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California Energy Commission
Dockets Office, MS-4
Re: Docket No. 11-IEP-1A
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Docket No. 11-IEP-1A - Draft 2011 IEPR

Sierra Club California appreciates the opportunity to comment on the California Energy Commission's (CEC) Draft 2011 IEPR Report. Sierra Club California is a non-profit membership organization with a long-standing interest in minimizing the societal and environmental costs of reliable energy services to Californians. We represent our 170,000 California members' interest in receiving affordable energy services and reducing the environmental impact of California's energy consumption.

Sierra Club California Comments on the Draft 2011 IEPR Report are organized by Report Section:

EXECUTIVE SUMMARY

Over-procurement of fossil fuel generation: IEPR Summary and body of text should draw attention to the implications and consequences of the state's chronic over-procurement of fossil fuel generation capacity, especially natural gas. The California Public Utilities Commission's (CPUC) LTPP proceedings have registered capacity projections that far exceed normal reliability margins for the next decade. The existence of this large excess deters needed investment in renewable sources and damages prospects for attaining state goals for renewable power and greenhouse gas reduction. The superabundance of unnecessary gas plants and transmission lines, all of which the ratepayers are responsible for, will hamper California's ability to justify investments in other types of resources, including distributed generation (DG) of all types. Investor-owned utilities have consistently failed to provide any compelling or persuasive demonstration of need for this surplus. CEC must consider need when approving new plants.

Feed-In Tariffs: Summary and body of text (see page 42 IEPR) omit strong support for Feed-In Tariffs (FiT). FiT should be given more prominence and highlighted as potentially the most powerful engine available to massively scale up investment in renewable energy sources without undue strain on taxpayers' pockets. IEPR should note the advantages for California of a fully integrated, comprehensive FiT program that are clearly being demonstrated throughout the world where such robust FiT programs have resulted in the fastest and largest installation of renewable capacity (e.g., Germany, France, Britain).

Todd Stern, the head of the climate change negotiating team for the U.S. Government called for FiT policies as key to solve the problem. Stern gave the briefing on December 7, 2011 to nearly 300 environmental group leaders in Durban, South Africa at the UN Climate Change negotiations. One of his major points was that the U.S. and other countries should utilize the Feed-in Tariff approach in order to transform the energy production sector of society. The IPCC Working Group III on Renewables recommended in chapter 11 "Policy, Financing and Regulation" of their November 2011 report that FiTs are the least costly and most competitive mechanism to deploy to combat climate change.

IEPR should spell out, at least in summary, key elements of a truly strong California FiT program, based on the most successful FiT examples elsewhere, and should explain the limitations of current programs and CPUC proceedings. There is real concern that the essentially non-FiT approach being recommended by the CPUC is doomed to fail or come up short, leading to the loss of valuable time in getting to a really effective state FiT program. At the CPUC, Sierra Club California currently is espousing a number of corrective elements, in particular, cost-based pricing, which is the most effective method for meeting renewable energy goals, market transformation, and cost reduction.

Solar Thermal: Summary (page 6 IEPR) fails to address the shortcomings of large solar thermal installations, as well as the strategically dubious regulatory practice of continual approval of plants that fail "viability tree" tests relative to other more competitive alternative forms of solar power and other renewable energy sources. IEPR should note that such problematic investment of billions of dollar ratepayer money makes it harder to justify more ratepayer money for FiT programs or distributed renewable generation that promise greater scalability, energy payoff and community benefits, particularly in the solar field.

Once-Through Cooling: Summary fails to note that renewables can replace retiring OTCs better than fossil fuels. Summary mentions only fossil fuels (page 12, para. 3 IEPR). Instead of just replacing old gas-fired plants with new ones, there is a more desirable alternative strategy, "Green Energy Replacement", that involves phased replacement with solar power generation, peak demand programs and energy efficiency. This strategy has several advantages and benefits: costs will be much lower, ratepayer costs will be contained, utilities will be helped to close their RPS gap, damage to public health can be reduced, attainment of AB 32 goals can be helped, and more local jobs will be provided. OTC "Green Energy Replacement" strategy is outlined in detail by Pacific Environment's November 2009 published analysis, "Green Opportunity: How California Can Reduce Power Plant Emissions, Protect the Marine Environment and Save Money", by Robert Freehling and Suzanne Doering; Editor: Rory Cox.

PIER: Summary talks about PIER only as funding technologies that the private sector has overlooked. Summary omits mention of PIER's additional role in stimulating and funding local community action on behalf of renewable power (pp. 18-19 IEPR). Through RESCO's grant program, this has been a vital element in local planning for renewable energy resources and should be mentioned favorably here. IEPR could emphasize that one of the less understood benefits of the PIER program is the degree to which the program enhances long-term energy security, community energy independence, rate stability, and long-term rate lowering. This facet of the PIER program is exemplified in the PIER-funded Renewable Energy Secure Communities (RESCO) program. The goal of RESCO is to develop and demonstrate the integration of on-site renewable energy generation combined with on-site energy storage, lighting and heating, ventilation and air conditioning, building retrofits, and electric vehicle charging stations.

Renewables Integration: Summary fails to clarify confusion about how much or how little more new natural gas capacity is necessary to being necessary to back up or "integrate" new renewables. IOUs and agencies have greatly exaggerated the amount of capacity required to overcome intermittency of renewables. This has been a standard rationale to justify the aforementioned glut of unneeded natural gas generation capacity. IEPR should give more prominence the many non-fossil-fuel alternative ways of dealing with intermittency that are moving rapidly into market acceptance, have been deployed in other countries and hold promise in California.

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Barriers to Distributed Generation: Summary fails to adequately list, at least in summary, barriers to DG and how these barriers can be overcome, in support of the Governor's 12 GW state goal for DG. IEPR could usefully focus more fully on what are the real (as opposed to imagined or rhetorical) barriers, and what is being done or could be done to remove them.

Energy Efficiency: Summary does not specify readily achievable and cost-effective energy savings over and above the 20-30% range. (See page 3 IEPR, "Energy Efficiency in New and Existing Buildings, paragraph 3). Energy savings of 45% are now readily achievable with current technology, including building envelope testing, measurement and validation prior to turning the building over for occupancy. The higher energy savings of 30-45% should be the common target for energy efficiency in new buildings and not relegated to "reach standards".

Transportation: Summary on "Transportation Fuel Demand and Infrastructure Needs" provides no transportation policy recommendations that would reduce driving. Uncertainties in estimations of sufficient improvements in car and fuel efficiencies, in the time required, means that growth in net driving would be catastrophic, from a climate perspective, and will undermines SB-375. Getting the car-and-light-duty-truck sector emissions to support the minimum climate-stabilization trajectory, such as S-3-05, will require clean cars, clean fuels, *and less driving*.

Nuclear: There is an error on IEPR page 20, paragraph 3. "resulted in spent fuel meltdowns " should be, "resulted in reactor core meltdowns".

INTRODUCTION:
In the "California's Nuclear Power Plants" section, page 27 of the IEPR, it should be noted that the Fukushima Daiichi Nuclear Plant was destroyed by the chain of events, not merely disabled. Further, it should be noted that without the direct monetary intervention of the Japanese government, the IOU operator would now be bankrupt.

CHAPTER 3: Achieving Energy Savings in California Buildings

1) In the IEPR "Building Energy Efficiency Compliance and Reach Standards" page 60, paragraph 4, we strongly urge that readily achievable and cost-effective energy savings over and above the 20-30% range should be set for the 2013 Building Standards. We suggest that the range should be 30-45%, with savings over 45% falling into the Reach Standards. Additionally, it is important that the Building Standards require that the building envelope integrity be tested, validated, and remediated (if necessary) prior to turning a building over to its occupants.

2) In the IEPR "Efficiency Improvements in Appliances". Page 65, paragraph one, it is very important to specifically add "always-on" computer technologies, such as cable modems, DSL routers, television set-top-boxes, and DVR's (Digital Video Recorders) to provide minimum efficiencies for this special class of plug loads.

3) In the IEPR "Recommendations" section for "Newly Constructed Buildings", page 67, paragraph 2, as above we suggest that the readily-achievable and cost-effective energy efficiency improvement range of 30-45% is achievable for the 2013 Building Standards.

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4) In the IEPR "Recommendations" section for "Appliance Efficiency Standards", page 68, paragraph 2, we suggest an addition that specific attention be directed at the class of "always-on" devices, as mentioned above.

CHAPTER 6: Energy Commission Natural Gas Assessment

There is an extensive discussion of the availability of shale gas, but no mention of the extensive controversial environmental impacts to water supplies, fugitive methane emissions and even potential earthquakes. The CEC should mention the environmental controversies and note that the fugitive methane emissions from shale gas are estimated at 30% - 100% more than the fugitive methane emissions from conventional wells (Howarth, et al, Climatic Change (2011) 106:679–690 DOI 10.1007/s10584-011-0061-5). Because the latest science reports that methane has 34 times the GHG impact of carbon dioxide over 100 years and 105 times over the crucial next 20 year (Drew T. Shindell, et
al., "Improved Attribution of Climate Forcing to Emissions," Science
326, 716 (2009), the result is that the GHG impact of electricity from shale gas is more than the GHG impact from a coal plant (Wigley, Climatic Change, August 2011, DOI 10.1007/s10584-011-0217-3).

CHAPTER 8: California's Electricity Infrastructure

In the IEPR " Part One: Once-Through Cooling and Assembly Bill 1318, we provide the following commentary:

California's 17 old once-through-cooling (OTC) gas-fired generation plants cause environmental damage to California's marine habitats and do not comply with EPA regulations. The challenge is how to replace their generating potential. Should we replace them with new, more efficient dry cooled gas fired generators? Or pursue a renewable energy scenario? The article, "Renewables Cost-Effective Replacement for Aging Natural Gas Plants," published in Natural Gas & Electricity (March 2010, Volume 26, Issue 8, Pages 4-8, DOI 10.1002/gas), updates an extensive analysis of this issue published by Pacific Environment in November 2009. (*Green Opportunity: How California Can Reduce Power Plant Emissions, Protect the Marine Environment, and Save Money. Robert Freehling and Suzanne Doering; Editor: Rory Cox*).

Instead of just replacing old gas-fired plants with new ones, the more desirable alternative strategy covered in this study, "Green Energy Replacement," involves replacement with solar power generation, peak demand programs and energy efficiency.
This article concludes that the best strategy for utilities would be to implement a phased replacement within the next five years using the Green Energy Replacement approach. This strategy has several advantages and benefits:

1. Costs will be much lower - The total cost for the low-cost scenario of gas-fired replacement is $0.309 / KWh vs. $0.169 KWH for the low-cost Green Energy scenario for a net reduction of $0.14/KWh or a 45% reduction in cost. This strategy costs less even without considering all external costs such as the environmental damage and carbon costs of the replacement gas plants.

2. Contain costs to ratepayers - If new gas plants replace the old ones, the costs for the generation from these plants will increase from $0.09 - 0.153 / KWH or 30-98%. By contrast, under the Green Energy Replacement scenario, the new rates would range from an increase of $.013 to a decrease of $.091 -- or an average overall decrease in rates from current costs. Furthermore, the renewables will supply

dependably priced power that is not subject to the fluctuations of the natural gas market or to potential carbon charges.

3. Help utilities close their RPS gap – California utilities in aggregate are far behind the renewable portfolio standard targets, procuring only about 13% renewables this year, when they're required by law to procure 20%. Eliminating 15,000 MW's of fossil fuel generation capacity, which on average runs only about 10 percent of the time, is an achievable way of helping the utilities catch up in meeting their legally required RPS.

4. Reduce damage to public health – By replacing these aging gas fired plants with renewable energy and energy efficiency, the state will benefit by lower criteria pollutants in crowded urban areas, reduced harm to its citizen's health, improved environmental justice.

5. Help meet AB 32 goals - Replacing the old gas plants with new or rebuilt ones means a huge commitment of capital resources into more fossil fuel facilities, which will produce greenhouse gases for decades to come. Those same dollars put into renewable energy and energy efficiency will help keep rates down and put California on the track to a lower carbon footprint.

6. Provide more local jobs – by installing locally sited renewables, co-generation and by ramping up efficiency projects, California can invest in our communities instead of sending money out of state for natural gas or out of the country for imported LNG.

This lower-cost conclusion is partly based on recent trends -- cost of conventional power plants is increasing while PV solar has experienced dramatic decreases.

To replace old gas-fired plants with new ones would not only be very expensive to utilities and ratepayers but also set back meeting the state's 33% RPS target by crowding out renewables with new natural gas power plants.

Utilities can plan the timing of retiring and replacing OTC plants to coincide with implementing energy efficiency measures and installing new renewable energy generation. Through proper planning, the plants can be easily and cost effectively replaced.

CHAPTER 9: Transportation Energy Forecasts and Analysis

We provide the following commentary:
In the *Preface* of the report, it is stated that the report, "provides policy recommendations to conserve resources."

However, there are no transportation policy recommendations that would reduce driving. The report seems to assume driving will continue to grow along with population. Since no one can guarantee sufficient improvements in car and fuel efficiencies, in the time required, such growth in net driving would be catastrophic, from a climate perspective, as well as causing perpetual congestion delays.

Steve Winkelman's authoritative work, Reference 1, states that getting the car-and-light-duty-truck sector emissions to support the minimum climate-stabilization trajectory, such as 80% reduction by 2050, as stated in Executive Order S-3-05, will require clean cars, clean fuels, *and less driving*. For

example Page 2 of Ref(1) refers to these three requirements as the "legs of a three-legged stool" that supports SB-375. Driving less must be significant, especially after 2009. See, for example, Reference 2.

Chapter 9 contains a subsection called, "**Transportation Energy Demand & Policy Impacts.**" However, it does not mention policy options such as support for active transportation (walking, bicycling, or other people-powered modes), support for transit, support for smart growth, support for complete streets, or pricing policies, such as unbundling the cost of providing and operating roads and parking. The closest it comes to recognizing that policy choices could reduce driving is where is says, on Page 135:

> There are three general strategies for reducing petroleum use: 1) increasing fuel efficiency in the fleet of vehicles, engines, aircraft, and vessels; 2) using non□petroleum fuels; and 3) changing land use and urban design to reduce vehicle travel.

However, there are much quicker and less expensive ways to reduce VMT than "changing land use and urban design." The rest of Chapter 9 and 10 are about strategies to get more clean cars and more clean fuels. These strategies are just as necessary as the strategy of reducing driving. Some of the grants and other money available to reduce emissions should be used to reduce driving.

Ref(1), discusses both long-term and short-term methods to reduce driving. Its section, "Travel Demand Management", starting on Page 8, shows a comprehensive list. It includes improved parking policy, VMT fees, and congestion pricing. Reference 3 shows a universal method to unbundle the cost of parking in a way that supports instantaneous congestion pricing and the sharing of parking. This approach would benefit from a limited-feature demonstration project. This would be an inexpensive method of fostering a change that would increase equity while it significantly reduces driving. Reference 4 describes such a demonstration project. The IEPR report should be expanded to include a section on how to reduce VMT.

References relating to transportation

1) *Transportation's Role in Climate Change and Reducing Greenhouse Gases*, Testimony of Steve Winkelman, Center for Clean Air Policy, Senate Committee on Environment and Public Works, July 14, 2009. http://www.ccap.org/docs/resources/692/Winkelman%20EPW%20testimony%20(7%2014%2009).pdf

2) *California Air Resources Board (CARB) Greenhouse Gas (GHG) Reduction Targets, Issued to SANDAG, in Accordance with SB 375, for the Year 2035*, Bullock to SANDAG Board, April 20, 2011 (available from mike_bullock@earthlink.net)

3) *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*, 103rd Conference of the Air and Waste Management Association, paper *2010-A-554-AWMA*, presented at the *Sustainable Land Use and Transportation Session*, June 2010, Mike R. Bullock and Jim R. Stewart, PhD, available at moderntransit.org/parking/Manuscript18c.pdf

4) *Equitable and Environmentally-Sound Car Parking Policy at Schools*, Mike Bullock, July 20, 2011 (unpublished, available from mike_bullock@earthlink.net)

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CHAPTER 13: Nuclear Issues and Status Report on Assembly Bill 1632 Report

Recommendations

1) We appreciate the breadth and depth of analysis on nuclear issues in this Chapter, and especially all the recommendations the CEC has made on pages 199-203. We appreciate the ongoing review commitments of the CEC to help protect the people of California.

2) There is an error on IEPR page 184, paragraph 3. "resulted in spent fuel meltdowns" should be "resulted in reactor core meltdowns".

3) Regarding the IEPR "Spent Fuel Pool Safety" section, page 188, paragraphs 1-3, we commend the CEC for its recommendations in the 2008 IEPR regarding moving older spent fuel to dry cask storage. We are extremely concerned at PG&E's complete lack of action to even start a study on the issue, and we ask the CEC and the CPUC to strongly encourage PG&E to instantiate and complete such a study with all due haste, or face financial penalties. We ask the CEC to relay this comment to the NRC.

4) In the IEPR "Spent Fuel Pool Safety" section, page 189, paragraph 1, the specification of providing "at least one electrical power system to operate spent fuel pool instrumentation and pumps at all times" is an inherent design flaw in that it institutionalizes a single point of failure for these demonstrably critical functions. The specification should be "at least two independent power systems to operate spent fuel pool instrumentation and pumps at all times". We ask the CEC to relay this comment to the NRC.

5) In the IEPR "Spent Fuel Pool Safety" section, page 189, paragraph 1, the plant operators must be able to guarantee that the spent fuel pool monitors and instrumentation will hardened, maintained or regularly replaced such that they will be available continuously, especially under severe accident conditions. We ask the CEC to relay this comment to the NRC.

6) In the IEPR "Nuclear Plant Liability Coverage" section, page 190, we are extremely concerned that the liability coverage limit of approximately $12.6B is woefully inadequate should a severe accident occur at Diablo Canyon or SONGS. We are also concerned with the industry interpretation that there would be a requirement that individuals harmed by a nuclear accident would have to prove damages and adjudicate claims in state court. At SONGS there is a population of 7.4 million people living within a 50 mile radius of the plant. We ask the CEC to produce a post-accident litigation action plan in conjunction with the State Courts that would be provided to every Californian living within 50 miles of SONGS and Diablo Canyon.

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7) In the IEPR "Replacement Power and Reliability" section, pages 190-192, it is clear that a prolonged outage at SONGS would cause significant disruption to the electrical grid in southern California. We suggest that properly planned renewable sources should replace both SONGS and Diablo Canyon in order to provide a safer and more reliable energy grid for Californians. As an example of how this might happen, Germany installed 7,400MW of PV last year alone. This is more than the combined generating capacity of SONGS and Diablo Canyon. We ask that the CEC and the CPUC produce a cost-benefit analysis (including time of use and other benefits of renewables) between relicensing SONGS and Diablo Canyon versus replacing them with renewables.

8) In the IEPR "Nuclear Waste Issues", pages 193-194, we ask the CEC and the CPUC to direct PG&E to perform and publish a cost-benefit analysis for long-term spent fuel storage at Diablo Canyon.

9) In the IEPR "Progress in Completing AB 1632 Report Recommendations", page 199, paragraph 3, we ask the CPUC to institute financial penalties against any utility not meeting the schedule to complete the additional AB 1632 Report seismic hazard studies.

Thank you for your consideration,

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