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**SDG&E Workshop Comments - State of the Science on Scenarios to Deeply Reduce GHG from CA's Energy System**

*Additional submitted attachment is included below.*



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## Docket 15-IEPR-11-Climate Change

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**RE:** SDG&E Comments on Workshop on the State of the Science on Scenarios  
to Deeply Reduce GHG from CA's Energy System

San Diego Gas and Electric (SDG&E) supports California's efforts to continue taking a leadership role in advancing clean energy policies. We are committed to working with the California Energy Commission and other Energy Agencies to reduce greenhouse gas (GHG) emissions and the impact of carbon and associated pollutants on our air and environment. SDG&E offers these comments to highlight some potential issues coming from the 2015 Integrated Energy Policy Report (2015 IEPR) workshop on the *State of the Science on Scenarios to Deeply Reduce Greenhouse Gas Emissions from California's Energy System*.

### ***Jim Williams, E3, "Deep Decarbonization Pathways in CA, US, World"***

The presentation by Jim Williams of E3 described the Pathways model used as a tool to estimate GHG emissions if particular technically feasible actions are taken and have the assumed effects and the assumed costs; it is not an optimization tool. As such the outcomes are highly dependent on the assumed costs of actions and the assumed consumer response.

The key questions raised in the Presentation, but not answered, include:

- How does the State decide on the forks in the road? For example, High levels of Energy Efficiency or electrification; which low emission passenger vehicle technology (EVs vs. hydrogen fuel cells); biomass for diesel or pipeline gas?
- What should the State do about potential technology lock-in? While water heaters are replaced every 10 to 15 years, power plants (including Combined Heat and Power (CHP)) and buildings built in the next 5 years will most likely be around in 2050.
- How does the State deal with the side effects of a high penetration of variable, weather dependent renewables?
- How does the State set and achieve a social goal of GHG reduction in a decentralized decision-making environment? What are consumers' and businesses' ability and willingness to adopt the new technologies?

While the questions were left unanswered in the Workshop, it is apparent that the State will have to address them in the future. SDG&E recommends an accurate price signal approach to allow for decentralized decision-making and believes mandates are a poor alternative.

### ***Brian Tarroja, UC Irvine, "Transition to a Low-Carbon Economy: Air Quality Considerations"***

President Obama's Clean Power Plan emphasized the co-benefits of improved air quality. Of course, in most of the rest of the U.S., switching from coal to natural gas reduces both ozone and particulates associated as

GHG reductions occur. But as this research showed, California is in a different position in that there is no coal electricity production (except a few cogeneration facilities) in the State. As this research showed, entirely eliminating power plants in California would reduce current ozone levels in the State by less than five percent.

In California, to achieve air quality co-benefits, the Study showed a need to reduce GHG in heavy duty equipment, ports, and railroad sectors. This suggests that to achieve the large air quality co-benefits in California, we should consider these co-benefits and prioritize goods movement GHG reduction strategies.

***Jimmy Nelson, Union of Concerned Scientists, "Achieving 50 percent renewable electricity in California"***

In order to reliably manage the grid, energy demand must match energy supply on a second-to-second basis. Renewable generation patterns do not always match time periods of greatest resource need within the CAISO Balancing Authority, which in extreme situations may result in physical curtailment of renewable energy or paying others to take the excess energy. The UCS research suggests the problem be addressed by reducing the minimum power level of gas-fired generation needed for reliability services, adding more storage, and smarter renewable curtailment (labeled renewable dispatch). As was pointed out by Commissioner Weisenmiller in the workshop, less solar in load-serving entity supply portfolios and 15-minute dispatch also will likely reduce the possibility that renewable resources within the CAISO Balancing Authority will need to be physically curtailed.

SDG&E believes this research should also consider the benefits of adding control systems and, potentially, new equipment to CHP facilities that eliminate the need for CHP to operate as a baseload resource during all hours of a year to provide needed thermal energy. CHP, with the ability to be shut down in periods when generation has very low value may be a much more cost-effective solution to be able to accommodate more renewables. It still provides efficiency benefits of joint production of heat and power when it operates, but does not operate as a baseload electricity producing generator.

***Trieu Mai, NREL, "Research Findings for the Electricity Sector of the USA, the West, and California."***

The National Renewable Energy Laboratory (NREL) Low Carbon Grid Study is the most relevant of the three NREL studies presented for investigating deep reduction of carbon in California. However, the conclusions of the Study that CA "can cut its carbon footprint in half by 2030 with minimal rate impact" is based on assumptions that are inconsistent with current state policy. By contrast, the E3 Pathways study, which does assume current policies continue, finds California electric bills will increase by \$50 per month compared to average bills of \$90/month in 2013 for a comparable level of GHG reduction to the NREL study; a substantial increase in rates and bills. Further, the revenue requirements of renewables is not included as it is part of phase two of the Study. Therefore, SDG&E continues to be concerned about the rate impacts of deep GHG reductions for its customers.

It is interesting to note that the Study finds large saving from changes in AB 32 GHG and RPS accounting. The Study assumes a change in AB 32 accounting methodology to allow exports of energy to lower the CA carbon footprint. Currently, exports of electricity cannot lower the GHG of the California electric sector as the emissions associated with all electricity production in the State, regardless of whether in is consumed in-state or out-of-state, are included in California's GHG inventory. Likewise, the Study assumes California RPS accounting will change to allow for unlimited development of renewables outside of California. The Study finds large cost savings by assuming the vast majority of new renewables required would be wind energy outside CA.

Thank you for considering SDG&E's comments.

