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December 23, 2011

DOCKET	
11-IEP-1A	
DATE	Dec.23 2011
RECD.	Dec.23 2011

California Energy Commission
Docket Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: California Energy Commission ("Energy Commission")
Docket No. 11-IEP-1A: Draft 2011 IEPR

To Whom It May Concern:

Southern California Edison ("SCE") appreciates the opportunity to provide comments on the 2011 Integrated Energy Policy Report ("IEPR"): Lead Commissioner Draft Report ("Draft Report"). SCE would like to acknowledge the Energy Commission Staff for completing this large undertaking encompassing a wide breadth of issues. In this cover letter, SCE summarizes its most significant concerns about policies raised in the Draft Report. Attachment 1 to this letter provides greater detail on specific subject areas and Attachment 2 is a matrix of specific recommended verbiage changes. The State of California's electricity sector has a significant task ahead in working to meet its current energy policy goals. A well-crafted 2011 IEPR can further the State's efforts to meet those goals and support making sound policy decisions for the future.

Fundamentally, SCE supports the State's environmental goals and direction. However, SCE has an increasing concern about the economic consequences that additional environmental policy requirements are having on our customers' rates and the State's economy. California's current electric rates are among the highest in the nation.[4] In SCE's case, this is due to a combination of factors, such as:

- Aggressive procurement rules for relatively expensive renewable resources and integration costs related to renewable intermittency,
- Capital investment requirements for building new transmission and distribution infrastructure to deliver renewables and localized energy resources ("LER"),
- Capital investment requirements for maintaining aging transmission and distribution infrastructure, and

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[4] Source Electricity Sales & Revenue; Energy Information Administration, available at: http://www.eia.gov/electricity/sales_revenue_price/index.cfm.

- Direct and indirect costs of compliance achieving aggressive greenhouse gas ("GHG") obligations.

Recent growth trends in electric rates are unsustainable particularly when coupled, as they are, with rate design policies that often charge customers rates that bear little relationship to SCE's costs of providing electricity service. SCE encourages policymakers to integrate the priorities of safety, reliability and affordability for electric customers with current and proposed environmental goals. Specifically, SCE would like to work with policymakers to:

- Promote competitive market solutions to environmental problems as a means to lower compliance costs,

- Prioritize policy actions and eliminate arbitrary targets or goals that are disconnected from any rigorous cost-benefit analysis or realistic timelines, and

- Fully consider the operational costs of policy choices and the resulting impact on customer rates.

It is our hope that pursuing these steps will lead to policies that can further the State's aggressive environmental goals, but in a manner that is affordable to electricity customers.

I. <u>Promote Competition-based Energy Solutions to Environmental Problems</u>

SCE encourages the Energy Commission to promote a competition-based approach to achieving environmental goals. One way to achieve this is through the avoidance of feed-in-tariff programs that rely on administratively set prices. California electricity customers have paid billions of dollars in excess payments for renewable and alternative power projects over the past three decades due primarily to the administratively set prices established during contract formation in the 1980s. Any administratively-set price is problematic. If it is set too low the desired generation never materializes; if it is too high customers over pay. With competitive pricing sellers determine the lowest price they need to be paid to provide the desired generation and have an incentive to improve efficiency to compete with others.

California electricity customers are now benefiting for the first time from a robust, competitive market for renewables that promises to yield significant new developments and lower costs for customers. In recent years, SCE has been successful in acquiring renewable resources through competitive solicitations, typically at a lower cost than those acquired with administratively set prices. These benefits will be stripped away by any return to the errant past policy of trying to set administrative prices. The Energy Commission can support this goal by promoting competition-based approaches to achieve policy objectives, including the Governor's LER targets.

Likewise, California will have ongoing problems with meeting future generation needs until effective, system-wide competitive-based mechanisms are developed that encourage competitive investment in new power plants necessary for reliability and renewable resource integration. The

Energy Commission should support interagency efforts to develop effective long-term capacity procurement mechanisms with appropriate consumer protections.

SCE also recommends the use of a competition-based approach to resolving operational challenges associated with renewable integration. Managing a large number of intermittent renewable resources has created new integration requirements and increased costs. Accordingly, SCE supports the goals of the California Independent System Operator's ("CAISO's") initiative to identify operational needs and create a competitive market for renewable integration products.[5] SCE recommends that the Energy Commission support policies ensuring that the renewable generators imposing increased integration costs on the electric system bear responsibility for those costs.

II. Prioritize Policy Actions and Eliminate Arbitrary Targets or Goals

SCE recommends that the Energy Commission support eliminating arbitrary targets or goals that are disconnected from any rigorous cost-benefit analysis or deviate from a realistic timeline. SCE agrees with the Division of Ratepayer Advocates ("DRA") that "[p]icking arbitrary procurement target levels, such as a MW level or a percentage level would most likely result in a suboptimal market solution and increase costs to ratepayers without yielding commensurate benefits."[6] Specifically, when considering new targets such as 12,000 MW of LER, the definition of eligible resources should be broad and should target development in urban load centers near distribution and transmission lines with sufficient capacity. The timing of the pursuit of LER goals should be realistic and consider that existing renewable energy initiatives have added to already substantial capacity reserves. Furthermore, imposing unrealistic timelines on Investor Owned Utilities ("IOUs") prevents them from taking advantage of new technologies and cost reductions in new technologies resulting from increased economies of scale. It is essential that policy makers factor cost-effectiveness metrics into their decisions, so that those initiatives with the greatest impact per dollar spent are given highest priority.

III. Fully Consider Operational Costs of Policy Choices and the Resulting Impacts on Customer Rates

It is critical that the Energy Commission take customer rate and operational impacts of new environmental initiatives into consideration *before* making specific recommendations. For example, the 20,000 MW target for renewables has not been adequately analyzed for cost impacts on customers and system reliability impacts. Without understanding such impacts, there is a significant concern that procurement to achieve any arbitrary targets may prove more expensive than necessary. Moreover, the Draft Report includes several recommendations to limit water consumption for power plant cooling without sufficient demonstration of cost-effectiveness. Such regulations could inappropriately constrain renewable project developments and raise costs.

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[5] CAISO Stakeholders Renewables Integration Market and Product Review; http://www.caiso.com/informed/Pages/StakeholderProcesses/RenewablesIntegrationMarketProductReviewPhase1.aspx
[6] R.10-12-007, Comments of Division of Ratepayer Advocates On Administrative Law Judge's Ruling Entering Documents Into Record And Seeking Comments, p. 3 (filed on August 29, 2011), available at http://docs.cpuc.ca.gov/efile/CM/142495.pdf.

Failure to consider customer cost impacts adequately has clear equitable implications as well. For example, the widespread use of monetary incentives to encourage additional installation of distributed renewable resources does not benefit all customers equally. In fact, these incentives often go to customers who can afford to pay the upfront costs of participating. At the same time, the costs of these programs are borne by non-participating customers through increased electricity rates resulting from the direct costs of the incentives and the indirect subsidy provided by allowing participating customers to avoid paying distribution costs.

Moreover, failure to address operational concerns, such as the need for new transmission or distribution upgrades to support a large number of variable resources, could hinder overall grid reliability and safety. Accordingly, understanding the operational and cost impacts of policy choices is crucial to developing effective policies that promote least cost solutions. The Energy Commission needs to prioritize minimizing customer cost and operational impacts when developing new energy policy recommendations.

SCE appreciates the willingness of the Energy Commission staff to work collaboratively with SCE during the development of the Draft Report. As always, SCE appreciates the opportunity to submit its comments. Feel free to contact me regarding any questions or concerns.

Sincerely,

/s/ Manual Alvarez

Manual Alvarez, Manager
Regulatory Policy and Affairs
Southern California Edison Company

Attachment 1
To SCE's Comments on 2011 Draft IEPR
Chapter-by-Chapter Comments

Attachment 1

Table Of Contents

Section	Title	Page
I.	INTRODUCTION	1
II.	CHAPTER 1: Renewable Electricity Status and Issues	1
	A. Siting of Distribution-Level Resources Near Urban Load with Sufficient Capacity	2
	B. Clarification of Eligibility Requirements for 20,000 MW Target	3
	C. Feasibility of Use of Demand Response to Support Integration	4
	D. Pursuit of Competition-based Approaches to Resolve Grid- and Distribution-Level Integration Issues	5
	E. Availability of Project Financing for Feed-in Tariff Projects	5
	F. Reconsideration of Costs Associated with Renewables Targets	6
	G. Reliance on Relevant Data in Formulating Renewable Energy Policy	7
III.	CHAPTER 2: Achieving Cost-Effective Energy Efficiency for California: Assembly Bill 2021 Progress Report	9
IV.	CHAPTER 3: Achieving Energy Savings in California Buildings	9
	A. A Market Segment Approach to Energy Efficient Buildings	10
	B. Opportunities for Use of Integrated Demand-Side Management	10
	C. Building Energy Benchmarking	12
	D. Lighting	13
	E. Building Codes and Standards	13
V.	CHAPTER 4: California's Clean Energy Future	15
	A. 1,000 MW Target for Energy Storage	15
	B. Job Creation Metric	16
VI.	CHAPTER 5: Power Plant Licensing Lessons Learned	17
VII.	CHAPTER 6: Energy Commission Natural Gas Assessment	19
VIII.	CHAPTER 7: Electricity and Natural Gas Demand Forecast	19
IX.	CHAPTER 8: California's Electricity Infrastructure	19
	A. Combined Heat and Power	19
X.	CHAPTER 9: Transportation Energy Forecasts and Analysis	21
XI.	CHAPTER 10: Benefits from the Alternative and Renewable Fuel and Vehicle Technology Program	23
XII.	CHAPTER 11: Bringing Energy Innovation to California Through the Public Interest Energy Research Program	24
XIII.	CHAPTER 12: 2011 Bioenergy Action Plan	24
XIV.	CHAPTER 13: Nuclear Issues and Status Report on Assembly Bill 1632 Report Recommendations	24
	A. License Renewal	24
	B. Seismic Issues	26

Attachment 1

Table Of Contents (Continued)

Section	Title	Page
	C. Spent Fuel Pool and Independent Spent Fuel Storage Installation	27
	D. Plant Safety	29
	E. Station Blackout	30
	F. Fukushima Daiichi Events	30
XV.	CONCLUSION	31

I. INTRODUCTION

Southern California Edison ("SCE") appreciates the opportunity to review and comment on the California Energy Commission's ("Energy Commission's") 2011 Integrated Energy Policy ("IEPR") Draft Report ("Draft Report"). SCE commends the Energy Commission staff for completing this large undertaking, which encompasses an analysis of numerous complex issues. SCE also commends the Energy Commission on a document that presents a generally balanced view of the myriad of issues facing the State in its efforts to provide appropriate energy policies to address the environmental challenges ahead. Specifically, SCE agrees with the Energy Commission's vision for:

- improving coordination among energy agencies,
- recognizing the contribution of electric vehicles, and
- recognizing the positive aspects of nuclear generation.

While the Energy Commission Staff's efforts in completing the Draft Report are commendable, SCE believes that the Draft Report can be further refined and improved in several ways. Below, SCE provides detailed comments on the Draft Report in a chapter-by-chapter format.

II. CHAPTER 1: RENEWABLE ELECTRICITY STATUS AND ISSUES

The Energy Commission's report accurately depicts a wide range of issues associated with meeting the state's aggressive renewable energy targets; however, the Draft Report gives insufficient attention to issues of cost and grid stability. Specific policy recommendations related to the Governor's targets for localized generation and renewables development generally should be implemented in a way that is cost-effective, is cognizant of potential rate impacts, and ensures grid reliability. Accordingly, the Draft Report should be revised to include the following recommendations:

- Site localized generation near urban load centers with sufficient available transmission/distribution circuit capacity (i.e., no upgrades required),
- Clarify the eligibility of resources towards the 20,000 MW target,
- Study the feasibility of using demand response to support renewable integration,
- Pursue a competition-based approach to resolving grid and distribution level integration issues,
- Accurately address issues of availability of project financing for projects subject to feed-in-tariffs,
- Give further attention to the critical issues of the impact of increased costs on customers, and
- Rely on relevant analyses when formulating renewable energy policy.

All of these issues are discussed in more detail below.

A. <u>Siting of Distribution-Level Resources Near Urban Load with Sufficient Capacity</u>

On page 32, the Draft Report states, with respect to development of localized energy resources ("LERs"), that "the focus for meeting regional targets for localized generation should be on developing the 'low-hanging fruit.'" Likewise, on page 22 and 28, the Draft Report recommends the installation of "12,000 MW of localized generation close to consumer loads and transmission and distribution lines." SCE agrees with the Draft Report's recommendation that LERs should be sited close to load centers.

SCE recommends that the Energy Commission go further to specify that LERs should be installed within ***urban load centers*** near distribution and transmission lines with ***sufficient available circuit capacity***. Such language generally will promote the development of LERs while also minimizing cost impacts on customers. In contrast, installation of large amounts of renewables in rural areas will be substantially more expensive because it requires upgrades to the rural transmission system, construction of new transmission infrastructure, and presents challenges to the operation and reliability of the transmission system.

Additionally, to the extent the Energy Commission attempts to identify specific load centers for siting LER development,[1] the Investor Owned Utilities ("IOUs") and municipal utilities should play a significant role in determining the optimal locations in order to minimize system impacts and upgrade costs.

B. <u>Clarification of Eligibility Requirements for 20,000 MW Target</u>

Page 22 of the Draft Report states that "[t]o support [the 33 percent] target, Governor Brown's Clean Energy Jobs Plan sets a goal of ***adding*** 20,000 megawatts ("MW") of renewable generating capacity by 2020, including 12,000 MW of localized electricity generation - small, on-site residential and business systems and intermediate-sized energy systems close to existing consumer loads and transmission lines--as well as 8,000 MW of large-scale wind, solar, and geothermal energy systems." On the one hand, the phrase "adding" suggests that the Energy Commission may view the 20,000 MW target as additional to the 33 percent target in the Renewables Portfolio Standard ("RPS") statute ("SB 2 1x").[2] On the other hand, the phrase "[t]o support [the 33 percent] target" suggests that the 20,000 MW target is intended to contribute to the 33 percent target, rather than create an additional goal. Furthermore, the Governor's Plan simply stated that "[b]y 2020, California should produce 20,000 new MW of renewable electricity"[3] and did not explicitly preclude meeting the 20,000 MW target through compliance with SB 2 1x. Accordingly, SCE recommends deletion of the word "adding" to clarify that the targets may be met through compliance with SB 2 1x, the 33 percent RPS statute. This change, consistently applied at page 22 and other similar

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[1] Draft Report at p. 40.
[2] Senate Bill 2 1x was codified in Section 399.11 *et seq.* of the California Public Utilities Code.
[3] Available at http://www.jerrybrown.org/Clean_Energy.

references in the Draft Report, eliminates ambiguity on this issue and maintains consistency with the original target specified in the Governor's Clean Energy Jobs Plan.

In addition, on page 31, the Draft Report defines localized generation as "renewable distributed generation (DG) projects 20 MW and smaller that are interconnected to the distribution or transmission grid." The Draft Report should not settle on this is definition of "DG" since the Governor's Clean Energy Jobs goal has not yet been defined. SCE supports a broader definition -- one that recognizes the breadth of LERs available, and acknowledges the progress made to date with LERs in California. The Draft Report's targets should include all existing and in-the-pipeline resources, including other alternative technologies such as efficient combined heat and power and fuel cells. Also, the definition should not include the term "DG," since resources interconnected both at the distribution and transmission level are included. For this reason, SCE suggests, instead, using the term "localized energy resources" or "LER" rather than "distributed generation" or "DG."

C. Feasibility of Use of Demand Response to Support Integration

On page 39, the Draft Report discusses the role of demand response in renewable integration efforts. SCE supports studying the use of demand response to help integrate increased levels of renewables into the electric grid associated with meeting California's 33 percent RPS target. Today, demand response mainly serves to reduce peak energy demand by responding to system emergencies and high market prices. With system balancing needs expected to increase over the next decade due to increasing generation from variable energy resources ("VERs"), SCE recommends that the Energy Commission support studies of the use of demand response to provide balancing services such as "ramping" or frequency regulation. Unlike conventional gas-fired generation, demand response may potentially provide cost-effective balancing services without generating

Greenhouse Gas ("GHG") emissions. In addition, demand response empowers customers to engage in electricity management, often reducing energy procurement costs.

D. Pursuit of Competition-based Approaches to Resolve Grid- and Distribution-Level Integration Issues

On page 39-40, the Draft Report includes several existing efforts that address grid-level and distribution-level integration issues. The Draft Report should add to this list the California Independent System Operator's ("CAISO's") Stakeholder process on Renewables Integration Market and Product Review, Phase 1 and 2. This stakeholder process is an additional ongoing effort to address grid-level and distribution-level integration issues. The CAISO intends to develop robust market structures and products to address the operational challenges associated with higher penetrations of VERs. The CAISO's process uses guiding principles to steer its market design activities,[4] including the important principle of cost-causation, i.e., that any resource increasing overall system costs should pay for the increased cost associated with its operations. Adherence to this principle is important because it directs costs for services onto market participants that cause the need for such services and thus, ensures greater long-term market efficiency and effectiveness. Ultimately, this ensures that VERs develop and operate more cost-effectively in California.

E. Availability of Project Financing for Feed-in Tariff Projects

Page 42 of the Draft Report states that "[t]ools like feed-in tariffs provide a relatively guaranteed revenue stream, reduce transaction costs, and help support low-cost

[4] These guiding principles include: (1) cost-causation, i.e., any resource increasing overall system costs should pay for the increased cost associated with its operations; (2) technology neutrality, i.e., new resources should be accommodated based on their performance capability, without preference for specific technologies; (3) transparency, i.e., price signals should be used to incent behavior aligned with market needs; (4) depth and liquidity, i.e., markets should attract robust resource participation; (5) durability and sustainability, i.e., markets should ensure an efficient mix of resources and attract new investment when and where needed; (6) flexibility and scalability, i.e., markets should adapt to new and changing energy policy goals and resource mix; (7) cost-effectiveness and implementable, i.e., existing infrastructure, industry experience, and lessons learned should be leveraged.

private financing."[5] To the contrary, fixed price feed-in-tariffs are not needed to support low-cost private financing. In fact, some developers have stated that they were unable to secure financing for contracts executed under past feed-in-tariffs with administratively-set prices. Furthermore, it is SCE's experience that many renewable projects can obtain financing through competitive solicitations. As an example, SCE executed over a dozen contracts from SCE's 2010 Solar Photovoltaic Program solicitation that successfully secured financing. SCE's experience and stakeholder feedback have shown that a thorough contract is the most important factor in securing financing. Such a contract provides the transparency that an administratively-set price attempts to achieve, by clearly outlining pricing terms and conditions (and thus allowing calculation of a "relatively guaranteed revenue stream"). Competitive pricing always provides transparency to bidders since they set their own prices. Furthermore, it would be irrational for a developer to bid into a solicitation and provide development security for a project that cannot be financed.

Moreover, administratively set prices are inconsistent with the Federal Power Act which grants the federal government sole authority to set wholesale power prices that are not set by the states solely for qualifying facilities ("QFs") pursuant to the Public Utilities Regulatory Policy Act of 1978 ("PURPA"). Such administratively set prices significantly increase the risk that utilities will procure variable energy resources at above-market prices to the detriment of their customers.

F. Reconsideration of Costs Associated with Renewables Targets

The Draft Report does not weigh appropriately the significant costs associated with procuring and delivering renewable electricity. For example, in discussing the costs of procuring renewables, the Draft Report states that "[w]hile costs of both [transmission and renewable integration] appear significant, they are certainly not insurmountable."[6]

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[5] Draft Report at p. 42.
[6] Draft Report at p. 42.

This language downplays the extreme customer burden associated with renewable procurement. Direct costs related to renewable procurement have and will continue to put upward pressure on customer rates. Additionally, procurement of variable renewable resources on the scale required by SB 2 1x and other renewable energy targets, will require major upgrades to the transmission and distribution system. This will impose significant costs on California's electricity customers. The Draft Report should provide specific guidance on how aggressive renewables procurement can be achieved in a way that will not impose high energy costs on electricity customers.

The Draft Report also ignores the category of solar photovoltaic ("PV") costs associated with structural enhancements and re-roofing that are likely to be incurred as solar PV use increases. The Energy Commission has acknowledged that none of its rooftop solar estimates for state buildings had been vetted for structural, age or other physical conditions.[7] Costs of remedying such structural or age-related defects can be significant and should be included in the calculation of costs of any rooftop PV scenarios with penetrations that are significantly beyond current levels. The Draft Report should also note the high costs of distribution upgrades required to interconnect facilities where the utility does not have sufficient distribution capacity.

G. <u>Reliance on Relevant Data in Formulating Renewable Energy Policy</u>

Page 40 of the Draft Report states that one way the Energy Commission has worked to improve distribution-level integration has been to "fund a study on renewable [Distributed Generation] integration in Germany and Spain to identify strategies that can be applied to California's system." While SCE acknowledges that looking at past experiences in other jurisdictions is a worthwhile endeavor, SCE does not believe that the European experience can form a basis for policy in California. As SCE explained in

[7] Energy Commission Staff Report: Developing Renewable Generation On State Property, at p. 51, CEC-150-2011-001 (April 2011).

previous comments,[8] European electrical systems have many key differences from those in California, many of which make the European systems more accessible and suitable for the interconnection of distribution-level resources.

One important difference is the basic distribution system design. Most California distribution systems are composed of radial distribution circuits operating from 4 to 16 kilovolts ("kV") and have many distribution transformers serving small groups of residential/commercial customers (3 – 12 customers per transformer). In Europe, networked distribution lines operate at 21 kV or similar voltages and serve large neighborhood transformation stations that provide three phase power to large groups of customers (100 – 200 customers per transformer). Since higher-voltage circuits can usually handle distribution-level resources with greater ease, the European design was able to integrate many more distribution-level resources per customer than will the average California circuit. Because of differing distribution grid topologies and communication requirements, adoption of the European model would be a costly mistake. Accordingly, SCE recommends that the Energy Commission avoid over-relying on the European experience as a model for California.

The Draft Report states that "California's estimated renewable technical potential is 18 million MW" and goes on to say that "[a]chieving this potential will depend on the ability of project developers to secure financing, permits, transmission, interconnection, and power purchase agreements."[9] These numbers are so large that they invite ridicule and should be removed from the report. They are not appropriately qualified by existing system constraints and do not take into account the environmental impact of covering many tens of thousands square miles of land with solar panels. The existing transmission and distribution systems must be transformed and significantly upgraded to support both the interconnection and deliverability of that level of renewables. In addition, the volume

[8] SCE 2011 IEPR Comments, Docket No. 11-IEP-1G (Filed May 23, 2011).
[9] Draft Report at p. 33.

of balancing reserves and resource adequacy needed to incorporate several million MW of intermittent resources has not yet been studied or contemplated. These estimates should not be used as the basis for any policy recommendations. Instead, the Energy Commission should rely on data that has been screened for economic and environmental constraints (such as the estimates from Renewable Energy Transmission Initiative ("RETI")) to provide a more realistic picture of the type and amount of renewable resources that are likely to be developed.

III. CHAPTER 2: ACHIEVING COST-EFFECTIVE ENERGY EFFICIENCY FOR CALIFORNIA: ASSEMBLY BILL 2021 PROGRESS REPORT

No comment.

IV. CHAPTER 3: ACHIEVING ENERGY SAVINGS IN CALIFORNIA BUILDINGS

SCE supports the Energy Commission's policy goal of achieving deeper energy savings in California buildings as a path towards a clean energy future. As an administrator of one of the nation's largest, most successful, and cost-effective energy efficiency and demand response portfolios in the nation, SCE continues to support California's energy efficiency future through the policy goals outlined in the *California Long Term Energy Efficiency Strategic Plan*. Further, SCE recognizes that to meet the goals of AB 32, California's Global Warming Solutions Act, California will require continued and aggressive energy efficiency efforts. In general, SCE's comments are simply a refinement of what the Energy Commission has outlined in Chapter 3 of the Draft Report, and we have focused on execution of a strategy for successfully achieving deep energy reductions in buildings.

A. <u>A Market Segment Approach to Energy Efficient Buildings</u>

First, while the Draft Report discusses valuable energy savings strategies for both newly constructed and existing buildings, the Energy Commission should focus on the customer perspective in tailoring its programs and goals, as Zero Net Energy ("ZNE") buildings may not be cost-effective for all market segments. For example, big box stores may be more amenable to lighting changes than a small jewelry store where lighting that is reduced or affects display coloring can negatively impact sales. As such, effective and efficient ZNE implementation should be driven by individual customer needs. As required by AB 758, the legislation responsible for the Comprehensive Energy Efficiency Program for Existing Residential and Nonresidential Buildings, the Energy Commission must consider "[t]he most cost-effective means and reasonable timeframes to achieve the goals of the program."[10] Likewise, for nonresidential buildings, the Energy Commission must ensure "that the energy improvements do not have an undue economic impact on California businesses."[11] This is especially important in light of current economic conditions in California. Accordingly, the Draft Report strategies should take into account the economic costs and benefits of ZNE focusing on each market segment in transforming building energy usage.

B. <u>Opportunities for Use of Integrated Demand-Side Management</u>

Furthermore, it is also important to recognize that demand response, PV incentive programs, smart meters coupled with in-building displays and equipment controls, and nascent behavior-based programs should all be part of a customer-focused integrated demand side management ("IDSM") solution. In fact, each market segment may require a different IDSM solution based upon that segment's specific economic challenges and the needs of the customers. These are all part of what SCE has been exploring as an alternative concept to ZNE. SCE calls this alternative "Maximum DSM" or "Max DSM."

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[10] AB 758, codified by Public Resources Code ("PRC") Section 25943(c)(2).
[11] Public Resources Code Section 25943(d)(3).

Max DSM refers to a least cost, life cycle approach that comprehensively achieves all available cost-effective IDSM, the execution of which is a tiered and customer-focused approach toward achieving deep energy reductions.

In order to achieve any level of deep energy reductions, the IOUs must work to deliver more sophisticated, integrated, and market segment focused IDSM offerings that provide the best fit, least cost option for customers. In the development of new program offerings, the state must incorporate economic considerations and customer choices. Maximum technical potential cannot be achieved by forcing solutions upon customers. These programs will not flourish if the cost is too high or the interest is not there. Developing an understanding of customer interests and behaviors will be essential in designing programs that will deliver deep energy reductions. Implementation of Max DSM, if done correctly, presents the opportunity to maximize savings out of each market segment. As is currently offered in SCE's IDSM programs, the combination of various energy efficiency and demand response measures, as well as a more holistic approach can yield deep savings that would not be otherwise achieved through a more conventional approach.

Building upon this principle, SCE recommends a market segment approach with specific unique, economic solutions for each segment. This "loading order" approach is consistent with the State's overall approach to meeting its energy needs. This is also in alignment with AB 758, which requires "[p]rioritizing the identified energy efficiency improvement"[12] associated with energy assessment results (i.e. audits) and the corresponding energy efficiency improvements. Within the larger context of Max DSM, that would mean the most cost-effective increments of savings would be applied first: aggressive levels of energy efficiency, supplemented with demand response (if appropriate), and ultimately site renewable generation, where economically and

[12] Public Resources Code Section 25943(c)(5)(A).

technically viable. The state should emphasize maximizing cost-effective IDSM, namely energy efficiency and demand response, first.

The utilities' generation mix should also be considered in the net energy metering of site usage. This will provide two avenues for renewables: directly at the site or indirectly through utility-scale renewable portfolio acquisition. This rewards utility efforts to improve reliance on renewable generation sources and lowers costs to individual buildings through bulk utility purchase and centralization of system operation and control.

C. Building Energy Benchmarking

SCE also supports the Energy Commission's efforts regarding building energy benchmarking as a method to help educate customers regarding energy usage and to drive deeper building energy savings. SCE applauds the Energy Commission's efforts to develop rating systems based upon California's unique building stock. Such ratings systems would provide a more robust comparison of building energy usage for California building owners. The methods and tools used to perform benchmarking must be developed with the customer in mind, however. An asset-based rating system, which inventories the energy intensity of building equipment and hardware in addition to overall energy intensity, is typically less economical for the building's owner or agent to implement. Therefore, it is important to implement an asset-based rating system in California on a voluntary basis unless the methodology can be streamlined to ensure ease of use and low cost. As with other building energy savings efforts, the asset-based rating system must be economical for the customer to implement. SCE welcomes the opportunity to work with the Energy Commission and pilot the Commercial Building Energy Asset Rating System ("BEARS") or other California-centric rating systems that may emerge in the future.

D. Lighting

Page 65 states that "[l]ighting is the largest electrical load in both homes and businesses, accounting for 35 percent of commercial annual electricity use and 22 percent of residential annual use. Assembly Bill 1109 (Huffman, Chapter 534, Statutes of 2007) requires an 11 percent reduction in electricity consumption from residential lighting and an 8.6 percent reduction from commercial lighting. Achieving these goals would reduce California's total electricity use by more than 6 percent." However, it is unclear how the Energy Commission expects the IOUs to calculate compliance with this target. To avoid confusion, the Draft Report should instead state the actual lighting energy reductions required by market sector (e.g., in 2018, residential lighting usage is to be reduced by 50 percent from 2007 levels).

E. Building Codes and Standards

Page 66 of the Draft Report states that "[i]n general, local building departments have limited resources for enforcing building codes, especially those beyond minimum health and safety protections." SCE supports the use of Energy Commission resources to ensure compliance with building code standards related to efficiency and to support training and awareness of the energy codes through programs offered by the Energy Commission and the state's utilities.

On page 67, the Draft Report recommends that "[t]he Energy Commission should adopt triennial building standards updates that increase the energy efficiency of newly constructed buildings by 20-30 percent in every triennial update to achieve ZNE standards for newly constructed homes by 2020." With the 2013 standards nearing completion, there are only two revisions of the standards that will occur between now and 2020. Energy savings increases of 20-30 percent in each revision may not be adequate to meet these goals. Furthermore, a large portion of home energy use is not regulated in the building code and total energy use is not included in the building standards. Other approaches must be used to encourage greater energy savings.

The Draft Report states that "[t]he Energy Commission, CPUC, builders, and *other stakeholders* should collaborate to accomplish workforce development programs to impart the skills necessary to change building practice to accomplish ZNE in newly constructed buildings."[13] With respect to this recommendation, SCE requests that the state's IOUs be included as stakeholders in this process. The state's IOUs have significant experience providing energy efficiency training and workforce development to customers. In fact, SCE is currently providing targeted building energy code role-based training to building department plan checkers and inspectors through the statewide IOU Codes and Standards program (the "C&S Program"), which is a collaboration between the three IOUs and the Energy Commission.

The Draft Report also states that "[t]he Energy Commission should focus significant resources during the next Building Standards update on efficiency improvements in building additions and alterations."[14] The C&S Program has historically addressed additions and alterations in code change proposals. However, the C&S Program has not received energy savings credit for any savings resulting from additions and alterations to existing buildings. Although the IOUs have requested that these energy savings for alterations and additions to existing buildings be considered in the 2010-2012 program cycle, it is unclear as to whether the CPUC will allocate the resources necessary for the impact evaluation consultants to estimate savings from the C&S Program. The Energy Commission should recommend that the CPUC dedicate resources to estimate energy savings resulting from existing building additions and alterations through the C&S Program in the 2010-2012 program cycle.

The Draft Report also recommends adopting "appliance standards that focus on reducing plug loads."[15] Although the C&S Program team supports this, there are

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[13] Draft Report at p. 68 (emphasis added).
[14] *Id.*
[15] *Id.*

limitations caused by the federal preemption of appliances regulated by the United States Department of Energy ("DOE"). California cannot exceed the efficiency levels as set forth by the DOE. Accordingly, SCE agrees with the recommendation in the Draft Report that "[t]he Energy Commission should engage in DOE proceedings that are developing federal test methods and appliance standards."[16]

V. CHAPTER 4: CALIFORNIA'S CLEAN ENERGY FUTURE

SCE takes issue with two of the metrics included in the planned update of the Energy Commission's California Clean Energy Future ("CCEF") report. First, the installed capacity metric should avoid establishing a capacity target for energy storage. Second, because the job creation metric is so difficult to calculate, SCE proposes removing it. These metrics are discussed, in turn, below.

A. 1,000 MW Target for Energy Storage

The Draft Report references the goal included in the Energy Commission's CCEF report of adding 1,000 MW of new storage capacity by 2020.[17] While SCE supports the development of cost-effective energy storage technologies to mitigate the intermittency associated with VERs, SCE takes issue with this capacity target for several reasons. First, abstract "goals" or "targets" that are disconnected from any benefit-cost analysis are inappropriate, as they may drive investment towards solutions that do not maximize customer value. As the Division of Ratepayer Advocates ("DRA") has pointed out, "[p]icking arbitrary procurement target levels, such as a MW level or a percentage level would most likely result in a sub-optimal market solution and increase costs to ratepayers without yielding commensurate benefits."[18]

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[16] *Id.* at p. 69.
[17] *Id.* at p. 71.
[18] R.10-12-007, Comments of Division of Ratepayer Advocates On Administrative Law Judge's Ruling Entering Documents Into Record And Seeking Comments, at p. 3 (dated Aug 29, 2011), available at http://docs.cpuc.ca.gov/efile/CM/142495.pdf.

Second, the CPUC has stated that "[r]atepayer funding should not generally be used to protect a competitive developer from exposure to market forces and challenges."[19] However, by establishing a capacity target for energy storage, the CCEF report would be protecting energy storage technologies that may not be cost-effective through the use of customer funds. In fact, energy storage should be viewed as one option among many to mitigate intermittency. Individual storage applications should be allowed to compete for selection as the most cost-effective solution for a given defined need (e.g., capacity or ancillary services), and where necessary, the Energy Commission should support regulatory changes to allow for this. Investment in energy storage technologies should occur if (and only if) they have proven to be the most cost-effective solution to meet a given need. Currently, there is a proceeding at the CPUC to consider the adoption of energy storage procurement targets."[20] SCE has taken the position in that proceeding that the CPUC should not adopt a numeric capacity target for energy storage. Likewise, SCE recommends that a numerical value for incremental storage capacity be eliminated from the CCEF report.

B. <u>Job Creation Metric</u>

The Draft Report proposes to include a new metric for job creation as part of the ongoing CCEF status reporting. This is a highly challenging metric to calculate accurately, and SCE recommends that the CCEF metrics not include job creation to avoid presenting incorrect information. Programs that provide subsidies to encourage investment that might not otherwise take place, such as the California Solar Initiative or the RPS, will often increase green jobs in the affected industry, but the cost of the

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[19] Comments of the Public Utilities Commission of the State of California Regarding FERC Notice of Inquiry on Third-Party Provision of Ancillary Services; Accounting and Financial Reporting for New Electric Storage Technologies, FERC Docket No. RM 11-24. at pp. 6-7 available at http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12739423.

[20] *See* Order Instituting Rulemaking Pursuant to Assembly Bill 2514 to Consider the Adoption of Procurement Targets for Viable and Cost-Effective Energy Storage Systems, R.10-12-007 (filed on December 16, 2010).

subsidies raises electricity rates and results in a reallocation of consumer spending (less money available after paying the electricity bill), which may lower jobs in other sectors of the economy. For instance, a study performed for the Energy Commission in the 2008 IEPR update proceeding found net job loss as a result of solar incentives.[21] Properly designed, a CCEF jobs metric might very well show net jobs losses taking into account the adverse economic effect of higher utility bills. Alternatively, the CCEF might limit this metric to creation of direct clean energy jobs with an appropriate disclaimer.

VI. CHAPTER 5: POWER PLANT LICENSING LESSONS LEARNED

The Draft Report includes several recommendations (listed in italics below) for the Siting and IEPR Committees to consider for helping improve the power plant licensing process in relation to water consumption.[22] SCE recommends the following modifications to these options:

- *"Eliminate the distinction between cooling and noncooling uses of water by power plants."* The Draft Report does not include a sufficient explanation of how elimination of this important distinction would result in improving the power plant licensing process in relation to water consumption. SCE recommends elimination of this recommendation until its net benefits are explored in a public forum.

- *"Promote best management practices or establish a hierarchy of water use options . . . as opposed to firm requirements."* The hierarchy or prioritization of water use options for power plant cooling has already been established by the State Water Resources Control Board ("SWRCB"), the agency whose primary jurisdiction is the protection of the state's water resources, in Resolution 75-58, adopted in June 1975. On page seven of the Resolution, it states:

[21] *See* SCE October 5, 2011 comments on the draft "Renewable Power in California" report, page 3, citing "Cost Benefit Analysis of the Self-Generation Incentive Program", TIAX LLC, CEC-300-2008-010-F, October 2008.

[22] *See* Draft Report pp. 83-84.

> It is the Board's position that from a water quantity and quality standpoint the source of power plant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters.

Accordingly, the Energy Commission should rely on the existing prioritization or work with the SWRCB to modify that prioritization, where necessary, rather than embarking on the development of a potentially inconsistent or duplicative prioritization.

- *"Change data adequacy regulations; for example, provide information sufficient for detailed showing of economic (in)feasibility of dry cooling, recycled water use, zero liquid discharge, and so forth."* SCE agrees with this recommendation; cost-benefit analyses are an important element of reasonable energy and environmental policy making, especially in light of the current economic conditions in California.

- *"Examine water use efficiency/cycles of concentration and combinations of technology that make the most sense and identify them as a priority*." Decisions on technology utilization and on combinations of technologies should be based on cost-benefit analyses to ensure that California customers are getting the best value for their dollars spent. Accordingly, SCE recommends rewording this recommendation to include a reference to cost-benefit analysis. In addition to recommending a combination of technologies that "make the most sense," this recommendation should be revised to provide a combination of technologies that are cost-effective.

- *"Establish firm thresholds for water use by power plants; for example, efficiency standards . . . or alternatively, require that water use be as efficient as possible."* Firm thresholds, if established, should be subject to regular update and review to reflect potential changes in water efficiency technology. A requirement that water use be as efficient as economically possible may prove to be a prudent goal; however, such a goal should by established by the SWRCB in consultation with the Energy Commission.

- *"Universally proscribe the use of evaporation ponds."* While zero-liquid discharge through the use of evaporation ponds may seem like an attractive option because it eliminates the disposition of a wastewater stream, evaporation ponds, by definition, are a consumptive use of water. Therefore, this recommendation conflicts with a policy of maximizing the use of a recyclable water source. Evaporation ponds could be a *recommended* engineering control, but universal proscription is not appropriate in all cases

- *"Universally require the use of dry cooling."* While the elimination of all evaporative (wet) cooling may initially appear to be an attractive option, dry cooling is not a technology that can be universally applied in all situations. For example, high ambient inland temperatures during summer months preclude the use of this technology for power plant cooling at the precise time of the year that peak loads are often seen. SCE suggests eliminating this recommendation.

VII. CHAPTER 6: ENERGY COMMISSION NATURAL GAS ASSESSMENT

No comment.

VIII. CHAPTER 7: ELECTRICITY AND NATURAL GAS DEMAND FORECAST

No comment.

IX. CHAPTER 8: CALIFORNIA'S ELECTRICITY INFRASTRUCTURE

Below, SCE provides a few points of clarification on the discussion of combined heat and power ("CHP").

A. Combined Heat and Power

With respect to CHP resources, the Draft Report states that "[f]rom 2015 onward, CHP request for offers will procure more CHP to the extent that the GHG emissions reduction target has not been met."[23] This statement is incorrect in several respects. First, the settlement agreement entered into among the IOUs, representatives of qualifying facilities ("QFs"), representatives for CHP entities and ratepayer advocates (the "QF Settlement Agreement") provides IOUs until December 31, 2020 to achieve

[23] Draft Report at p. 133.

their GHG emissions reduction targets.[24] Second, the Settlement establishes that IOUs are to conduct three CHP Requests for Offers ("RFOs") in the first four years after the Settlement Effective Date of November 23, 2011, but it does include provisions for additional CHP RFOs after that time.

Likewise, the Draft Report provides that

> . . . continued regulatory uncertainty and the lack of resolution on the high costs associated with standby charges and departing load fees negatively affect private sector CHP investment decisions in California. The largest barrier, especially for large CHP developers, continues to be uncertainty relating to GHG regulations and costs under AB 32. Others include local permitting issues, CHP program delays due to slow implementation and prolonged legal conflicts, and long waits for interconnection.[25]

This section perpetuates the misconception that standby and departing load charges and interconnection times are among the key obstacles to deployment of new CHP. In fact, standby charges and departing load charges are intended to appropriately recover costs from CHP facility host electricity customers and prevent cross subsidies that would be borne by other electricity customers. Standby charges are designed to recover the cost of fixed infrastructure that stands by to serve the CHP's host electricity customer;[26] and departing load charges prevent host electricity customers from avoiding costs incurred to serve their usage. Likewise, interconnection times for non-exporting CHP serving behind-the-meter load have been reduced through the implementation of Rule 21. Moreover, since the interconnection of new, exporting CHP has not occurred in any significant quantity since the California IOU standard offer contracts for CHP were suspended by the CPUC in the 1990s, there is no empirical evidence to support the

[24] Settlement Agreement Term Sheet, Section 6.1.1.4.
[25] Draft Report at p. 134.
[26] SCE will waive standby charges if a customer is willing to provide "physical assurance" that the customer's load normally served by the CHP facility will not be imposed on SCE when the CHP unit is not operational. *See* SCE Tariff, Form 14-749, available at http://www.sce.com/NR/sc3/tm2/PDF/14-749.pdf.

Energy Commission's claim that interconnection is an obstacle to new CHP development.

Also, the Draft Report overstates the availability of new CHP. A major factor in how much new CHP is deployed is the availability of suitable thermal host customers. Notwithstanding the overly optimistic outlook portrayed by the CHP Market Assessment reports sponsored by the Energy Commission, SCE asserts that the best CHP applications were already exploited during the first wave of QF development in the 1980s and 1990s.

Finally, this chapter concludes with a statement regarding policy measures intended to encourage CHP development to reach 2030 targets. It is unclear what the Draft Report means by "2030 targets"[27] and this reference needs to be clarified. If it is intended to represent an intermediate step towards the 2050 GHG goal referenced elsewhere in the documents, SCE would like to encourage the Energy Commission to complete the analysis described in the Draft Report before reaching conclusions about the long-term role of CHP. Currently, well designed, efficient CHP installations (with good thermal matching to host requirements) can reduce GHG relative to standalone electricity and process thermal production, but as the electricity grid declines in GHG intensity, it is likely that CHP units, no matter how efficient, will become net GHG producers due to their use of natural gas to produce electricity.

X. CHAPTER 9: TRANSPORTATION ENERGY FORECASTS AND ANALYSIS

With respect to growth of electric vehicles, the Draft Report states that "[b]etween 2009 and 2025, various forecasts show that electric vehicle growth will increase rapidly, largely the result of substantial, cumulative market penetration of plug-in hybrid electric vehicles ("PHEVs") and fully electric vehicles ("FEVs"), ranging from 440,000 vehicles in 2020 to 1.4 million vehicles by 2025."[28] The Draft Report also provides that "[t]hese

[27] Draft Report at p. 135.
[28] Draft Report at p. 138.

scenarios are not intended to be explicit predictions of the future, but rather to explore the potential range, magnitude, and direction of trends in energy use and price, vehicle purchase, and supply and infrastructure requirements under a wide array of uncertain future conditions."[29] The Energy Commission's range for plug-in electric vehicle ("PEV") adoption in California by 2020 underestimates the total number of PEVs and their impact on statewide petroleum consumption, GHG production, and electricity demand in the state that California can reasonably expect over that timeframe.

SCE has developed a forecast of PEVs for 2020, which is based on a comparison of over 10 studies conducted by various consulting and other stakeholder agencies. SCE's analysis indicates that the PEV penetration in California will range anywhere between 450,000 to 1 million PEVs by 2020 in SCE's territory alone, which translates to roughly 1 million to 2.6 million by 2020 in the state.[30] While the Energy Commission references the zero emissions vehicles ("ZEV") program as a major driver of PEV adoption in the state, the ZEV program should not be seen as the ceiling, but rather the floor/low end of the range. Because the Energy Commission's intentions are to explore the potential range and magnitude of the impact of alternative fuels on California transportation energy consumption, SCE recommends that for its future evaluations, the Energy Commission consider a broader, more comprehensive view of estimates for PEV adoption in California over the next decade.

SCE uses the ZEV program estimates as its floor or low case, which, under the 2009 ZEV program, translated to approximately 170,000 PEVs by 2020 in SCE territory alone. SCE is willing to provide our reference supporting the various higher penetration cases.

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[29] Draft Report at p. 136.

[30] SCE-03, Vol. 02, page 17, Figure III-2, available at http://www3.sce.com/sscc/law/dis/dbattach3e.nsf/0/5107C6F4C71E3017882577E300235AC4/$FILE/S03V02.pdf.

A few days after the Draft Report was released, the California Air Resources Board ("ARB") released the ZEV Program Staff Report,[31] which provided a detailed, year-by-year forecast, from 2018 through 2025, of incremental PEV additions in California. The forecast, however, does not take into account the expected PEV sales for ZEV compliance prior to 2018. To align with the ARB's ZEV Program, the Energy Commission should combine the ARB's pre-2018 and 2018-2015 compliance outlooks and use that figure as the floor for the Energy Commission's forecast for PEV penetration. Because the Energy Commission's intentions are to explore the potential range and magnitude of the impact of alternative fuels on California transportation energy consumption, SCE recommends that for its future evaluations, the Energy Commission consider a broader, more comprehensive view of estimates for PEV in California over the next decade.

XI. CHAPTER 10: BENEFITS FROM THE ALTERNATIVE AND RENEWABLE FUEL AND VEHICLE TECHNOLOGY PROGRAM

In footnote 176, the Energy Commission states that it used an energy efficiency ratio ("EER") of 2.6 to estimate the GHG impact of electricity and states that this is "roughly comparable" to the ratio established by ARB.[32] In an effort to better align with the ARB's latest low-carbon fuel standard regulations, the Energy Commission should change the EER it uses in its analysis to 3.4. This change (and using ARB's expected number of PHEVs an BEVs from above) will have a significant impact on GHG reduction forecast.

[31] http://www.arb.ca.gov/regact/2012/zev2012/zevisor.pdf.
[32] Draft Report at p. 163, fn 176.

XII. CHAPTER 11: BRINGING ENERGY INNOVATION TO CALIFORNIA THROUGH THE PUBLIC INTEREST ENERGY RESEARCH PROGRAM

No comments.

XIII. CHAPTER 12: 2011 BIOENERGY ACTION PLAN

No comments.

XIV. CHAPTER 13: NUCLEAR ISSUES AND STATUS REPORT ON ASSEMBLY BILL 1632 REPORT RECOMMENDATIONS

SCE submits comments on the Draft Report concerning the following nuclear power plant issues: (1) License Renewal; (2) Seismic Issues; (3) Spent Fuel Pool and Independent Spent Fuel Storage Installation ("ISFSI"); (4) Plant Safety; (5) Station Blackout; and (6) Fukushima Daiichi events. SCE addresses each of these topics below.

SCE notes that the Energy Commission broadly cites "the accidents and/or plant shutdowns following the earthquakes at Fukushima Daiichi (2011), Kashiwazaki-Kariwa (2007), and at the North Anna nuclear plant (August 23, 2011)" as the basis, in part, for the recommendations. However, the Energy Commission's report does not identify how particular aspects of these events serve as the basis for each specific recommendation. Therefore, SCE's comments regarding the recommendations are limited to what is stated in the recommendations, and do not speculate on the Energy Commission's possible basis for each specific recommendation.

A. License Renewal

The Draft Report recommends on Page 203, "[t]o help ensure plant reliability and minimize costs, PG&E and SCE should complete the remaining AB 1632 Report recommended seismic studies and make their findings available for consideration by the Energy Commission, CPUC, California Coastal Commission, and the NRC during their reviews of PG&E's (and SCE's, if they apply) license renewal application(s) and related certificates. SCE should not file a license renewal application with the NRC without prior approval from the CPUC." Likewise, on page 200, the Draft Report states "[h]owever, the utilities' recent progress reports indicate they are not on schedule to complete the additional AB 1632 Report recommended seismic hazard studies until 2013 (PG&E) and 2015 (SCE) at the earliest."

SCE urges that the schedule for submittal of a license renewal application for San Onofre Nuclear Generating Station ("SONGS") should be based on when it is appropriate for resource planning considerations and should not depend on completion of seismic studies and development of results, which are activities of inherently uncertain duration. The Nuclear Regulatory Commission ("NRC") does not consider changes in design bases, such as seismic requirements, as part of license renewal. Accordingly, the studies and results are not required for that purpose. Whatever actions are required based on the seismic studies and results will be taken under provisions of the ongoing operating license.

On page 203, the Draft Report recommends that "[s]ince the regulatory changes and requirements recommended by the NRC Near-Term Task Force ("NTTF") on Fukushima could result in higher costs, for example, seismic retrofits, PG&E and SCE should provide cost estimates to the CPUC for complying with NRC's requirements and the costs of potential replacement power in the event of an extended outage. The CPUC should consider these additional costs during its license renewal evaluations for Diablo Canyon (and SONGS, if SCE applies for license renewal)." SCE anticipates that any scope or cost impacts due to any regulatory changes recommended by the NRC NTTF would occur during the on-going license period. As such, descriptions and cost estimates for any such changes/requirements would be included in future general rate cases ("GRCs"), or as appropriate, separate CPUC applications, and would not have any relevant impact on CPUC license renewal evaluations.

B. Seismic Issues

On page 201, the Draft Report recommends that "SCE should include the Independent Peer Review Panel's ("IPRP's") evaluations, findings, and recommendations in their seismic hazard analyses and submittals to the NRC." The NRC has specific guidance as to when and what information is to be submitted by licensees. SCE as the licensed operator will provide information to the NRC, as identified in its regulations, requests for information, and/or guidance.

On page 201, the Draft Report recommends that "SCE should include greater representation on their SONGS' Seismic Advisory Board of independent seismic experts with no current or prior professional affiliation with utilities, including SCE or PG&E, or their consultants. The composition of SCE's SONGS' Seismic Advisory Board of independent seismic experts should exclude those with a continuing affiliation with SCE." SCE believes that the current membership of the SONGS Seismic Technical Advisory Board ("STAB") is appropriate. SCE expects the STAB to provide technical expertise to company management. The STAB is not intended to provide oversight. The SONGS' STAB consists of seismic experts who have expertise in geology and seismology and are knowledgeable about the seismic hazard at the SONGS site.

On pages 19 and 184, the Draft Report states "However, Diablo Canyon and SONGS are older plants located near major earthquake faults and have significant inventories of spent nuclear fuel stored onsite." While the licensing basis for SONGS assumes for design purposes that a magnitude 7.0 earthquake could occur nearby on what was identified as the Offshore Zone of Deformation, the connection of this feature to identified faults to the north and south was a conservative hypothetical assumption. One objective of the planned seismic studies is to further evaluate this feature (i.e. the Offshore Zone of Deformation) using current technology.

C. Spent Fuel Pool and Independent Spent Fuel Storage Installation

On page 201[33], the Draft Report recommends that "PG&E and SCE, as soon as practicable, should transfer spent fuel from pools into dry casks, while maintaining compliance with NRC spent fuel cask and pool storage requirements." SONGS utilizes Pressurized Water Reactors ("PWR") and Fukushima Daiichi utilized Boiling Water Reactors ("BWR"). Unlike fuel storage in pools at Fukushima Daiichi, used fuel is stored in a separate building at each SONGs unit. This allows access to the used fuel building to ensure cooling is maintained for the used fuel in the event conditions prohibit access to the containment buildings housing the reactors.

Storage of used fuel in both pools and in dry storage has been identified by the NRC as safe storage. SCE evaluated whether the rate at which used fuel is moved from the used fuel pools into dry cask storage should be modified. SCE determined that moving fuel at a faster rate would accelerate customer costs and employee exposure to radiation with no significant increase in safety. Therefore, SCE will continue to follow its used fuel management plan as identified in its February 2, 2011 AB 1632 submittal to the CPUC. SCE plans to transfer used fuel from SONGS 2 & 3 used fuel pools to ISFSI dry cask storage as needed to maintain the full core offload capability required by the NRC. SCE's used fuel management plan provides safe and secure storage of used fuel until the DOE meets its acknowledged obligations to remove the used fuel from the site.

On page 189, the Draft Report states "[i]nternational researchers examining worldwide radiation monitoring stations found that the Unit 4 fuel pool at Fukushima played a significant part in the widespread release of radioactive materials to the environment." The statement is misleading. The initial belief was that the Unit 4 used fuel pool had lost water level allowing the spent fuel in it, including recently unloaded fuel, to overheat and melt, and that the hydrogen generated from the assumed fuel

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[33] The Draft Report discusses Spent Fuel Pool and ISFSI similarly on p.201 and p.189. These comments apply to both instances.

melting caused a hydrogen explosion in that building. It was later determined that the water level never dropped below the top of the fuel in the used fuel pool throughout the event. The hydrogen explosion in Unit 4 was determined to be the result of hydrogen generated in Unit 3 back feeding through the ventilation system into the Unit 4 area. As identified in the Institute of Nuclear Power Operations ("INPO") report[34], there was no significant damage to the used fuel pools or to the stored fuel.

On page 188, the Draft Report states "Due to the unavailability of offsite storage or disposal facilities, most spent fuel is stored at reactors in cooling ponds in far greater densities than original plant designs and in significantly less protected buildings than the reactor cores." Additionally, on page 189, the draft report states "A high-priority measure would be to equip spent fuel pools with low density racks for spent fuel storage." The original storage capacity for SONGS 2 & 3 was 1,600 used fuel assemblies. When the used fuel storage pools were modified to increase the storage capability to the current 3,084 assemblies, all systems, structures, and components associated with used fuel cooling were analyzed and modified as appropriate to ensure safe storage of a larger quantity of used fuel. Replacement of existing used fuel racks would result in unnecessary production of low level radioactive waste and additional, unnecessary cost and personnel radiation exposure.

On pages 20 and 185, the Draft Report identifies that the 9.0 magnitude earthquake and estimated 40-foot tsunami at the Fukushima Daiichi plant site resulted in "overheating and damage to spent fuel storage pools." Likewise, on page 186 and 187, the Draft Report asserts that "there was structural damage to the plant and radioactive material releases following the earthquake even before the tsunami hit." While the Richter scale is one common way to measure the magnitude of an earthquake at its

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[34] Institute of Nuclear Power Operations, "Special Report on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station", INPO 11-005, November 2011 - http://hps.org/documents/INPO_Fukushima_Special_Report.pdf.

epicenter, when assessing the seismic safety at nuclear facilities, peak ground acceleration at the facility's location is the more appropriate way to measure an earthquake's potential impact, especially when the epicenter is miles away. The design basis ground motion of .45g at several of the Fukushima units was exceeded in the east/west direction by about 20%, but not in the north/south direction.

While the ground motion exceeded the design basis of the plant as indicated above, all units shutdown normally. It appears that the earthquake resulted in a loss of off-site power; however, all of the station's available diesel generators started and supplied necessary power to the plants. There is no indication that the earthquake alone would have resulted in any significant damage to the fuel.[35] While there may have been subsequent physical damage to the used fuel pools due to falling debris from hydrogen explosions in the reactor building, no known fuel damage occurred due to overheating in the used fuel pools, and they were not a source of any significant release of radioactivity.[36] There is no indication that there was any radioactivity released from the site prior to the tsunami. The subsequent tsunami resulted in a loss of all AC power.

D. Plant Safety

The Energy Commission's report recommends, on page 204, that "the CPUC should consider establishing a SONGS Independent Safety Committee, modeled after the Diablo Canyon Independent Safety Committee, to provide an independent review of SONGS' safety, performance, and follow-up to the lessons learned from the Fukushima Daiichi plant accident." SCE understands that the purpose of the Diablo Canyon Independent Safety Committee is to assess the safety of operations and suggest any recommendations for safe operation. At all U.S. nuclear power plants, the NRC Resident

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[35] Institute of Nuclear Power Operations, "Special Report on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station", INPO 11-005, November 2011 - http://hps.org/documents/INPO_Fukushima_Special_Report.pdf

[36] Institute of Nuclear Power Operations, "Special Report on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station", INPO 11-005, November 2011 - http://hps.org/documents/INPO_Fukushima_Special_Report.pdf.

Inspector Program includes a rigorous and ongoing assessment of safety which is extensively discussed in the public record. This assessment ensures that station management receives necessary independent input required for safe operation. Duplicating this input from another independent source would result in an unwarranted and unacceptable distraction to station management and increased costs to customers.

E. Station Blackout

On page 190, the Draft Report states "[s]ince SONGS is located on the Marine Corps Base, it has backup resources for handling a station blackout." This statement is misleading. SONGS and the US Marine Corps have a mutual-aid agreement which is primarily related to firefighting, but it does not include providing emergency power to the plant.

F. Fukushima Daiichi Events

There are a multitude of instances in the Draft Report where information regarding the Fukushima event does not appear to be consistent with the findings of multiple, independent sources with respect to the events referenced. For example, on page 190, the Draft Report states "[t]he tsunami struck about 40 minutes later, flooding the electrical equipment rooms and thereby disabling the generators. At that point, the plant relied solely on direct current (DC) power from the station batteries. However, the batteries eventually drained, leaving the station without power." These statements are inaccurate. INPO Special Report 11-005 states that one of the diesel generators on Unit 6 remained operational throughout the event and provided power to Unit 6 and later to Unit 5.[37]

[37] Institute of Nuclear Power Operations, "Special Report on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station", INPO 11-005, November 2011, available at http://hps.org/documents/INPO_Fukushima_Special_Report.pdf.

XV. CONCLUSION

SCE appreciates the opportunity to review and comment on the Draft Report. While SCE commends Energy Commission Staff for completing this large undertaking, which encompasses an analysis of numerous complex issues, SCE believes that the Draft Report should be further refined and improved, as set forth herein, before it is formally adopted by the Energy Commission.

Attachment 2
To SCE's Comments on 2011 Draft IEPR
Specific Language Changes

SCE recommends the following changes be made to the Draft 2011 Integrated Energy Resources Report ("IEPR"). A page citation to the Draft 2011 IEPR is provided in brackets for the changes that SCE proposes. Added language is indicated by **bold type**; removed language is indicated by ~~strike-through~~.

[P. 32]

Given the trend of declining costs for solar photovoltaic (PV) technologies, the Energy Commission believes the focus should be on developing the "low-hanging fruit" in the next few years, **in particular, cost-effective localized energy resources ("LER")**[1] **that are located near load centers.**

[P. 33]

Achieving this potential will depend on the ability of project developers to secure financing, permits, transmission, interconnection, **local community acceptance,** and power purchase agreements."

[P. 37]

Currently, proposed **renewable generation** projects are **evaluated in queue clusters and selected** based on existing **energy load needs** ~~as demonstrated by individual interconnection requests~~.

[P. 38]

~~Complementary~~ **Enabling** technologies like natural gas-fired power plants, energy storage, and demand response provide various choices for flexible and rapid response for renewable integration. Natural gas units can provide quick startup, rapid ramping, regulation, spinning reserves, and energy when intermittent resources are not available. However, a challenge is the need to modify revenue streams to cover the incremental costs of shifting the use of these units from providing maximum energy production to providing flexible products, as well as potential environmental impacts **and loss of machine life** from cycling these units more frequently.

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[1] SCE recommends using the term "Localized Energy Resources" or "LER" in the context of the 12,000 MW goal, because this goal impacts transmission as well as distribution. Accordingly, all such references to "distributed generation" should be replaced with "LER".

The potential loss of thermal power plants along the coast could also reduce dynamic stability margins on the grid necessitating back-up generation or inertial support.

[P. 39]

Distribution-Level Integration
There are also issues with integrating large amounts of renewable DG into the distribution system, which brings power from substations to consumers. Much of today's distribution system still uses designs, technologies, and strategies that were developed to meet the needs of mid-20th century customers and move electricity in only one direction. The distribution system needs to be modernized and use technologies that easily allow for two-way flow of electricity as well as improved communication technologies, better protection systems, uniform standards, cyber security measures, and inverter standards. **Better models and simulation tools are also needed to evaluate protection, control and operational requirements of the grid with a high penetration of distributed energy resources.** There are also process challenges associated with the increasing number of requests for interconnection and the need to reduce the complexity, expense, and length of time associated with that process.

[P. 53 Table 5]

Table 5 in the Draft Report should be replaced in its entirety with the following:

Table 5: IOUs' and Publicly Owned Utilities' 2009 and 2010 Savings and Expenditures

2010	**GWh**	**MW**	**MMth**	**Expenditures ($M)**
SDGE	**311**	**50**	**1**	**$63.02**
SCG	**3**	**2**	**28**	**$50.69**
PGE	**2,060**	**357**	**17**	**$370.37**
SCE	**2,236**	**430**	**0**	**$271.13**
Total	**4,610**	**839**	**46**	**$755.21**

2009	**GWh**	**MW**	**MMth**	**Expenditures ($M)**
SDGE	**506**	**116**	**6**	**$90.31**
SCG			**24**	**$45.20**
PGE	**1,560**	**267**	**24**	**$360.22**
SCE	**1,704**	**317**	**0**	**$225.77**
Total	**3,770**	**700**	**54**	**$721.51**

Note that all data came from each IOUs' energy efficiency annual reports for 2009 and 2010.

[P. 60]

Consistent with the loading order, the goal is to minimize energy use as much as technologically **and economically** possible through cost-effective efficiency measures, and then generate the balance of the building's energy needs with onsite renewable electricity generation such as solar photovoltaic systems or wind-driven electricity generators **where economically viable for the building owner.**

[P. 64, Footnote 59]

California's appliance efficiency standards are ~~Program~~ forecasted ~~for 2020 will grow~~ **to grow by** 27,116 GWh a year **by 2020**. This would represent 8.6 percent of projected load in 2020. At the current rate of 14¢ per kilowatt hour, this would save the state about $3.8 billion for 2020. See: http://www.energy.ca.gov/2009_energypolicy/index.html.

[P. 65]

The battery charger standards will improve the efficiency of a wide range of plug loads, such as laptop computers, power tools, electric toothbrushes, cell phones, ~~and~~ mp3 players**, and golf carts**.

[P. 65]

However, the challenge of meeting commercial lighting and outdoor lighting mandates must be addressed through additional standards **and voluntary programs** developed in collaboration with the lighting industry, consumers, the CPUC, and the state's utilities.

[P. 65]

Light-emitting diode (LED) lamps are a promising example for advancing beyond current ~~mandatory~~ **base** lighting standards.

[P. 66]

To address this risk, the Energy Commission is working with CLTC engineers, industry, **the state's utilities,** and the CPUC to develop product quality specifications for LEDs that could serve as a basis for future utility incentive programs.

[P. 66]

In general, local building departments have limited resources for enforcing building codes, especially those beyond minimum health and safety ~~protections~~ **requirements**.

[P. 66]

The lack of compliance with standards can result in defective construction and installation, including improper installation of ~~wall and~~ **building envelope** and duct insulation, HVAC systems, **lighting systems, photovoltaic installations** and other efficiency measures, all of which can drive up energy costs for home and building owners.

[P. 67]

The Energy Commission, CPUC, local governments, **the state's utilities,** and builders should collaborate to encourage the building industry to reach these advanced energy efficiency levels in a substantial segment of the market through industry-specific training and financial incentives.

[P. 67]

The Energy Commission and CPUC should coordinate future investor-owned utility "new construction-related" programs with the Energy Commission's efforts to meet the ZNE goals through triennial updates of ~~mandatory~~ **base** and reach standards.

[P. 67]

The Energy Commission should adopt triennial building standards updates that increase the energy efficiency of newly constructed buildings by 20-30 percent **provided that the measures and associated standards are economically viable** in every triennial update to achieve ZNE standards for newly constructed homes by 2020.

[P. 68]

The Energy Commission, **in collaboration with other stakeholders**, should develop an asset rating system for nonresidential buildings that can be used **on a voluntary basis** to rate the energy efficiency of commercial properties and provide owners and potential buyers with information about the energy efficiency of the buildings they own or are considering for lease or purchase. This will help drive market demand for efficiency. The Energy Commission also should consider how the cost-effectiveness of options to achieve greater energy efficiency in those buildings can be addressed in conjunction with building asset ratings. The Energy Commission**, the Utilities,** and CPUC should collaborate to pilot the implementation of the rating system through education and financial incentives. The ~~Energy Commission and CPUC~~ **Energy Commission, the CPUC, the utilities, and other stakeholders** should collaborate to pilot the implementation of the rating system through education and financial incentives.

[P. 68]

The Energy Commission should focus significant resources during the next Building Standards update on efficiency improvements in building additions and alterations **that are economically viable.**

[P. 68]
The Energy Commission and CPUC**, in collaboration with the utilities and other stakeholders,** should jointly develop a roadmap to meet the lighting energy savings mandated by AB 1109, including new appliance and building efficiency standards and

market transformation programs to achieve higher levels of **cost-effective** energy efficiency than required by standards.

[P. 75-76]

Remove the two paragraphs proposing "jobs" as a metric.

[P. 102 Table 8]

Non-Coincident Peak (MW)				
Average Annual Growth Rates				
	CED 2009 (December 2009)	CED 2011 Preliminary High (August 2011)	CED 2011 Preliminary Mid (August 2011)	CED 2011 Preliminary Low (August 2011)
1990-2000	1.23%	1.23%	1.23%	1.23%
2000-2010	1.52%	~~1.23%~~**1.19%**	~~1.23%~~**1.19%**	~~1.23%~~**1.19%**
2010-2015	1.37%	~~1.19%~~**1.95%**	~~1.19%~~**1.68%**	~~1.19%~~**1.22%**
2010-2020	1.31%	~~1.95%~~**1.76%**	~~1.68%~~**1.45%**	~~1.22%~~**1.26%**
2010-2022	--	~~1.76%~~**1.72%**	~~1.45%~~**1.38%**	~~1.26%~~**1.20%**

[P. 116-117]

After numerous failed attempts to purchase offsets because commercial emission reduction credits were unattainable, EME purchased and **will** retire~~d~~ Huntington Beach Units 3-4 from AES Corporation to use the exemption from offsets allowed by Rule 1304(a)(2) for Walnut Creek.

[P. 127, Title of Table 13]
Table 13: OTC Capacity With Compliance Deadlines in or Before 202~~0~~**2**

[P. 132]

Studies are underway to help understand the future needs of the transmission grid. The California ISO is conducting a study with General Electric on frequency response and system inertia as part of the Renewable Integration Analyses. This study is expected to be completed ~~in fall~~ **by the end of** 2011.

[P. 134]

Discussions with CHP generations and developers indicate that continued regulatory uncertainty ~~and the lack of resolution on the high costs associated with standby charges and departing load fees~~ negatively affect private sector CHP investment decisions in California.

[P. 135]

Delete the reference to 2030 targets.

[P.185]

On March 11, 2011, a magnitude 9.0 earthquake and tsunami in Japan knocked out power at the Fukushima Daiichi nuclear plant in Japan, resulting in **fuel damage and resulting production of hydrogen,** ~~reactor meltdowns~~, **hydrogen** explosions, fires, and widespread radioactive contamination.

[P.185]

The 9.0 magnitude earthquake on March 11, 2011, in northern Japan and an estimated 40-foot tsunami at the Fukushima Daiichi plant site resulted in ~~spent fuel meltdowns~~ **fuel damage and resulting production of hydrogen** at three of the plant's six reactors, overheating and damage to spent fuel storage pools, **hydrogen** explosions and fires, large-scale releases of radioactive materials to the environment, and the evacuation of an estimated 80,000 people.

[P.186]

208 On August 23, 2011, following an earthquake, the two-reactor North Ana nuclear plant in Virginia shut down. The dry cask storage containers during the earthquake moved several inches **as would be expected consistent with design**. The earthquake exceeded design parameters for the plant. NRC is asking Dominion to demonstrate to the Energy Commission that no functional damage occurred to features necessary for continued operation without undue risk to the health and safety of the public. The NRC ~~will~~ complete**d** a safety evaluation regarding restart of the plant, **and the plant has already been restarted.**

[P. 194]

SCE periodically **reassesses** ~~reviews~~ the **access roads and** ~~roadways~~ surrounding **roadways near** SONGS and **confirms** ~~has concluded~~ **that** they are adequate for **allowing** emergency personnel **to reach SONGS and local communities and non-essential plant workers to evacuate when appropriate in the event of** ~~access and for evacuation during~~ an emergency.

[P. 203]

Since the regulatory changes and requirements recommended by the NRC Near-Term Task Force on Fukushima could result in higher costs, for example, seismic retrofits, PG&E and SCE should provide cost estimates to the CPUC for complying with NRC's requirements and the costs of potential replacement power in the event of an extended outage **due to the implementation of any such NRC requirements**. ~~The CPUC should consider these additional costs during its license renewal evaluations for Diablo Canyon (and SONGS, if SCE applies for license renewal).~~