the July 2016 ELUTG public meeting, the San Bernardino County Board of Supervisors submitted a letter to RETI 2.0 in response to RETI 2.0's outreach to counties.[35] In its comment letter, the board requested that RETI 2.0 review the county's position paper on the draft DRECP[36] and the Board's Resolution 2016-20, which states the county's position on the DRECP LUPA. Within its letter, the board summarized its positions related to siting of utility-oriented renewable energy generation facilities (bold text indicates emphasis on central points added by the board in its letter):

1) Protect desert community values and economic development opportunities by:
   - **a)** Focusing renewable energy development on private land in **areas that have marginal economic development potential, have been previously disturbed, or have been contaminated, in addition to federal land in the county.**
   - **b) Focusing mitigation and conservation on federal land in the county.**
   - **c) Minimizing mitigation and conservation on private land in the county.**
2) Encourage distributed generation that addresses local needs while allowing excess energy to be sold to the grid
3) Maintain county land use authority
4) Retain access to and availability of mineral resources in the county
5) Seek means to improve economic benefits of renewable energy development to the County of San Bernardino

The board also restated its "general and tentative" support for five of the DFAs in the DRECP LUPA: North of Kramer Junction, Trona, Hinkley, El Mirage, and Amboy. The board emphasizes that further evaluation of all DFAs will continue through the county's development of its renewable energy element, and that upon further analysis by the county, its tentative support for these five DFAs may change.

The letter from the board emphasizes that RETI 2.0 rely on the county's previous input to the DRECP and that the Energy Commission "and its RETI 2.0 affiliates to carefully

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34 See the San Bernardino County website to learn more about its general plan update: http://cms.sbcounty.gov/lus/Planning/RenewableEnergy.aspx.

35 http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN212509_20160729T143023_Josh_Candelaria_Comments_County_of_San_Bernardino_Comments_Re_R.pdf.

36 See the DRECP website to access the San Bernardino County's position paper on the draft DRECP: http://www.drecp.org/draftdrecp/comments/San_Bernardino_County_comments_2015-02-20.pdf.

consider our expressed positions, priorities and concerns in the process of defining future transmission corridors and refinement of DFA locations."

Northern California Counties

This section of the report describes county information for those counties within the Northern California TAFA shown earlier in the section in Figure 4. Not all of the counties shown in the Northern California TAFA participated directly in the RETI 2.0 process. The counties of Lassen, Modoc, Yolo, and Tehama did provide some information, which is described in each of the sections below. While RETI 2.0 was able to gather some information from Northern California counties, the information is incomplete, and counties with high-value, location-specific renewable resources, like wind and geothermal energy, should continue to be evaluated to better understand how local land-use planning may affect development potential.

Lassen County

Lassen County planning staff participated in a phone call on July 18, 2016, with RETI 2.0 and participated in the July 2016 ELUTG public meeting. County staff indicated that it has experienced commercial interest in developing wind energy on both public and private lands, though the county has not received any permit requests for projects on private land. The county has some existing geothermal resource development and described additional developer interest in expanding development of geothermal resources. The county indicated that it is considering an update to its 1993 energy element of the general plan to promote additional renewable energy development and clarified that wind energy is allowed in many zoning districts within the county with a use permit.[37] [38]

Wind development land-use constraints in the county tend to be related to biological resources, such as sage grouse habitat and eagle populations, as well as visual resources such as scenic areas near Eagle Lake. In addition to potential land-use constraints to developing renewable energy, according to the county, transmission capacity and ability to transmit power out of the county is a major constraint to developing renewable energy in Lassen County.

Yolo County

Yolo County planning staff also participated in a phone call on July 18, 2016, with RETI 2.0 and participated in the July 2016 ELUTG public meeting. County staff described its planning processes and its efforts to develop a comprehensive wind energy ordinance to

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37 Lassen County General Plan: http://old.lassencounty.org/govt/dept/planning_building/planning_division/general_area_plans.asp.

38 See Table 2-3 on page 54 of the Lassen County Energy Element: http://old.lassencounty.org/govt/dept/planning_building/planning_division/documents/ENERGYELEMENTpublishonwebsite.pdf.

prepare for all scales of wind energy development.[39] The county indicated that it had much less wind energy development than what it had anticipated, and most wind energy development is distributed scale (1 to 2 MW) and not utility scale. The county described its experience working with a developer and the California Department of Fish and Wildlife (CDFW) to begin scoping the permit and environmental review process for a potential utility-scale wind energy project with 200 turbines on 40,000-50,000 acres in the northern portion of the county near Colusa County. According to the county, the project did not progress into the permit process before the developer "pulled the plug" on the project and dropped commercial interest in the project.

The county has limited experience to share regarding utility-scale renewable energy development and land use. The county did emphasize, however, that its experience with permitting small distributed-scale wind energy (1 to 2 MW) could apply to understanding utility-scale development, especially those distributed projects that require in-depth environmental review. The county also described potential conflicts between renewable energy, such as solar PV, and agricultural resources, especially for those lands under Williamson Act contracts.[40] According to the county, nearly two-thirds of land in the county is under Williamson Act contract, and, as described by county staff, the county takes "ag land preservation very seriously" and does "not cancel Williamson Act contracts." So, developing solar on lands with Williamson Act contracts would likely require developers to mitigate any loss of Williamson Act land because cancellation is not an option.

The county also clarified that the Yolo Habitat Conservancy is preparing a Yolo Habitat Conservation Plan/Natural Community Conservation Plan and Yolo Local Conservation Plan that will affect development in the county, including renewable energy and transmission.[41]

Modoc County

In a phone call on July 15, 2016, Modoc County staff shared its recent experiences with renewable energy and transmission development and described the county's priorities. According to the county, due to a lack of available transmission capacity and long

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39 http://www.yolocounty.org/home/showdocument?id=15796.

40 The California Legislature passed the Williamson Act in 1965 to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. The vehicle for these agreements is a rolling-term 10-year contract (in other words, unless either party files a "notice of nonrenewal," the contract is automatically renewed for an additional year.). In return, restricted parcels are assessed for property taxes at a rate consistent with the actual use, rather than potential market value. (See http://www.conservation.ca.gov/dlrp/lca/basic_contract_provisions/Pages/LCA_QandA.aspx.)

41 http://www.yolohabitatconservancy.org/.

distances to electric load, Modoc County has experienced less utility-scale renewable energy development interest than other portions of the state. In Modoc County, renewable energy development and development interest have primarily been distributed-scale projects smaller than 20 MW, including geothermal and solar. Modoc County expressed interest in working closer with the state to plan for renewable energy and transmission development.

Tehama County

Tehama County planning staff followed up with RETI 2.0 through email to share its experiences with renewable energy development and land use. Most of the county's experience is with distributed-scale renewable energy, mostly solar PV. According to the county, RETI 2.0 should revise renewable energy capacity estimates for Northern California down by one-third because there is not enough electric load in the county to consume the capacity from the RETI 2.0 estimates for the Northern TAFA. The county also indicated that 80 percent of the land assumed by RETI 2.0 as potential solar and wind energy development in Tehama County is under Williamson Act contract.

Concluding Remarks and Next Steps

RETI 2.0 was able to gather information from several counties in the northern and southern portion of the state, though the information for all 28 counties, especially for those counties in the San Joaquin Valley TAFA area, is incomplete. As previously shown, RETI 2.0 county outreach included counties from the Desert, San Joaquin Valley, and Northern California TAFAs; however, local land-use information was not available from all the counties. To fully describe how land uses throughout the state may affect renewable energy development, additional land-use information representing counties not described in this report, especially those counties in the San Joaquin Valley and portions of Northern California, should be included.

Furthermore, it is important to distinguish between the two types of county land-use information that RETI collected. As presented in this section, some county land-use information can be displayed geographically, like the renewable energy overlay zone in Imperial County. Other county land-use information cannot be easily displayed geographically because the land-use rules and policies are criteria-based, like those being contemplated in San Bernardino County. For planning new renewable energy and transmission, it is simpler to present land uses geographically because the information can be easily incorporated with other geographic information, like transmission system information, that may affect how and where renewable energy projects develop. Nevertheless, not all counties plan for renewable energy by designating certain areas or geographies for development because some counties find that a criteria-based approach works better for regulating renewable energy development within their county. To fully understand how county land-use information may affect development, it is important to understand that counties plan for and regulate renewable energy development

differently. Also, some information is simple to present on maps, while other information is better presented in text form.

Summary and Next Steps for Environmental and Land Use Technical Group Report

The ELUTG had three work tracks, and throughout the RETI 2.0 the ELUTG worked with a wide variety of stakeholders and Native American tribes. The environmental track focused on assembling and presenting planning-level analysis of biological and other related environmental data relevant to TAFAs. ELUTG also focused on consultation and outreach with Native American tribes regarding TAFAs to gather input on tribal land and cultural resource concerns. Moreover, ELUTG worked with county planners to gather and share input from counties, as well as gather geographic information regarding local land-use planning for renewable energy development. This ELUTG report describes the work from these three ELUTG tracks, and the intent of this report is to provide environmental and land-use information to inform the final RETI 2.0 Report.

Each ELUTG track made progress to better understand the environmental and land-use issues within TAFAs by gathering and presenting data and information that may affect future renewable energy and transmission development. Some of this information was gathered from existing sources, like environmental information from the *DRECP*, while some information presented by the ELUTG is new, including input from Native American tribes and information from counties. In addition to assembling environmental and land-use information, the environmental track initiated development of a spatial tool--the environmental report writer, which can improve infrastructure development decisions.

This ELUTG report is being presented as an input for the final RETI 2.0 report. As such, this is the final ELUTG report. Any comments that are submitted to the ELUTG regarding this report may help inform how the environmental and land-use information is used to prepare the final RETI 2.0 report.

Acronyms

BLM	—	United States Bureau of Land Management
California ISO	—	California Independent System Operator
CDFW	—	California Department of Fish and Wildlife
CBI	—	Conservation Biology Institute
CEQA	—	California Environmental Quality Act
CHRIS	—	California Historical Resources Information System
CNRA	—	California Natural Resources Agency
CPUC	—	California Public Utilities Commission
CREZ	—	Competitive Renewable Energy Zones
DFA	—	development focus areas
DRECP	—	*Desert Renewable Energy Conservation Plan*
DTC/C-AMA	—	Desert Training Center/California-Arizona Maneuver Area
EJ	—	environmental justice
EIS	—	environmental impact statement
ELUTG	—	Environmental and Land Use Technical Group
EOA	—	Economic Opportunity Area as defined by Los Angeles County
EPR	—	Environmental Performance Report
GIS	—	geographic information system
IEPR	—	*Integrated Energy Policy Report*
LUPA	—	land use plan amendment
MW	—	megawatt
NRHP	—	National Register of Historic Places
PAD-US	—	Protected Areas Database of the United States
PV	—	photovoltaic
REAT	—	Renewable Energy Action Team
RECPG	—	Renewable Energy and Conservation Planning Grants
REO	—	Renewable Energy Ordinance as defined by Los Angeles County
RPS	—	Renewables Portfolio Standard
RETI	—	Renewable Energy Transmission Initiative
SEA	—	Significant Ecological Area as defined by Los Angeles County
SEDA	—	solar energy development areas as defined by Inyo County
SJVS	—	San Joaquin Valley Solar
TAFA	—	Transmission Assessment Focus Area
TTIG	—	Transmission Technical Input Group
U.S. BLM	—	United States Bureau of Land Management

VPL — variance process lands

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