Comments submitted by Sierra Club 2/23/2015

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Section 1.3.5, Renewable Energy Goals and Planning Process

1. California's renewable energy goals require more coordinated planning by California Energy Commission (CEC), California Public Utilities Commission (CPUC) and the California Independent System Operator (CAISO); this will in turn alter what is needed from the DRECP

California's new interim goals for renewable energy underscore the need for more coordinated statewide energy resource planning among the three principal energy agencies/entities, the CEC, CPUC, and the CAISO. The Governor has signaled his intent to move forward aggressively to at least 50% renewables on the electric grid by 2030, to reach the long-term goal of 80% renewable energy by 2050. The DRECP is modeled on the same long-term goal.

Higher penetration of renewable energy on the grid necessitates planning that will enable balancing of renewables with other renewables, both large-scale and distributed generation (DG); continued support for energy efficiency, higher amounts of energy storage and other demand-side management; and development and operation of a much more interactive grid at all levels. Properly done, this will not only benefit the ratepayer and environment but will provide increased reliability. (Note: NREL's Western Wind and Solar Integration Study has examined some of the issues related to bringing higher amounts of wind and solar onto the grid: http://www.nrel.gov/electricity/transmission/western_wind.html.)

> **Recommendation:** Achieving integration of renewables on California's grid will require a detailed state energy plan involving all the private utilities, ideally also integrating the public utilities, and providing greater integration with balancing areas beyond our borders. Such a plan will include supply-side resources, but will also map out the services increasingly provided by energy efficiency, distributed generation, storage, demand response and other technologies. It should also lay out, in addition to the DRECP, logical regional goals and appropriate locations for large-scale renewable energy development (which will need to be studied carefully for impacts prior to adoption).

This increased integrated statewide energy planning will naturally lead to prioritizing not only different kinds of renewable energy in various locations, but also multiple demand-side efforts and technologies as well as new ways to operate the grid overall.

2. Guiding Principles for DRECP planning should be amended to incorporate lessons learned and interactive planning for the grid of the future, prioritizing a range of technologies for their varying contributions to the overall need.

The DRECP's stated guiding principles for planning (page 37) are summarized below for reference:

1. Projects should be built on lands that are previously disturbed, with lower biological value; conflict with biological and non-biological resources (cultural, historic, other) should be minimized.
2. Areas for development should have high quality solar, wind and/or geothermal renewable energy resources.
3. Generation should be sited close to existing transmission and in areas where transmission could be expected as a reasonable extension of the existing system and planned system upgrades as identified by RETI or other transmission plans.
4. Generation should to the maximum extent possible be aggregated to avoid transmission sprawl, reduce cost and disturbance across the Plan area.
5. Plan should allow sufficient areas for development flexibility to ensure it does not constrain competition within the market or unnecessarily result in distorted or environmentally incompatible incentives when implemented—i.e., where feasible, the Plan should remain market neutral between different technologies or different project configurations.

These principles include many important components, valuing smart-from-the-start planning, maximizing resource value and minimizing energy sprawl. However, they should be amended to also take into account lessons learned in Southern California. Proactive planning should lead to and actively support integrated statewide planning for an interactive, renewable energy-driven grid. This is essential in order to avoid over-reliance on technologies that may be cheaper now but may not enable high renewables penetration of the scale we need by 2030 and to focus on specific locations which provide grid benefits which can avoid fossil fuels.

At this point the desert region has already had experience with a number of renewable energy technologies that have had unforeseen impacts on avian species. Scientists are still trying to understand and come up with ways to reduce or eliminate these impacts.

> **Recommendation:** It's important that the DRECP incorporate these "lessons learned," and at least in the short run, limit new projects with high-mortality

potential (either by location or technology) until more is learned on the actual extent of impacts and how to avoid and minimize bird and bat mortality.

The principle of "market neutrality between different technologies" is problematic in other ways. One problem with leaving it to the market to determine what projects will be built is that PV solar has quickly become the cheapest renewable energy to deploy and accounts for the majority of large-scale projects in the desert. However, if only the market determines what technology to employ, as we move toward more renewable energy we may end up with too much solar PV on the system and too little wind or geothermal, which can supply power in the evening, night and early morning hours. This could lead to the often-heard but technically incorrect assertion that we "need more natural gas to balance" renewable energy on the grid. Additionally, assuming market neutrality ignores the fact that the market in California is designed,through legislation and decisions by the California Public Utilities Commisision—which has the power to direct the utilities to value different characteristics or locations, and has done so in the past. Although investor-owned utilities are ultimately answerable to cost, they also have the freedom to propose "least-cost best-fit" procurement metrics for inclusion in their procurement plans.

> **Recommendation:** To avoid the overuse of natural gas pitfall and others, it's important to plan now for a mix of renewable technologies throughout the state, along with demand-side resources that can together address our varying seasonal and daily energy needs, without over-procuring natural gas. The Governor's new plan provides the perfect opening to jumpstart this planning. In order to ensure the right mix of clean energy is deployed, the energy agencies will likely need to prioritize some technologies or develop them in certain locations, such as urban and built-up areas, that appear facially more expensive, but which provide more value to the overall system in the long run because of the balancing and other grid services they enable. Again, market forces alone will not necessarily (or even likely) achieve this goal unless there is careful coordination among all the energy agencies. Assuming this more integrated planning is undertaken, it may reshape the relative costs and value of various technologies available in the California desert and thus affect how the DRECP is built out.

Fortunately, California's desert region has numerous renewable resources (solar PV and thermal, wind and geothermal) available. A more comprehensive analysis by all the energy agencies could better evaluate which are most important to fulfill our statewide energy goals. However, some examples of resources that may have added value with higher levels of renewable energy penetration as well as reduced impacts on habitats and species include:

* Geothermal energy, because of its higher capacity factor, potential for dispatchability, and relatively small impact on habitat compared to other renewable technologies;

* Solar thermal trough technology with several hours of storage, providing energy well beyond daylight hours and reduced avian issues; and

* Repowering and infill of permitted and new wind energy in the Tehachapi Wind Resource Area.

> **Recommendation:** We recommend that the DRECP work with the CPUC and CAISO to study and work to facilitate transmission to develop the extensive geothermal resources in Imperial County, including identifying ways this development could help with Salton Sea restoration. We support efforts to build well-sited solar thermal trough energy with storage as part of the DRECP and encourage the CEC to support it as well. In addition, we recommend the DRECP study and prioritize the energy potential for wind repowering and infill in the Tehachapi Tehachapi Wind Resource Area.

3. Development Focus Area and transmission development should be carefully phased

As articulated earlier, there are problems with simply allowing the market to propose development and responding only to what is proposed. This is also true for achieving Development Focus Area and transmission development that achieves multiple objectives—such as providing reliability, integration or other grid benefits, and avoiding harm to natural resources.

Simply providing multiple Development Focus Areas in the desert region that might work for a variety of technologies is unlikely to achieve all of these goals. Rather, it could lead to: conflict between competing projects in different DFAs; proposals to develop multiple expensive transmission lines rather than use existing lines, poles, or corridors; and continued focus on the contract price of renewable technologies, rather than the benefits of specific technologies or locations.

> **Recommendation:** A collaborative, site-specific fifteen-year (to 2030) planning process that is fully public and transparent among the three energy agencies (CEC, CPUC and CAISO) would potentially develop a more nuanced, phased initial build-out. Such a process would identify at least the following factors and likely many others, which would be utilized to prioritize areas within DFAs, technologies and transmission:
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> * What are the technologies that will be most important to develop, and at what levels, in getting the grid to 50% renewables? What will be needed to replace fossil fuel that is going offline, what will be needed to balance other renewables, where are the load centers where the energy will be needed?

* Where are the least-cost, no regrets build-out scenarios (such as wind repowering)? What areas within what DFAs have the lowest impacts and are closest to load pockets?

* Where are there existing transmission lines that are not fully utilized? Where are there transmission poles that could carry additional lines, both long and gen-tie? What low-impact corridors are available that would permit building adjacent lines?

* Where will retirement of fossil fuel plants free up existing transmission that could be repurposed to carry renewable energy?

* Where in the system will storage, voltage support and other grid services be required and how can that be provided?

* What is the likely build-out of rooftop and other DG solar in the DRECP region as well as outside the Plan area and in major load centers, and how will that affect estimates of DFA development needs over the time period?

From these and other factors, compared for grid value, cost to the customer, GHG reduction, and least environmental impact, an analysis of a variety of DFA build-outs within the 15 year timeframe could be constructed. Assuming the process is robust, fair, and transparent, it would steer development of the right kind, with the needed grid enhancements, to the right places at the right time.

Please see also further comments on transmission in response to the Transmission Appendix of the DRECP.