



Union of
Concerned
Scientists

Citizens and Scientists for Environmental Solutions



California Energy Commission

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California Energy Commission
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Docket 13-IEP-1D
1516 Ninth Street
Sacramento, CA 95814-5512
Submitted via email to: docket@energy.ca.gov

Re: Joint comments of the Union of Concerned Scientists, the Natural Resources Defense Council, and the Sierra Club on the Evaluation of Electricity System Needs in 2030

I. Introduction and Summary

The Union of Concerned Scientists, the Natural Resources Defense Council, and the Sierra Club (“Joint Environmental Parties”) appreciate the opportunity to submit comments in response to the Commission’s August 19, 2013 workshop on California’s electricity system needs in 2030.

The Joint Environmental Parties strongly support the Commission’s efforts to begin exploring electricity scenarios for 2030 that would position the state to reduce greenhouse gas emissions by at least 80 percent below 1990 levels by 2050. The state established this economy-wide emissions reduction goal in order to address the growing impacts that a warming climate has already taken and will continue to take on California’s economy and environment.¹ Indeed, with this Commission’s and other agencies’ recent assessments, which document the increasingly measurable impacts of climate change throughout California—decreasing spring snowmelt runoff, rising sea levels, increasing severity and frequency of wildfires, more dangerous heat waves—continued action to further reduce greenhouse gas pollution could not be more urgent.² In addition, California stands to reap the significant economic benefits from maintaining its role as a center of technological innovation in aggressively transitioning to a low carbon economy.

For these reasons, the Joint Environmental Parties urge the Commission to include an analysis of low-carbon 2030 electricity planning scenarios in the Integrated Energy Policy Report (IEPR) proceeding. Scenarios should assume aggressive energy efficiency savings, an accelerated transition to ultra-low carbon

¹ Executive Order S-3-05, June 2005.

² CEC, Joint Lead Commissioner Workshop on Climate Change and the Energy Sector, June 4, 2013. Available at: http://www.energy.ca.gov/2013_energypolicy/documents/2013-06-04_workshop/presentations/. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. Indicators of Climate Change in California, August 2013. Available online at <http://www.oehha.ca.gov/multimedia/epic/2013EnvIndicatorReport.html>; see also California Environmental Protection Agency, Press Release, Climate Change Report Documents Growing Impacts on California’s Environment (Aug. 8, 2013), http://oehha.ca.gov/public_info/press/ClimateChange_PressRelease.pdf.

transportation sources, a marked increase in renewable generation resources, and significant deployment of distributed generation resources. Given the state's success with the 33 percent by 2020 Renewables Portfolio Standard (RPS) program, we suggest 50 percent renewable penetration as a starting point for analyzing 2030 scenarios. In addition, a higher RPS scenario in the range of 60-70 percent of retail sales should also be examined. Because we are experiencing the impacts of climate change faster and more severely than anticipated even a few years ago, this higher RPS scenario reflects the need to more aggressively reduce greenhouse gas pollution to avoid potentially catastrophic impacts to future generations of Californians.

At least one scenario should explore increased coordination between electricity balancing authorities within the Western Energy Coordination Council (WECC) to better understand the economic, reliability, and land use implications of increased out of state renewable investments. And one scenario should explore energy efficiency continuing at a business-as-usual pace, to provide contrast with the rest of the aggressive energy efficiency scenarios. As part of its work in modeling higher RPS scenarios, the IEPR should also identify and explore the benefits of low carbon solutions to renewable integration. Discussions around high levels of renewable penetration often focus on the "duck graph", which shows an increased need for flexible resources to meet the net load in the early evening as the sun sets—however it assumes that electricity demand patterns remain constant through 2020. The Commission should examine how efforts such as the strategic charging of electric vehicles, increased energy efficiency that is targeted to particular load shapes (such as residential lighting), and demand response driven by effective rate designs can modify demand and reduce the potential ramp. While the integration of higher levels of renewables present challenges, the existential threat posed by climate change is greater. It is incumbent upon the Commission to rise to this challenge and present a path forward for California to progress toward a low carbon future.

II. California will continue to need strong policies that encourage widespread investments in zero carbon generation and demand-side management technologies.

While the Joint Environmental Parties agree that to the greatest extent practicable, the procurement of low and zero carbon generation resources and demand-side management resources should occur through competitive solicitations in order to place downward pressure on prices. However, the Joint Environmental Parties believe that California will continue to need clear, long-term policy signals to ensure that regulated entities in charge of major investments, like utilities, have adequate time to plan for clean energy investments. Long-term policy signals will also be necessary to attract private investment dollars to the state.

For example, the Joint Environmental Parties believe that some form of renewable purchase program, like the 33 percent by 2020 RPS mandate we have in place today, will be necessary through at least 2030. The Joint Environmental Parties believe that simply relying on market prices to drive future clean energy choices will not be sufficient to drive the magnitude, and attributes, of the clean energy investments required to achieve future greenhouse gas emission reduction targets, nor provide the long-term market certainty that renewable developers need in order to make investments in the state. For this reason, the Joint Environmental Parties recommend that any 2030 analysis include several high renewable energy investment scenarios that are driven by policy mandates. Given the state's success with the 33 percent RPS program and current rates of renewable deployment, we suggest 50 percent by 2030 as a minimum assumption for 2030. In addition, a high RPS scenario in the range of 60-70 percent of retail sales should also be examined. At least one scenario should explore the implications of a high level of in-state distributed generation investment and at least one scenario should explore a high amount of out-of-state investment, to help the Commission understand the implications of various scenarios on cost, land use, grid reliability, and electricity balancing authority coordination requirements.

III. Prioritizing energy efficiency investment is critical to reducing costs, alongside the necessary electrification of major end uses, including the transportation sector.

Energy efficiency is a key strategy to meet the state's climate goals, to reduce total electric system costs, and reduce customers' bills.³ Presentations at the August 19, 2013 workshop revealed that energy efficiency will need to play a vital role in the transition to carbon-constrained world. Both the California Council on Science and Technology and the UC Berkeley Energy Resources Group presentations rely on energy efficiency as an important resource in the models.⁴ The CCST model and UC Berkeley's SWITCH model assume aggressive energy efficiency in their base scenario for 2030 and 2050. They find that the State needs to: "Start deep efficiency and electrification early, otherwise, we'll likely miss 2050 carbon targets."⁵ Failing to deploy energy efficiency aggressively and early results in excessive supply-side investments, which drive up costs, and many of which will be costly (perhaps prohibitively so) to operate in a 2050 carbon-constrained world. CEC scenarios that extend only to 2030 should nonetheless consider the financial and operational impacts of investing in infrastructure that may have a 2050 expiration date. Therefore, we recommend that the Commission's 2030 scenarios contain aggressive energy efficiency assumptions on par with the CCST and SWITCH models. Also, the Commission should run one scenario in which energy efficiency only continues at a BAU pace, in order to isolate the impacts (and benefits) of aggressive energy efficiency deployment.

In addition, both the CCST and SWITCH model confirmed that the rapid decarbonization of the electricity grid will have important and dramatic implications for reducing emissions beyond the current electricity sector and will be necessary to reduce emissions in the transportation sector.⁶ The increased generation to accommodate electric vehicles, including hydrogen for fuel cell vehicles, will not achieve the desired amount of emissions reductions if load is not reduced as much as possible through energy efficiency, and the bulk of generation on the system is virtually carbon free. This suggests that the state may want to focus its nearer-term (2030) goals on dramatically reducing electricity load and transitioning away from carbon-emitting generation sources, in order to ensure an electrified fleet runs on as much low carbon electricity as possible.

Finally, the state must begin formulating a plan for how California's building stock can be heated without the use of fossil fuels. The Commission should take the lead on developing a plan for how solar thermal resources can play a much bigger role to heat buildings and develop a policy for the state to dramatically lower building heating needs.

IV. More research and development will be needed

³ Cost reductions from energy efficiency are demonstrated in part by the lower than average California residential electric bills. California residential electric bills are 27% lower than the average U.S. bill (\$83/month versus \$114/month, respectively). EIA, Electric Sales, Revenue, and Average Price (Aug 2013). Available at: http://www.eia.gov/electricity/sales_revenue_price/

⁴ "Power systems with high fractions of wind and solar power will require investment in various sources of flexibility: . . . energy efficiency." UC Berkeley Energy Resources Group, Jimmy Nelson, "Simultaneous planning of generation, transmission, and storage capacity for 2030 and beyond using the SWITCH model," Slide 2 (August 19, 2013). CCST, Jeff Greenblatt, California's Energy Future 2050 study: Insights for 2030, Slide 4 (August 19, 2013).

⁵ *Id.* at slide 6.

⁶ See California's Energy Future 2050 Study: Insights for 2030, presentation to the CEC, August 19, 2013, Slide 8.

http://www.energy.ca.gov/2013_energypolicy/documents/2013-08-19_workshop/presentations/05_Greenblatt-CEF_short_2013-08-19-ppt.pdf

While many of the emission reductions required by 2050 can be accomplished using technology that is currently available, research and development (R&D) will still be necessary to create new carbon-reducing technologies and lower prices associated with current generation and demand-side technologies. Given its role as the administrator of the Electric Program Investment Charge (EPIC) program and the author of the IEPR, the Commission is the natural agency to identify where current clean energy investment R&D money should be spent and identify areas where R&D beyond current levels is needed.

V. The Commission should use its power as a convener to discuss the state's biggest challenges

In addition, the Joint Environmental Parties believe that the Commission should use its convening power to bring together stakeholders to discuss solutions to the most challenging aspects of decarbonizing the electricity grid. For example, several workshop participants expressed a need for the state to establish a much more detailed plan for bringing on additional demand response resources. While the California Public Utilities Commission (CPUC) approves demand response programs for the three investor-owned utilities in the state, other parties, for example the CAISO and publicly owned utilities that operate their own balancing areas, should be brought into the conversation so that the state has a clear picture of what each utility/ISO needs to fully support an increase in demand response. Another topic that seems ripe for discussion is the perceived benefits and challenges of increasing coordination between the eight balancing area authorities operating in California. Lastly, we encourage the Commission to explore the land and water use implications of the electricity scenarios for 2030 and bring together stakeholders to discuss how the state can plan, in a comprehensive way, for future energy needs. Comprehensive planning proactively accounts for and manages the cumulative impacts of energy development before they happen. Through comprehensive planning the state can plan for energy development and protect wildlife, habitat and ecosystem function.

VI. Conclusion

We appreciate the opportunity to participate in the wide-ranging discussion at the workshop, and follow-up with written comments. We strongly support and urge the Commission to analyze 2030 electricity scenarios that position California to meet its 2050 greenhouse gas emission reduction goals, and look forward to subsequent opportunities to discuss the details of various scenarios.

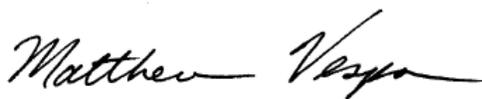
Sincerely,



Laura Wisland, Senior Energy Analyst
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