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California Energy Commission DOCKETED 09-RENEW EO-1
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Subject: Request for a new Desert Renewable Energy Conservation Plan Alternative

cc:

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Los Angeles County Supervisors

Riverside County Supervisors

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To Whom It May Concern,

The undersigned groups and individuals on this letter officially request that a new alternative be considered for the Desert Renewable Energy Conservation Plan. The current Desert Renewable Energy Conservation Plan (DRECP) includes no alternative that accurately reflects existing California state energy priorities that require energy efficiency measures of all types, including rooftop solar (classified by the state as an energy efficiency measure), be fully implemented prior to developing large, remote power generation projects of any type, nor one that incorporates the US-EPA's Re-Powering America's Lands program when siting the latter. The DRECP draft EIR/EIS states: "*Multiple commenters noted that distributed generation, energy efficiency, and the siting of renewable energy on brownfield sites should be considered as components of a single alternative rather than as independent alternatives...*" (Section II.8-3). Our comment is presented as that alternative. This failure to consider detailed analysis of viable, cost-effective and less harmful alternatives to those listed in the existing draft DRECP appears to violate both NEPA and CEQA and should be remedied by including the point-of-use energy efficiency and solar alternative described in this letter.

PURPOSE AND NEED.

Current Focus. The DRECP draft EIR/EIS says that "*Alternatives evaluated in detail in the Draft DRECP and EIR/EIS must meet the objectives, REAT agencies' purposes and needs, and the regulatory framework described in Volume I. The BLM's and USFWS' statements of purpose and need and the CEC's, CDFW's, and CSLC's objectives set the context for the development and analysis of alternative scenarios.*" (Section 11.8-4)

Yet both the Inter-Agency and BLM purpose and need statements are primarily focused on rapidly expanding large-scale energy development solely in fragile desert ecosystems, rather than on the urgent need to transition the state's electrical systems to clean power in the fastest and least harmful way, and to permanently conserve our intact, carbon-sequestering desert wildlands. The BLM's Purpose and Need Statement overlooks the recent data concerning the direct and cumulative negative impacts of recently constructed large renewable energy projects on both public and private lands. Further, the purpose and need statements in the current draft of the DRECP risk stifling innovation and conflict with and undermine existing laws, including landmark AB32. AB32 clearly acknowledges a diverse suite of tools to address climate change, including energy efficiency, demand response, storage solutions and protection of our ecosystems and water sources to bolster resilience, in addition to generation of renewable energy.

Reframing is Needed. As drafted, the DRECP errs by positioning a single means, utility-scale desert renewable energy, to be an end unto itself.

Review of Alternatives. Once the Purpose and Need is properly framed, the presumption that widespread development of pristine desert ecosystems must be the primary means used to facilitate the transition to renewable energy can be evaluated in a larger context that prioritizes desert conservation on par with renewable energy development.

In contrast, focus on the point-of-use solar alternative, developed by the California Public Utilities Commission and investor-owned utilities and known as the California Energy Efficiency Strategic Plan (CEESP), would avoid the industrial development of vast tracts of public lands and construction of hundreds of miles of associated and expensive transmission lines. In contrast to the base case large-scale desert development alternative, the point-of-use solar alternative with the twin objectives of: 1) rapid and responsible transition to renewable energy, and 2) conservation, stewardship, and protection of California desert ecosystems.

The DRECP draft EIR/EIS undertakes a thorough and detailed analysis of utility-scale central-station renewable energy in the Acreage Calculator (Appendix F3), based on modeling of different possible future scenarios, growth forecasts, assumptions, and multiple variables, with several revisions since 2011. Although not an Alternative, it is used to inform the Alternatives analyzed by the DRECP planners. But this detailed analysis favors utility-scale renewable energy power stations; the DRECP has not undertaken a similar level of analysis of DG and energy efficiency calculations that could meet the energy needs of the state without using desert wildlands. On page 2 of Appendix F3, the DRECP planners state that the Acreage Calculator for renewable energy needs would provide “*the acreage of renewable development that might need to take place in California and in the DRECP area in order to satisfy those needs.*” The emphasis of the word “might” indicates to us that other alternatives to developing large acreages of desert land in California can be made available to meet the state’s renewable energy goals.

Summary. The most effective way to conserve the California desert, in the context of renewable energy development, is to not make the California desert the focal point of solar energy development in the state. A focus on the point-of-use energy efficiency/solar energy alternative, developed by the California Public Utilities Commission and investor-owned utilities and known as the California Energy Efficiency Strategic Plan (CEESP), is preferable to the current draft alternatives in the DRECP. The CEESP Alternative most effectively addresses the climate crisis that drives the renewable energy development the DRECP is intended to accommodate.

CEESP ALTERNATIVE.

Introduction. The better alternative is rapid implementation of the highest-priority state energy plan already adopted. The California Public Utilities Commission (CPUC) is driving energy policy in California, and the **California Energy Efficiency Strategic Plan (CEESP)** is current regulatory policy dating back to 2007. California’s utilities developed the CEESP

cooperatively with the CPUC. The current version is available online at: http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf.

California law establishes energy efficiency as the highest priority resource in meeting California's energy needs. The CEESP presents a "single roadmap to achieve maximum energy savings across all major groups and sectors in California," by implementing rooftop solar, and bold appliance and building efficiency standards. (<http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/eesp/>)

Role of DRECP in Implementing Current Law. The CEESP needs implementation now to reach the explicit 2020 energy efficiency and rooftop solar targets for existing and new residential, commercial, and industrial buildings in the CEESP. It prioritizes energy efficiency and rooftop solar consistent with state law and the loading order (detailed below). These CEESP targets must be incorporated into each utility's biennial Long Term Procurement Plan in the current planning cycle at the CPUC. The DRECP should support and inform this process. The CEESP will also help meet renewable targets beyond 2020 as noted below.

California utility procurement is currently incompatible with California Public Utilities Code Section 454.5(b)(9)(C), which requires that an electrical corporation "*shall first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.*" This incompatibility could be resolved in a DRECP that selects our alternative and tracks the CEESP, but is instead currently limited by the singular focus on remote, large-scale power production in all alternatives studied in the current draft of the DRECP.

Governor Brown, through Executive Order B-18-12 (March 2012) is already implementing the substantive elements of the CEESP for state buildings. The target of 50 percent of existing state buildings achieving Zero Net Energy (ZNE) by 2025 in Executive Order B-18-12 accelerates the CEESP target for existing commercial buildings, 50 percent ZNE by 2030, by five years. Executive Order B-18-12 states (in part):¹

IT IS FURTHER ORDERED that all new State buildings and major renovations beginning design after 2025 be constructed as Zero Net Energy facilities with an interim target for 50% of new facilities beginning design after 2020 to be Zero Net Energy. State agencies shall also take measures toward achieving Zero Net Energy for 50% of the square footage of existing state-owned building area by 2025.

SCE received approval from the CPUC to construct up to 500 MW of solar on warehouse

¹ See: <http://gov.ca.gov/news.php?id=17506>.

rooftops in the LA Basin in 2008, the same year the CEESP was first issued.² Half of this capacity is utility-owned, with the remainder owned by third parties supplied via power purchase agreements. California's utilities already have an approved template for large-scale development of solar energy development commercial rooftops. The SCE warehouse rooftop solar project was approved by the CPUC as 100% RPS-eligible. See this paragraph from the attached CPUC press release: "*Prior to today's decision, utility solar programs in the one to two MW range had limited participation in the California Solar Initiative or Renewables Portfolio Standard (RPS) program. Edison's program creates a new avenue for developing such smaller sized solar projects.*"

Arbitrary Solar Designations and valuations. The CPUC treats behind-the-meter rooftop solar as equivalent to an energy efficiency measure and does not count it toward meeting Renewable Portfolio Standard (RPS) targets. It is therefore "first in line" in the loading order as an energy efficiency measure while at the same time achieving the same greenhouse gas reductions as RPS-eligible solar energy alternatives.

The RPS is one tool toward achieving greenhouse gas reductions from power generation. However, AB32, California's landmark greenhouse gas reduction legislation, is focused on the ultimate goal – removing carbon from electric generation. That must be the state's focus, not arbitrary classifications between solar panels that count toward meeting RPS mandates (large solar installations) and solar panels that do not (rooftop solar), and compromising California's deserts based on this arbitrary distinction.

Why the CEESP Alternative? If implemented quickly, the CEESP Alternative will greatly increase rooftop solar and energy savings, generating greenhouse gas reductions at the point-of-use and negating the need to disrupt carbon-storing desert ecosystems.

LOADING ORDER FOR ENERGY PROCUREMENT IN CA

Established policy undermined by DRECP. The CPUC and CEC have established the following loading order for electricity procurement:

First Priority is Energy Efficiency and Demand Response.

Broad economic and social justice benefits can be derived from reducing electricity usage and demand rather than adding high-cost large-scale remote utility projects with associated long transmission lines burdening rate-payers. Energy efficiency has no environmental costs or negative impacts to public lands, which supports the second purpose and need of the DRECP, which is to protect and steward public lands.

The 2005 CPUC and California Energy Commission's Energy Action Plan II, declared:

² CPUC press release, *CPUC Approves Edison Solar Roof Program*, June 18, 2009.

The goal is for California's energy to be adequate, affordable, technologically advanced, and environmentally-sound, cost effective energy efficiency is the resource of first choice for meeting California's energy needs. Energy efficiency is the least cost, most reliable, and most environmentally- sensitive resource, and minimizes our contribution to climate change.

Distributed renewable generation in the built environment requires no mitigation to offset significant impacts to natural and cultural resources of public lands, valuable groundwater resources are not depleted, carbon in desert soils is not released, biodiversity of desert ecosystems is not significantly impacted, and costly long transmission lines are not needed.

Second Priority is Remote Procurement of Renewables, if needed.

According to the loading order, only after energy efficiency measures and demand response are maximized should supply-side utility-scale renewable energy be considered. The current draft of the DRECP treats remote procurement of renewables as the priority option. If California needs any remote renewable energy after maximizing development of energy efficiency and point-of-use solar, the first lands for development consideration should be the brownfield, Superfund, and other degraded sites in need of remediation as identified by the US-EPA in their RE-Powering America's Land initiative (<http://www.epa.gov/oswercpa/>).

NEPA, CEQA AND MULTIPLE AGENCY BASIS FOR INCLUDING OUR ALTERNATIVE

Since the DRECP plan is a multi-agency blueprint for achieving renewable energy goals in the state of California, the Objectives and Purpose and Need Statement must be changed to reflect the stated priorities of these agencies, and accommodate a more meaningful alternatives analysis that includes the CEESP Alternative.

NEPA Alternatives Analysis. The National Environmental Policy Act directs the BLM to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources;...” (NEPA Sec102(2)(E))

and to analyze:

“Reasonable alternatives includ[ing] those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.”

If the DRECP follows public opinion and includes more environmental protections in the Purpose and Need Statement, while rapidly reducing GHG emissions and improving the

reliability of our electricity grid through implementation of the CEESP Alternative, it will utilize an alternative that is not only popular, but economically and technologically more feasible than the pending DRECP preferred alternative.

The CEESP Alternative is a solution that reduces any perceived need for: (1) Environmental reviews at a local and a landscape level; (2) The “Taking” of protected species; (3) Local and landscape mitigation plans and (4) Complex and costly permitting processes; so the BLM can focus on its critical role in the conservation priorities that should form the purpose of the DRECP with respect to public lands. As such, the changes we are requesting conform to the requirements of NEPA.

USFWS Goals Met By CEESP Alternative. A new Purpose and Need Statement and inclusion of the CEESP Alternative would also help meet the first stated goal of the Fish and Wildlife Service in:

“designing alternatives for a renewable energy program and conservation strategy for all public trust resources, including natural communities, wildlife, and special-status species consistent with the conservation objectives under the ESA, NEPA, Migratory Bird Treaty Act, Eagle Act, and other applicable federal laws, regulations, and policies. USFWS also worked with interested parties to determine an environmentally sustainable proportion of the state’s renewable energy portfolio to be met in the California deserts.”

It would also eliminate the need for the second stated role of USFWS which is to:

“prepare the EIS element of the Plan that considers the USFWS’s proposed action under NEPA (i.e., to consider the issuance of Section 10[a][1][B] permits for the incidental take of Covered Species on nonfederal lands within the GCP Permit Area and the issuance of take permits under the Eagle Act on both federal and nonfederal lands within the Plan Area). The USFWS is also responsible for consulting under Section 7(a)(2) of the ESA at the request of other federal action agencies, such as BLM, if the agency’s action may affect federally listed species or designated critical habitat, as described earlier in Section I.1.2.1.2, Federal Endangered Species Act.”

The CEESP Alternative would eliminate the need for any Take permits or other modifications that would otherwise compromise the Endangered Species Act. This would greatly reduce environmental impacts and significant effects, not to mention reduce the administrative burdens on Federal Agencies such as BLM and USFWS that remote-generation permits create.

CEQA Alternatives Analysis. A new Purpose and Need Statement accompanied and inclusion of the CEESP Alternative would also better meet the requirements of the California Environmental Quality Act (CEQA) which are, in relevant part:

“An EIR shall describe a range of reasonable alternatives to the project, or to the location

of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.” (http://resources.ca.gov/ceqa/docs/2010_CEQA_Statutes_and_Guidelines.pdf)

The CEESP Alternative Also Meets Multiple California State Agency Goals More Effectively. A new Purpose and Need Statement alongside implementation of the CEESP Alternative would also help the DRECP better meet the conservation objectives of the California Energy Commission, California Department of Fish and Wildlife, and California State Lands Commission which are:

“Reduce the biological and other environmental impacts of future utility-scale renewable energy developments in the Plan Area by designating appropriate areas for renewable energy development within the context of a landscape-scale conservation plan that are sufficient to accommodate the foreseeable demand for renewable energy in the DRECP through 2040. “

“Provide for the long-term conservation and management of Covered Species within the Plan Area and preserve, restore, and enhance natural communities and ecosystems in which those species are found by focusing renewable energy development away from areas of greatest biological importance or sensitivity; coordinating and standardizing biological avoidance, minimization, mitigation, compensation, conservation, and management requirements for Covered Activities within the Plan Area; and taking other actions to meet conservation planning requirements in state and federal law. “

THE DG ALTERNATIVE SHOULD NOT BE REJECTED

The DRECP draft EIR/EIS states on page II.8-7: *“For a variety of reasons (e.g., upper limits on integrating distributed generation into the electric grid, cost, lack of electricity storage in most systems, and continued dependency of buildings on grid-supplied power), distributed energy generation alone cannot meet the goals for renewable energy development.”*

Yet as discussed above, no detailed and up-to-date analysis of a DG Alternative was included in the draft plan, similar to the analysis of other Alternatives which favor large-scale wildland use.

The DRECP seeks to accommodate the development of up to roughly 20,000 MW of renewable energy projects. Only about 3,000 MW of renewables have been built in the DRECP area. Yet less than 5% of over 100,000 MW of rooftop and parking lot solar potential has been developed to date in California. Over 39,000 MW of DG PV can be

utilized on parking lot structures alone (see attached calculation, Parking Lot Solar Potential in California, Bill Powers, December 15, 2014).

A more current analysis is needed of DG renewable energy implementation. For example, the draft DRECP EIR/EIS states on page II.8-7: *“Integration and reliability concerns were highlighted due to local renewable generation being sent to the grid through power lines and equipment that were primarily designed to transport energy in the opposite direction. Unless managed appropriately, the integration of local renewable energy can impact the safe and reliable operation of distribution grids.”*

This needs more analysis. California can add 20,000 MW DG PV without transporting any energy in the opposite direction. California's IOU have spent hundreds of millions of dollars via their smart grid programs to allow bidirectional flow on distribution circuits and substations. The issues bulleted are being addressed over time. PG&E, for instance, says that 100% of critical substations will be microprocessor controlled by 2015.

On page II.8-3 the draft DRECP EIR/EIS states: *“Multiple commenters noted that distributed generation, energy efficiency, and the siting of renewable energy on brownfield sites should be considered as components of a single alternative rather than as independent alternatives, see Section II.8.2.1.”*

Our response to this is that multiple commenters continue to call for distributed generation, energy efficiency, and the siting of renewable energy on degraded land/brownfield sites adjacent to existing transmission lines as a single stand-alone alternative. That alternative would be known as the California Energy Efficiency Strategic Plan (CEESP) Alternative. The CEESP alternative also accommodates the siting of renewable energy on degraded/brownfield sites adjacent to existing transmission lines.

On page II.8-3 the draft DRECP EIR/EIS states: *“...(NREL 2010; Linvill et al 2011; California Office of the Governor 2012; Zichella and Hladik 2013). For a variety of reasons (e.g., upper limits on integrating distributed generation into the electric grid, cost, lack of electricity storage in most systems, and continued dependency of buildings on grid-supplied power), distributed energy generation alone cannot meet the goals for renewable energy development.”*

Our response is that there is a major difference between point-of-use, customer-provided solar meeting all the goals for renewable energy development in the DRECP and customer-provided solar offsetting only about 15 – 30 percent of the renewable energy production in the DRECP as is the case in the three scenarios evaluated in the DEIR/EIS (basecase 10,000 MW customer-side PV, 15,000 MW, and 20,000 MW). In Appendix F3, p. 22, the MW capacity of wind, geothermal, biofuels, and utility DG is reduced as the amount of customer-provided DG solar is increased. This has the effect of leaving the amount of utility-scale PV and solar thermal by less than 1,200 MW, from

9,869 MW to 8,690 MW, as the amount of customer-provided DG solar increases by 10,000 MW. If the total 2040 MW capacity of wind, geothermal, and biofuels (for California) is held constant across the three customer-provided DG solar scenarios, increasing the amount of customer-provided DG solar from 10,000 MW in the base case scenario to approximately 30,000 MW by 2040 would completely eliminate the need for any of the combined 16,323 MW of utility-scale PV, utility scale solar thermal, wind, or utility DG in the DRECP base case scenario. The implementation of the CEESP Alternative would result in customer-owned DG solar increasing at a rate of approximately 15,000 to 20,000 MW per decade beginning in the 2011-2020 ten-year period, without considering the added MW from solar projects on degraded/brownfield sites. Customer-side DG solar additions would exceed 30,000 MW by 2030, ten years before the 2040 target date in the DEIR/EIS, if the CEESP Alternative is fully implemented.

Citing to a 2011 conference on distributed generation as the basis for rejecting California state policy, the California Energy Efficiency Strategic Plan, is not supportable. Numerous experts either spoke at or participated in Governor Brown's DG conference at UCLA in July 2011. Advocates of utility-scale remote renewable energy projects advanced the pessimistic bullet points included in the DEIR/DEIS discussion of a DG alternative. Advocates of the point-of-use customer-side DG solar approach pointed out the flaws and inconsistencies in the positions advanced by the "big and remote" advocates. One flaw is the assertion that electricity moves only one way on the California transmission and distribution grid and therefore only a nominal amount of customer-side generation can be added before causing grid reliability problems. In reality, even with no upgrades, the existing California grid can absorb about 20,000 MW of customer-side DG solar without causing any backflow on the grid³. In other words, there are no current grid reliability impediments to adding 20,000 MW of customer-side DG solar. At the same time, California investor-owned utilities are rapidly upgrading their distribution systems to allow full two-flow and maximize their ability to absorb customer-side DG. PG&E indicated in its 2011 Smart Grid Plan that 100 percent of its critical distribution substation circuit breakers would be microprocessor controlled (two-way) by 2015

(See p. 61:

http://www.pge.com/includes/docs/pdfs/shared/edusafety/electric/SmartGridDeploymentPlan2011_06-30-11.pdf). SDG&E claims to be the national leader in grid modernization, including the upgrading of its distribution system for two-way flow of electricity

(See p. 39:

<https://www.sdge.com/sites/default/files/documents/1647058660/Smart%20Grid%20A>

³ Powers, December 16, 2009 opening testimony, CEC's Ivanpah Solar Electric Generation System proceeding, pp. 7-8, <http://tinyurl.com/p2s5zg8>.

nnual%20Report%202013.pdf?nid=9126).

It is also important to underscore that the DRECP targets are for 2040. Over the next 25 years it is reasonable to assume that the smart grid modernization programs the investor-owned utilities are spending hundreds of millions of dollars per year of ratepayer funds to implement will fully address in a timely fashion any potential bottlenecks on the grid to full utilization of customer-side DG solar.

On page II.8-3 the draft DRECP EIR/EIS states: *“However, this (DG PV) alternative would not respond to the USFWS’s purpose and need to advance DOI’s national policy goals to identify and prioritize specific locations best suited for large-scale production of solar energy on public lands and encourage the production, development, and delivery of renewable energy as one of the DOI’s highest priorities. . . It (DG PV alternative) would also not meet the objective because it would not provide for the long-term conservation and management of Covered Species within the DRECP.”*

Our response is that the reasons given in the DEIR/DEIS for rejecting an energy efficiency/customer-side solar alternative are either circular or nonsensical. For example, Objective 1 of DRECP is to build large-scale renewables in the desert, therefore point-of-use DG solar must be rejected as not conforming to purpose of DRECP, even though the alternative would result in maximum desert conservation. Objective 2 is to provide for the long-term conservation and management of Covered Species within the DRECP. The DEIR/EIS stated that a distributed generation alternative would not meet this objective, yet the DG alternative leaves these species, their habitats, and their ecological linkages intact and would be the alternative that best meets long-term conservation of the California desert.

CONCLUSION.

In the past 5 years, large-scale renewable energy projects have changed the landscape of the California Desert region. We now have a good idea of some of the serious problems that arise when streamlining of very large projects takes place. The use of “adaptive management” mitigation has been based on finding solutions to problems that arise after approval, and should be considered a last resort, not a standard operating practice because of rushed and inadequate permitting processes. Among some of the problems we have witnessed are undercounts of desert tortoise populations, a blade throw from a large wind turbine in a public place, unmitigated large amounts of fugitive dust from construction, bird kills from large scale wind and solar projects, lower energy output than that promised in application documents, much higher energy costs than anticipated, and requests for increased water and natural gas use. If there were no other options, perhaps this level of damage might make some kind of sense, but with alternatives like the CEESP, there is no reason for ongoing and expanding harm to our natural heritage simply to produce renewable power that can more efficiently and reliably be produced at or very near load centers.

The agencies involved have a unique conservation opportunity within the framework of the DRECP to choose an alternative that utilizes the built environment for sustainable, reliable, local solutions to California's renewable energy needs. Thank you for considering our requests.

Sincerely,

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PRESS RELEASE

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CPUC APPROVES EDISON SOLAR ROOF PROGRAM

SAN FRANCISCO, June 18, 2009 - The California Public Utilities Commission (CPUC), in its ongoing commitment to innovative programs and policies to advance the delivery of renewable energy, today approved a solar photovoltaic program for Southern California Edison.

The program will result in the deployment of 500 megawatts (MW) of solar photovoltaic (PV) on existing commercial rooftops in Edison's service territory. Edison will own, install, operate, and maintain 250 MW of solar PV projects, which will primarily consist of one to two MW rooftop systems. The remaining 250 MW will be installed, owned, and operated by independent, non-utility solar providers selected through a competitive process.

Prior to today's decision, utility solar programs in the one to two MW range had limited participation in the California Solar Initiative or Renewables Portfolio Standard (RPS) program. Edison's program creates a new avenue for developing such smaller sized solar projects.

"This program represents a valuable complement to the existing renewable procurement efforts we have underway, given the significant permitting challenges large scale renewables face, both in terms of transmission and the generating facilities themselves," said CPUC President Michael R. Peevey. "It represents an important hedging strategy by allowing for the deployment of distributed resources that, while somewhat more expensive than the large scale renewable projects that are the primary focus of the RPS program, offer a much higher level of certainty in terms of when they will come online."

Added Commissioner John A. Bohn, author of the decision, "This decision is a major step forward in diversifying the mix of renewable resources in California and spurring the development of a new

market niche for large scale rooftop solar applications. Unlike other generation resources, these projects can get built quickly and without the need for expensive new transmission lines. And since they are built on existing structures, these projects are extremely benign from an environmental standpoint, with neither land use, water, or air emission impacts. By authorizing both utility-owned and private development of these projects we hope to get the best from both types of ownership structures, promoting competition as well as fostering the rapid development of this nascent market.”

“This decision is good for California because it makes good use of all that sun and warehouse roofs in Southern California to produce clean energy right where we need it, both by Edison and independent generators,” commented Commissioner Rachele Chong. “I commend Edison for its foresight in bringing a focus on commercial solar PV projects that are 1-2 megawatts in size.”

Commissioner Timothy Alan Simon said, “I support this decision because it strikes a balance between promoting utility-owned generation and competitive procurement for independent energy producers, as well as distributed generation and central station solar systems. Finally, it will bring much needed economic stimulus to the Inland Empire.”

Because this is the first significant foray by a utility into ownership of renewable generation, the CPUC will carefully monitor the program’s progress, examine ways in which the program can be improved, and fine tune the program when and where appropriate.

The energy generated from the project will be used to serve Edison’s retail customers and the output from these facilities will be counted towards Edison’s RPS goals. The output and capacity of the projects will not count towards the California Solar Initiative program goals.

The RPS program is one of the most ambitious renewable energy standards in the country. It requires investor-owned utilities to procure 20 percent of their electricity sales from renewable sources by 2010. Governor Schwarzenegger subsequently established an RPS target of 33 percent by 2020 for all retail sellers of electricity. The California Solar Initiative has a goal to install 3,000 MW of new customer solar projects by 2016, moving the state toward a cleaner energy future and helping lower the cost of solar systems for consumers.

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Parking Lot Solar Potential in California

Bill Powers, December 15, 2014

The methodology utilized to calculate the PV technical potential of ground-level parking lots and parking structures in California is shown in Table 1. A core assumption in the methodology is that only 25 percent of total estimated parking surface is sufficiently open, meaning not shaded to a significant degree, so that its full solar potential can be realized. The estimated ground-level parking lot and parking structure PV potential in California, assuming 25 percent of the total surface area is utilized for PV, is 39,500 MW_{ac}.

Table 1. Assumptions Used to Estimate PV Potential of Parking Lots – California

Assumption	Source
771 vehicles per 1,000 citizens	Dr. Donald Shoup, urban planning, UCLA ¹
At least 4 parking spaces per vehicle, one of which is residential space	Dr. Donald Shoup, urban planning, UCLA
38,332,521	July 1, 2013 California population estimate: http://quickfacts.census.gov/qfd/states/06000.html
162 square feet per parking space	Square footage of typical 9-foot by 18-foot parking space, Envision Solar, San Diego ²
Approximately 88,663,000 non-residential parking spaces in California	Calculated value: $38,332,521 \times (771/1,000) \times 3$ spaces [4 total spaces per car – 1 residential space per car] = 88,663,000 non-residential spaces
11 W _{ac} per square foot PV capacity per square foot of parking area	Envision Solar, San Diego ³
158,000 MW _{ac} parking lot PV theoretical potential in California without considering shading	$88,663,000 \text{ spaces} \times 162 \text{ square feet per space} \times 11 \text{ W}_{ac} \text{ per square feet} \times 1 \text{ MW}_{ac} \text{ per million W}_{ac} = 158,000 \text{ MW}_{ac} \text{ parking lot PV potential}$
39,500 MW _{ac} actual potential in California	Rough estimate of actual PV potential - assumes 25 percent of non-residential parking spaces are unshaded throughout the day and full PV potential can be realized at these sites

¹ Dr. Donald Shoup, *The High Cost of Free Parking*, March 2005, published by American Planning Association, Chapter 1.

² Jim Trauth, Envision Solar, estimate of solar parking lot potential in San Diego County, e-mail to Bill Powers, June 13, 2007.

³ Ibid.