Comments on E3 report on achieving carbon neutrality

As a Californian and climate activist I favor a speeded up zero carbon energy option.

A few points:

1. Rapid and complete electrification is the apparent key to having any chance of success at meeting the state goals. This is the conclusion of the House Select Committee report on Climate Change, the Biden climate plan, and recent reports from Rewiring America and the Goldman report, which goes so far as to say for the US, not just California:   
The United States can deliver 90 percent clean, carbon-free electricity nationwide by 2035, dependably, at no extra cost to consumer bills and without the need for new fossil fuel plants, according to [a study released today](https://www.2035report.com/?utm_medium=email&_hsmi=2&_hsenc=p2ANqtz-_nsf6UuQfub_okag8lAO3F-GO-oXf1rhZpXEhjh4RdqfOxBMs14KwyiFMybtArc0D5TNvO-YCGub8TavKJt9aEBqoo5w&utm_content=2&utm_source=hs_email) from the Center for Environmental Public Policy at the University of California, Berkeley.”

2. All three of these scenarios seem to be less bold than needed, letting CARB off the hook.

3. Carbon capture is at this point a fantasy, and if E3 is seriously presenting it as an option it is a fairytale to put us to sleep. There is no evidence at this point that these technologies will be able to help us achieve net-zero. Perhaps they will help us reduce the carbon dioxide we have already sent into the atmosphere at some point in the distant future. Hope Jahren’s book The Story of More contains a simple critique of carbon capture; perhaps the E3 authors have lost the forest for the trees.

4. Biomass is, in the context of the critical next thirty years, not carbon neutral. In fact, biologists in the last few years have come to see that the actual contributions of emissions for any bio-based project must be looked at carefully with a 100 year Life Cycle Assessment. For example, I live in Humboldt County where biomass power provides 30% of our electricity. It is justified as being carbon neutral because the state still has this 1980s understanding of carbon neutrality embedded in law. But recent studies have shown that the mill waste being burned and the 420 MTs sent into the atmosphere each year could yield a million metric tons sequestered if the mill waste were used in large scale composting. Biofuels are even worse in the global context, as they are primarily made from corn which could be feeding the approximately 1 billion people now with not enough to eat (it will go up rapidly with global warming).

5. The authors note refrigerants are not accounted for. This could be a very large omission. On paper CA looks to be doing well with reducing HCP refrigerants with GWP equal to hundreds to thousands of CO2 equivalents. Yet 15 years of trying to control these gases has so far shown little success in stationary applications (like supermarkets). And the problem is going to literally multiply as increasing temperatures move people to use more refrigerants.

6. All in all, my confidence that CARB is taking the steps necessary to achieve our stated goals for California took a big hit as a result of this presentation.

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