



**AGENDA REQUEST FORM**  
BOARD OF SUPERVISORS  
COUNTY OF INYO

For Clerk's Use Only: AGENDA NUMBER
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- Consent     Departmental     Correspondence Action     Public Hearing  
 Scheduled Time for     Closed Session     Informational

**FROM:** Inyo County Planning Department

**FOR THE BOARD MEETING OF:** June 14, 2016

**SUBJECT:** Renewable Energy Transmission Initiative 2.0

**DEPARTMENTAL RECOMMENDATION:** Receive a presentation from staff regarding the Renewable Energy Transmission Initiative 2.0 and provide direction.

**SUMMARY DISCUSSION:** In August of last year the California Energy Commission (CEC), California Public Utilities (CPUC), and California Independent System Operator (CalISO) initiated the Renewable Energy Transmission Initiative (RETI) 2.0.<sup>1</sup> This new planning effort – a follow-up to the 2008 RETI (now known as RETI 1.0) – is intended to help achieve the State's current climate and policy goals, a variety of legislative proposals, and the Governor's Executive Order B-30-15 that calls for a 40 percent reduction in greenhouse gas (GHG) emissions below 1990 levels by 2030. Two elements to achieve these goals include (1) producing 50 percent of the State's electricity from renewable resources and (2) electrifying the vehicle fleet, which in turn will require new investments in transmission. The schedule is focused on foundational work in early 2016, with more detailed discussions of resource/transmission combinations occurring now, and a final report scheduled for later in 2016. It appears as if preliminary recommendations may begin to form in late June.

Late last year a Plenary Group and two subcommittees were formed to provide input to the CEC, CPUC, and CalISO, and Brian Turner was designated as the RETI 2.0 Project Director. Through workshops the Plenary Group directs stakeholder processes. The two subgroups are (1) the Environmental and Land Use Technical Group (ELUTG) and the (2) Transmission Technical Input Group (TTIG). The ELUTG is being led by the CEC in close coordination with the Renewable Energy Action Team (REAT) and other agencies with relevant environmental and land use expertise. The TTIG assembles relevant in-state and west-wide transmission capability and upgrade cost information to inform resource development conversations on reasonably-needed transmission system implications and assists in the developing potential corridor scenarios.

The various groups have been reviewing available information, including case studies and a variety of renewable energy generation and supply/demand models.

- Focus seems to be on renewable energy generation in the Central Valley, west Mojave, and Sonoran desert.
- The anticipated increasing effect of drought appears to be leading towards emphasis on non-hydro resources.

<sup>1</sup> Refer to <http://www.inyoplanning.org/RenewableProjects-Other.htm> for past Agenda Requests Forms regarding RETI 2.0. Refer also to the CEC's project website at <http://www.energy.ca.gov/reti/>.

- Diablo Canyon is planned to decommissioned, which will leave no nuclear power in the State, thereby stressing the reliability of the system due to the loss of this base load.
- Reduced coal generation further to the east appears to be opening up transmission capacity.
- Some interest appears to revolve around local transmission and geothermal resources.

The following summarizes a modest selection of the themes being studied:

**Environmental Sustainability:** It is estimated that a 50-percent renewables portfolio with a low impact to important natural areas can be achieved at a cost premium of two percent or less. Environmental constraints increase geographic diversity. It is postulated that solar photovoltaic (PV) land impacts can be largely avoided.

**Low Carbon Grid:** Modeling results indicate that achieving a 50-percent carbon reduction below 2012 levels is possible by 2030 with relatively limited excess capacity (i.e., curtailment) if institutional frameworks are flexible. Less flexible frameworks and a less diverse generation portfolio could cause higher curtailment, operational costs, and carbon emissions. Critical components of enhanced flexibility include the following: real-time carbon accounting for dispatch; unit commitment as well as procurement and planning; technologically and geographically diverse renewable energy portfolio including grid-scale PV solar, rooftop solar, regional wind, geothermal, biomass, and concentrating solar power with thermal storage; bulk storage benefits shared across multiple balancing authorities and utilities; essential reliability services provided by non-thermal resources; strategic dispatch of natural gas resources and staggered quick starts to prevent idling and ramping, and; increased flexibility in unbundled renewable energy credit accounting without new legislation, enabling optimal sub-hourly dispatch. Topics for reform include the use of the Renewable Portfolio Standard (RPS) Calculator as the exclusive State resource planning tool, carbon accounting rules, integrating the Department of Water Resources hydro system into the grid, developing a robust, mutually beneficial trading pattern between and among the various balancing authorities, and expansion of CallSO regionally.

**Utility Planning:** Utilities in the State have been reporting their planning activities to the Plenary Group. Of particular interest to Inyo County is the City of Los Angeles' 2015 Power Integrated Resource Plan (IRP), which reports to serve as a comprehensive 20 year roadmap to guide the City's efforts to supply reliable electricity in an environmentally responsible and cost effective manner. The 2015 IRP analyzes various scenarios that investigated the economic and environmental impact of increased solar in Los Angeles, various levels of transportation electrification, etc. Updates include an increased RPS of 50 percent by 2030, sale of the City's share in the coal-fired Navajo Generating Station, specific renewable energy projects (particularly in light of planned divestiture in coal energy sources), renewable energy penetration mitigation, energy efficiency, and managing potential natural gas price volatility. Infrastructure in the Owens Valley is discussed, but no mention of local new projects is discernable. Transmission upgrades with potential relevance include the Barren Ridge Renewable Transmission Project and the Pacific Direct Current Intertie Upgrade.

**Transmission Assessment Focus Areas (e.g., Super CREZs):** The Competitive Renewable Energy Zones (CREZ) from RETI 1.0 have been updated and focused on much larger areas known as Super CREZs: Lassen and Round Mountain, Sacramento River, Central Valley North

and Los Banos, Solano, Westlands, Mountain Pass and El Dorado, Tehachapi, Kramer and Inyokern, Riverside East and Palm Springs, and Greater Imperial.

**Flexible Power System:** A flexible grid addresses predictable and unpredictable variability created by renewables – increased integration can increase resilience. As grid flexibility becomes more desirable, easier less costly solutions (e.g., improved operations, demand response, etc.) are adapted first, with more expensive options later (storage, fast-ramping supply, etc.). Curtailment becomes apparent in the mid-day when solar resources tend to rise before peak demand in the late afternoon and early evening – flexibility is key to reducing curtailment. California, New Mexico, and Wyoming wind resources appear to be complimentary. Excess energy can be a competitive advantage for California (e.g., desalinization, data processing, electric vehicles, air gassing, etc.). Solar energy can also be exported eastward when demand is highest but solar energy has declined. Coal retirements can be exploited by utilizing soon-to-be excess capacity on the transmission grid.

**Resource Values:** Low cost solar is ubiquitous, but does raise long-term integration challenges. Many options are available, but resource and technology diversity and exports are among the cheapest. Determining environmental feasibility and transmission access for remaining in-State wind may be a priority. Geothermal may offer important benefits by 2030, but costs and benefits need further work – transmission access is one important component. Environmental and land use constraints tend to favor in-State solar and out-of-State wind. Broad support exists for further assessment of out-of-State resources, particularly for high-quality, low-cost resources with complementary profiles. Unfortunately, quality and timeliness of out-of-State data does not match in-State data, and options for access by existing transmission is largely un-assessed.

**Transmission Capability.** Several new transmission lines have been constructed and several more are under development. Sufficient capacity appears to be available to meet the 33-percent RPS, but not a 50-percent RPS. Capacity on out-of-State transmission will limit renewable imports into California. Out of state resources appear technically viable to achieve, but can be constrained by the transfer capability into California at the interconnection point. Currently, it appears that reaching the 50-percent RPS under low demand conditions could entail modest renewables expansion by 2030. However, reaching 2030 GHG goals, on track to 2050 goals, raises important crosssector effects that could increase both total electricity sector demand and decarbonization needs substantially. The range of renewables needed by 2030 could range from 25,000 gigawatt hours (GWh) – for low load and 50-percent RPS – to over 100,000 GWh – for high load and 60-percent renewables. In capacity terms, this equates to a range of: seven to 31 GW of capacity if assuming an average 40-percent capacity factor, and 9.4 to 41 GW of capacity at a 30-percent average capacity factor. The Western RPS renewables demand and supply appears roughly in balance, but market forces, new RPS targets, Clean Power Plan, and other forces may increase demand substantially.

**Modeling Supply and Demand:** A high-demand case includes higher economic and demographic growth, higher climate change impacts, more electric vehicles with less self-generation, and lower electricity rates. A low-demand case includes lower economic and demographic growth, no climate change impacts, fewer electric vehicles with more self-generation, and higher electricity rates. How energy efficiency requirements are implemented will impact demand. On the supply side, biogas begins to replace natural gas, coal is retired, nuclear energy is uncertain, and other renewable energy sources increase.

**Western Interconnection:** The Western Electric Coordinating Committee (WECC) is a non-profit corporation that exists to assure a reliable Bulk Electric System in the geographic area known as the Western Interconnection – Alberta and British Columbia, all or parts of the 14 Western states, and northern Baja California. WECC has been approved by the Federal Energy Regulatory Commission (FERC) as the Regional Entity for the Western Interconnection. WECC's Transmission Expansion Planning Policy Committee (TEPPC) plans for transmission upgrades to accommodate demand. Current trends in the system include increasing population, retirement of coal, increasing natural gas and renewable energy, and energy efficiency.

**OTHER AGENCY INVOLVEMENT:** Numerous potentially affected agencies and stakeholders, such as the CEC, CPUC, CallSO, Bureau of Land Management, Department of Defense, National Park Service, other counties, and other interested individuals and organizations.

**FINANCING:** General funds are utilized to monitor State planning efforts.

<b>APPROVALS</b>	
COUNTY COUNSEL:	AGREEMENTS, CONTRACTS AND ORDINANCES AND CLOSED SESSION AND RELATED ITEMS <i>(Must be reviewed and approved by county counsel prior to submission to the board clerk.)</i>
AUDITOR/CONTROLLER:	ACCOUNTING/FINANCE AND RELATED ITEMS <i>(Must be reviewed and approved by the auditor-controller prior to submission to the board clerk.)</i>
PERSONNEL DIRECTOR:	PERSONNEL AND RELATED ITEMS <i>(Must be reviewed and approved by the director of personnel services prior to submission to the board clerk.)</i>

**DEPARTMENT HEAD SIGNATURE:**  
(Not to be signed until all approvals are received)



Date: 6/6/16