



**In the matter of,
2013 integrated Energy Policy Report
(2013 IEPR)**

) Docket No. 13-IEP-1A
) Subject: Draft 2013 IEPR

**Comments submitted by e-mail to: docket@energy.ca.gov
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Submitted: 10/29/13**

Comments of Sierra Club California

Sierra Club California respectfully submits these comments in response to the Draft 2013 Report.

CHAPTER 1: Energy Efficiency

We strongly support the Energy Commissions emphasis on continuing its tradition of promoting new ground-breaking and precedent-setting cost-effective energy efficiency (EE) measures. This includes Zero Net Energy (ZNE) building requirements, new appliance standards, and EE progress for schools under Proposition 39 implementation. We are especially looking forward to new efforts to promote existing building EE retrofits through AB 758 (Skinner, 2009) implementation.

With respect to ZNE standards, it is our understanding that the commission will be including an optional tier standard for ZNE buildings in its Title 24 triennial requirements issued in 2016 and that these will become requirements in the residential sector 2019 rules to be implemented in 2020.

For commercial buildings, the current plan is to require ZNE in 2030. There are now an increasing number of successful ZNE commercial projects. As an example, the new SMUD facility is designed to become the largest ZNE commercial building in the US when it opens soon and has been designed to accomplish this cost effectively compared to conventional construction.

Recommendation

Our recommendation is that the current plan to follow this path for commercial buildings in 2030 be accelerated to become effective in 2023. Building upon earlier optional ZNE standards that it will issue, the commission could issue ZNE standard requirements for commercial buildings in its 2022 Title 24 ruling effective 2023.

CHAPTER 2: Demand Response

We commend the commission for highlighting the importance of Demand Response (DR) in this IEPR, its comprehensive and straightforward discussion of the significant opportunities and

benefits of demand response and of the obstacles that California must remove and new policies and programs it needs to put in place so that we can be as successful as, or even more successful than, other states and jurisdictions. The IEPR clearly describes the urgent need to now proceed expeditiously. Now is the time to get this done so that DR can be implemented soon and in volume.

CHAPTER 4: Electricity

Preliminary Forecast of California Energy Demand

We believe that there are several significant adjustments that should be made to the California Energy Demand (CED) forecasts.

- **We recommend utilizing the low-case demand forecast, adjusted by the high-case scenario #5 for additionally achievable energy efficiency (AAEE) as the basis for the California's 2013-2014 final approved forecast. Further we support the commitment of the California Energy Commission (CEC), the California Public Utilities Commission (CPUC) and the California Independent System Operator (CAISO) to use a single forecast to guide all future agency and utility planning efforts.** The commission and state have a reliable tradition over many years of continuing its programs and standards programs which cost effectively achieve significant additional EE reductions. In addition, the commission and other agencies have committed to the legislature in the Padilla hearing to at least support the “low” case from the 2012 uncommitted energy efficiency scenario. We believe that with the multi-program approach to further significant energy efficiency programs and the historical reliability over years of the commission's standards and programs methods, that the high case levels of AAEE can be realized.
- **We believe AB 327 will result in at least 1,200 MW of additional Net Energy Metering (NEM) renewable energy projects that we believe are not currently included in the demand forecasts and installation will happen faster in the earlier years of this forecast.** (These are mostly solar PV and mostly rooftop projects).
 - The revised CED forecasts only 5,899 MW of PV self-generation by 2020 in its mid case. It documents 2,166 MW installed as of 2010. If we extrapolate to the end of 2012, this would be an estimate of 2,913 MW installed.
 - Under last year's CPUC ruling clarifying how to calculate the 5% NEM cap, this resulted in a combined capacity of about 5,400 MW.
 - Subtracting 2,913MW from the 5,400 leaves 2487 MW of self-generation that most experts believe will be fully installed by 2017.
 - This would result in a remaining increase of only 499 MW left out of the forecast 5,899 MW for the remaining three years.
 - Under AB 327, there will be a “NEM 2.0” program that will not have a cap and will begin by the IOUs as soon as each has completed its share of the 5,400 MW cap for “NEM 1.0.” While the provisions of NEM 2.0 have yet to be developed by the CPUC, it is likely that any such program would

produce at least 400 MW / year for the remaining three years of the program and potentially much more. This is especially likely given the historical increase in application filings year over year, the decreased costs of solar PV and readily available financing. For example, in 2012, 391 MW of capacity were installed compared with 195 MW in 2010. (California Solar Initiative Annual Program Assessment June 2013).

- SB 43 will provide 600 MW of new shared renewables through July 2016. If successful, this program could be further expanded to enable new residential and commercial building owners who cannot put solar on site to do so and this could help them comply with upcoming ZNE optional and ultimately required rules.
- The sum total of these three adjustments will significantly lower the future demand forecast to nearly flat over the next 10 years.

The Need for New Electricity Infrastructure

The IEPR report references the staff report requested by the Governor on how to address the San Onofre Nuclear Generating Station (SONGS) shutdown and once-through cooling (OTC) retirements. The report recommends that 50% of unmet generation needs must be met with conventional generation. We believe that all local capacity requirements (LCR) and integration needs can and should be met with 100% preferred resources. We request that reference to the following recommendations be included in the IEPR report.

While there are many good suggestions in the report, there are many omissions and insufficient analysis leading to incorrect conclusions.

Some of these include the following:

1. **No state plan has been created that examines what a 100% preferred resources plan (including new renewables and storage) would look like as an alternative to a 50% polluting conventional generation scenario.**
2. **The demand forecast is too high** – please see our recommendations for adjustments above.
3. **The plan includes no consideration for installing new renewables.** It assumes that the IOUs will achieve the 33% RPS but does not explore going beyond that. SONGS provided about 7% of generation for the state. It would seem logical to us that with the loss of this emissions-free generation that it must be replaced with an equivalent amount of emissions-free renewable resources to avoid going backwards on the state achieving its AB 32 objectives. That would call for increasing the 33% RPS to 40% by 2020. Further, when discussing preferred resources, the staff plan talks mostly about energy efficiency and demand response. These are critically important but then there is essentially no discussion of installing new renewables to take up any generation slack needed.
4. **There is essentially no discussion on the significant role that storage could play in integrating currently planned and potentially more renewables that could eliminate the need for more gas-fired generation.** This is even more true given that the CPUC has issued the Storage Decision requiring Southern California Edison (SCE) to install at least 580 MW and San Diego Gas & Electric (SDG&E) to install 165 MW of storage by

2020. Rather than install polluting gas-fired generation, the plan does not address the alternative of additional renewables combined with storage to firm these resources.

5. **In the staff draft plan it seems as though an arbitrary decision may have been made that 50% of new generation needs must be met with conventional gas-fired generation without a comprehensive effort to consider a 100% preferred resources plan.** No comprehensive plan has been created and made publically available that would lead to this recommendation.

Recommendation

1. **The IEPR should make a recommendation that a new 100% Preferred Resources Project Plan Action Team be formed to develop a 100% Preferred Resources Plan (including new renewable resources and storage.)** This team would be charged with coming up with the optimal plan utilizing 100% preferred resources and evaluate the feasibility, risk, cost, GHG emissions, etc. of such a plan for consideration of adoption and implementation.
2. **The IEPR should recommend that the CPUC should use its new authority under AB 327 to increase the RPS to at least 40% by 2020** and further that it consider locational RPS requirements as needed to meet LCR needs resulting from the SONGS shutdown and OTC requirements.
3. **The IEPR should recommend that an alternative plan be considered for re-powering OTC plants with a battery storage array** instead of dirty gas-fired peaker plants. If necessary, this could be supplemented with additional renewable resources with some coming from local distributed generation and some coming from new utility-scale renewable generation. One of the added benefits of storage installed at OTC sites is that they could support import of more electricity from adjacent areas over existing transmission lines reducing local capacity needs. This could reduce or eliminate the need to attempt to build problematic and expensive new transmission facilities in new corridors to import power in order to reduce LCR generation needs. Further if new gas fired generation is installed as a flexible resource to integrate renewables and then new required storage is installed because of the Storage Ruling, there could become an excess of these resources leading to stranded gas fired assets leading to increased costs for ratepayers. **We recommend that the Energy Commission consider a pilot project to prove feasibility at, for example, the Huntington Beach or Encina OTC plant sites.** Battery storage offers many advantages over gas fired generation/peaker plants including lower costs, more reliable design, no water requirements, much faster responding, modular for optimal “right size” installation, faster to build (2-3 years vs. 7-8 for gas fired plants), zero emissions and higher utilization rates.
4. **The IEPR should recommend that pilot programs installing distributed generation (mostly rooftop solar PV along with smaller ground mounted systems) with smart inverters and storage be implemented in the Los Angeles Basin and San Diego.** This could meet some of the requirements of the Storage Decision for these utilities while getting at least partially firmed renewable generation with voltage installed locally where LCR must be met.
5. **The IEPR should address a desire to support a more balanced portfolio of renewals to include a higher percentage of higher capacity factor technologies such as geothermal and appropriately sited concentrating solar power (CSP) with thermal**

storage such as molten salt. While the instant cost of these technologies are high, their levelized cost of energy (LCOE) costs are comparable to other conventional and intermittent renewables and they offer “baseload” characteristics to the grid.

6. **The IEPR should recommend that SCE and SDG&E focus their demand response and energy efficiency efforts on the load pockets most in need of resources following the shutdown of SONGS.**

CHAPTER 5: Strategic Transmission Investment Plan

Approved Transmission Projects to meet 2020 Renewable Goals

It is our understanding that the Pisgah-Lugo project is no longer moving forward. If it is somehow moving forward, we recommend it be rejected because it is both unnecessary and would guide generation to an area with very high biodiversity. The area known as the **Pisgah** Valley consists of lands that provide landscape-scale biological linkages across the central Mojave region for multiple threatened and endangered species. The Bureau of Land Management dropped this area as a potential solar energy zone in response to environmental concerns. Guiding generation to this area could create a de facto zone.

California ISO’s Potential Long-Term Transmission Alternatives in Light of San Onofre Shutdown

We recommend the commission update the transmission alternatives to include the Mesa loop-in, submitted by Southern California Edison (SCE) to the California ISO and presented in the draft 2013-14 Transmission Planning Process. We also recommend the commission include the Imperial Irrigation District’s proposed Strategic Expansion Plan (submitted to the California ISO on October 15, 2013), which identifies a transmission solution to provide full replacement for San Onofre.

The report should also reference the various non-transmission alternatives proposed in light of the San Onofre shutdown. For example, the California ISO has created a new initiative to consider and support preferred resource alternatives to transmission or conventional generation¹ as part of the transmission planning process. The CAISO is currently applying this approach to the Los Angeles Basin, San Diego and Moorpark substation local areas². The purpose is to determine an effective mix of resources for a local area, with a focus on post-contingency. Additionally, SCE has proposed in Track IV of the 2013 LTPP a preferred resource “living” pilot to procure and evaluate the ability of preferred resources to meet local capacity requirements in light of the San Onofre shutdown.

In-State Coordinated Land-Use and Transmission Planning Efforts

We are very pleased to see the commission recognize the importance of coordinating generation and transmission planning and permitting. As the commission correctly identifies, transmission

¹ CAISO, *Consideration of alternatives to transmission or conventional generation to address local area needs in the Transmission Planning Process*, September 4, 2013.

² T. Flynn-CAISO, *Consideration of alternatives to address local needs*, Stakeholder Web Conference, September 18, 2013, p. 4.

and generation are interdependent yet happen on vastly different timelines through distinct processes. We agree this lack of synchronicity leads to unnecessarily high risk and uncertainties. This discordance can also lead to other unfavorable outcomes-- such as a few generators guiding energy development to pristine locations with high habitat value for threatened and endangered species which will ultimately face high mitigation costs and delays, while generation projects in low-conflict areas are unable to obtain power purchase agreements because of lack of available transmission capacity. We agree with the commission that the scenario approach, although reasonable, is heavily weighted in favor of generators with power purchase agreements. We believe that transmission and generation planning must also be synchronized with land use planning if we are able to meet our energy policy goals in a sustainable, economical and defensible manner.

Thoughtful and informed transmission and land use planning should guide generation, rather than haphazard generation guiding expensive transmission investments. We support the commission's recommendation of *“(P)lanning, licensing and developing transmission to specific areas where the state wants to encourage the development of renewable resources before the generators are committed through PPAs or environmental permitting.”* We strongly believe energy development should occur in areas of low biological value and that guiding transmission to these areas is absolutely needed if California is to sustainably achieve our state mandated energy goals. In terms of specific areas to prioritize for development, we encourage the commission to consider previously disturbed lands or other land with low biodiversity values. This process should look to existing federal, state and local processes which have identified areas as suitable for energy development based on low biological resource value, such as the development focus areas within the Desert Renewable Energy Conservation Plan (DRECP), or zones identified through a future Central Valley process. We believe planning transmission to areas identified for generation will be key to the success of these plans. However, the transmission process should also consider prioritizing locations of low habitat value outside of these planning areas by looking to the presence or absence of protective land use and wildlife management designations such as designated critical habitat and core recovery areas.

Desert Renewable Energy Conservation Plan

We strongly support the DRECP. As discussed above, we believe transmission is a key component to the success of the DRECP and encourage the commission to consider ways to tie transmission planning to the DRECP. Although the Draft DRECP has not yet been issued, the informal December 2012 alternatives identified areas of disturbed lands common to each of the development focus areas. Transmission investments in the DRECP plan area should be prioritized to these disturbed areas with lesser biodiversity values.

We also support applying the DRECP model to the Central Valley as a means to prioritize development in low-impact impaired farmland such as the Westlands Solar Park, while avoiding development in areas such as the Panoche Valley, which are designated as core recovery for the San Joaquin kit fox and other upland species.

CHAPTER 9: Climate Change

California's 2030 Electricity System

Electricity Demand in 2030 – please see our comments above which, if adopted, would result in a lowered demand forecast.

There are three critically important issues discussed throughout this section we would like to address topically including:

- 1. The need to set RPS targets for 2030**
- 2. How to best meet integration needs**
- 3. The role of conventional gas fired generation in the future.**

1. Renewable Development from 2024 – 2030 - The need to set Assertive Renewable Portfolio Standard Targets Now

“By the time today’s children reach middle age, it is extremely likely that Earth’s life-support systems, critical for human prosperity and existence, will be irretrievably damaged by the magnitude, global extent, and combination of these human-caused environmental stressors, unless we take concrete, immediate actions to ensure a sustainable, high-quality future.” Scientific Consensus Statement.

“Relying on the science, the consensus statement concludes that the negative trends in climate disruption require scaling up carbon-neutral energy production. To stabilize atmospheric concentrations of carbon and potentially prevent global temperatures from rising more than 2° C, the world would have to decrease emissions by 5.1 percent per year for the next 38 years.” Page 204

California must go faster than just aiming to reducing emissions to 80% below 1990 levels by 2050. The critical goal is to reduce as much greenhouse gas emissions (GHG) as soon as possible. The more CO₂ and other GHGs that go into the atmosphere, the more damage to the planet and the greater the risk of crossing tipping points that could result in irreversible damage to the human habitability of earth.

“To reduce the global concentration to 450 ppm after delaying action 10 years, it would cost an additional \$3.5 trillion, compared to levels of investment needed if low carbon strategies were to be adopted immediately.” [IEA. 2013. *Redrawing the Energy Map: World Energy Outlook Special Report*. International Energy Agency. June 10. [www.worldenergyoutlook.org/energyclimatemap carb](http://www.worldenergyoutlook.org/energyclimatemap_carb)]

We should take all feasible steps to reduce GHG emissions as soon as possible to cost effectively minimize much greater future costs of adaptation, more expensive delayed mitigation costs and increased damage repair costs. An ounce of prevention is worth a pound of cure.

“Realizing California’s 2050 goal of reducing economy-wide GHG emissions to 20 percent of 1990 levels will require substantial decarbonization of the electricity sector and electrification of the transportation sector.”

The electricity sector is an especially good and important sector to move more quickly. A common strategy to reduce GHGs in many sectors of our economy is to “electrify” processes that rely on fossil fuels such as gasoline fuel for transportation, natural gas for space and water heating and gas combustion for industrial processes. By “greening the grid” sooner, all of the others processes that rely on substituting electricity for GHG producing dirty fossil fuel dependent processes, will result in deeper emissions reductions sooner.

It’s critically important for new targets for 2030 to be set as soon as possible in the electricity sector with its long term planning cycles such as the 10 year planning cycle in the LTPP. The IOUs have essentially contracted for all the renewable generation they need to achieve the 33% RPS and setting more aggressive targets now through 2030 can provide the market signal needed to provide “certainty”, keep this market thriving, competitive and prices low.

As noted above, we recommend that an RPS of 40% be set for 2020 and 70% for 2030. Increasing the RPS for 2020 from 33% to 40% will just replace the generation from the shut-down SONGS plant. An RPS of 70% by 2030 will in part replace another 7% from the probable shutdown of Diablo Canyon and loss of coal power contracts in LA.

In 2008, the state’s RPS was 13% and by the end of 2012 was 19.6% for an increase of 6.4% in four years or a 1.6% increase / year over that period. If this rate were continued to 2030, it would produce an RPS of 48.4%. The CPUC is forecasting that the state will add over 3,500 MW of new renewables in 2013 alone. If this happens and it results in a 24% RPS, then it would mean we have added at a rate of more than 2.2% / year. Extending this out to 2030 would produce a 57% PRS. However, with all the new programs now in place, continuing declining prices for solar and some other renewable resources, a robust industry, new supportive programs, the improving economy and other factors significantly increasing momentum, achieving a 40% RPS by 2020 and 70% RPS by 2030 should be quite feasible.

We support the Energy Commission’s recommendation to “**Support development of greenhouse gas reduction targets for 2030 and metrics to track progress.** The Energy Commission will work with the California Air Resources Board to develop potential greenhouse gas reduction strategies and goals for 2030 as part of the *Climate Change Scoping Plan First Update* development process.”

We recommend that in working with CARB, the Commission support an RPS of at least 40% by 2020 and 70% by 2030 as key strategies to reduce GHG emissions from the electricity sector as soon as feasible. An RPS goal of 70% mostly likely would actually accomplish an 80% GHG reduction compared with 1990 levels when combined with the effects of energy efficiency and new behind the meter self-generation.

2. Need for Operational Flexibility - How to meet integration needs

The Draft IEPR repeatedly makes reference to the need for “conventional generation” referring to gas fired peaker or baseload generation to integrate renewables and /or provide dispatchable resources. The underlying assumption is that the need for gas fired generation is a given, while at the same time insufficient consideration is given to more actively considering emission-free

alternatives. Certainly, there is much good discussion on the role demand response might take to help in this area and the role of EE to reduce new generation demand. But there is insufficient discussion of storage and other solutions to provide truly clean, emissions-free dispatchable resources and this is probably the single most significant omission in the DRAFT 2013 IEPR report.

There is no silver bullet to providing dispatchable emission free resources to mitigate intermittent renewables but rather the solution requires a more comprehensive and sophisticated portfolio solution approach. Components of this “**integration services portfolio**” would include but not be limited to:

- **Demand response** - including increased use of variable generation offered through the California State Water Project hydro resources infrastructure, EV batteries with variable charging rate services and many others.
- **A portfolio of storage solutions** – itself a “portfolio within a portfolio” – and could include
 - **Battery storage** - A variety of battery chemistries, deployment topologies (customer, DG, transmission) and for meeting a variety of grid services – voltage regulation, frequency regulation, dispatchable power for ramp support, peak shifting, transmission capacity increasing, etc.
 - **Appropriately sited pumped hydro storage** including re-powering of existing pumps to offer more variable control.
 - **Compressed Air Energy Storage (CAES)** - including some promising innovative new technologies.
 - **Thermal storage** – such as solar thermal, ice chillers for air conditioning and geothermal heat pumps.
- **A diversified portfolio of renewables** with an emphasis on improving the percentage of these resources from baseload resources such as geothermal and appropriately sited CSP with several hours of thermal storage and “baseload like” intermittent utility-scale renewables with on-site battery storage and distributed generation with onsite or shared storage resources.
- **Requiring the use of smart inverters for new renewable projects** over a minimal size to provide voltage support and other ancillary support services as well as visibility to balancing authorities. Consideration of requiring the retrofit of certain existing resources with financial support.
- Improved forecasting of intermittent output
- More frequent scheduling of resources
- Creating regional imbalance markets – (The IEPR discusses many positive developments on EIMs here.)
- Timely implementation of key components of each IOU’s Smartgrid deployment plans as required under SB 17 in a prioritized way. This will provide the automation and data communications systems necessary to manage this more complex grid while lowering grid costs and improving reliability and resilience.
- Incentives to drive DG generation to be closest to load to reduce LCR requirements and to locations within the built environment or on disturbed land with low biological value and where necessary, to upgrade the distribution grid infrastructure where it can facilitate this.

There are also now national laboratories available for our state utilities to utilize in conducting integration and load testing of these intermittent renewable resources.

At the time of the IEPR drafting, the CPUC Storage Decision had not been issued, but now it has been and this critical new initiative must be considered in the IEPR with its very positive effect on providing an effective and even more cost effective approach to integration of increasing penetration of intermittent renewables.

Recommendation

We recommend that the IEPR be revised to recommend a zero emissions integration services portfolio instead of conventional generation for integration of renewables as the default and given assumption.

We recommend that the IEPR promote further research in emission free integration of intermittent renewables. This research could be directed to evaluate different technologies, different topographical deployment options, automated control systems that optimize results from a portfolio of available resources, modeling systems to determine the optimal mix of different resources on criteria such as reliability, zero emissions, cost effectiveness, etc.

3. Potential Supply Development From 2024 Through 2030 – The role of conventional gas-fired generation in the future.

To achieve a GHG reduction goal of 80% GHG reductions by 2050 will require essentially carbon free generation. Two of the largest obstacles to going further than this are GHG produced from CHP facilities and CAISO's purchase of electricity through the spot market which today comprises up to 10% of electricity supply and much of which is out-of-state and produced from fossil fuels. Because of these potentially persisting challenges, it is necessary that the in-state generation be nearly entirely GHG free.

This will drive our planning decisions on meeting any future needs of generation from any demand increases (which are expected to be minimal), probable Diablo Canyon retirement, coal contract retirements, OTC plant retirements and other existing aging gas fired plant retirements. Further, it should be clear that the likelihood of the state to set increasingly higher RPS targets in the upcoming years will require more GHG free renewables further displacing the need for polluting gas fired generation. This makes it unwise and uneconomic to build any more new gas fired generation, especially after 2020, since any such plants may only have useful lives of 10 or 20 years. Such significantly foreshortened useful economic lives of these assets would greatly increase their LCOE costs and thus the costs to ratepayers.

Recommendation

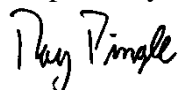
We recommend that the IEPR change its recommendations from “conventional generation” under its various descriptions (including the statements highlighted in bold below) to language referencing a portfolio of zero emissions integrated renewables for the following:

(All quotes below are contained in the Draft 2013 IEPR in this section)

1. “If Diablo Canyon is not relicensed in 2024 and 2025, the zero-carbon energy from 2,240 MW of generation capacity and an unknown share of the capacity itself will require replacement. **The equivalent annual output of 17,300 GWh from an efficient fast-start, gas-fired, combined-cycle plant emits nearly 7 MMT CO₂-e.**”
2. “LADWP and five smaller southern California POU’s will have to replace the energy from their shares (1,777 MW) of the coal-fired Intermountain Generating Station in the late 2020s because of California’s Emission Performance Standard. The utilities hope to accelerate the divestiture of their purchase obligations by two years: from 2027 to 2025, **replacing a share of the energy with output from a natural gas plant that would replace all or part of the existing facility.**”
3. “The utility’s filing (LADWP) indicates that **it expects to replace Navajo with a 300 MW combined-cycle facility.**”
4. If electricity demand grows as slowly from 2024 – 2030 as indicated by the midcase for energy efficiency shown in Figure 34, **incremental capacity from nonrenewable sources to meet system wide and zonal reserve margins, local capacity requirements, and reliability needs will be driven as much by resource retirements as by changes in peak demand.**
5. LADWP OTC units will have to comply with the SWRCB policy. **Scattergood 1-2 (358 MW, end of 2024), Haynes 1-2 (444 MW, end of 2029), and the Harbor combined-cycle (215 MW, end of 2029) will likely be replaced with a comparable amount of efficient, flexible capacity onsite** due to local reliability needs and the difficulties and costs associated with major transmission upgrades within the Los Angeles area that would allow for retirement without replacement.

Thank you again for the opportunity to contribute to this critical document that will play a pivotal role in guiding the states’ future energy policy.

Respectfully submitted,



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