Thank you for the great report and webinar. I hope my comments are relevant.

I believe Ms. Mahone stated that decarbonising the electricity supply and electrifying the economy should progress simultaneously. It makes sense, but the latter should not progress faster than the former. An example is the zero-emission mandate to transit agencies. In San Diego, MTS has compared the battery-electric and H2 ways, and cost weighs heavily against the latter. The study's model suggests, however, the necessity of much night-time charging, which, in today's electricity mix, means natural gas. Hence the possibility of electric buses increasing emissions.

The seemingly pricier H2 option would allow more daytime electricity consumption, thanks to storage of energy being more efficient than with batteries. It is therefore unfortunate that the Board mandates a comparative study but does not assist agencies in picking the best solutions by ensuring a realistic assessment of cost and emissions.

The problem of this 0-emission mandate is graver, though. Forcing transit agencies to commit ample resources for 0-emission transition places them in an unfair situation compared to private personal vehicles. A bus, provided it carries choice passengers, is already a depolluting device, by the virtue of taking several cars off the road. Demanding that buses be 0-emission is akin to demanding that solar panels be manufactured with renewable electricity. The enormous cost associated to complying stymies other improvements to the transit system that might increase ridership. Thus we are replacing empty natural gas buses with empty electric buses, which provides easy arguments to the adversaries of public transportation It is unfornutate that the agencies are not given the opportunity to justify spending some of the budget of total electrification on alternate initiatives that would result in higher emission reductions.

When it comes to emission inventory, we do not take into account gases emitted overseas to manufacture products imported there. It makes sense, lest those emissions be accounted for twice. Nevertheless we should have the honesty to temper our triumphant reports on decreasing californian emissions with the acknowledgement that some is due to the decline of the U.S. manufacturing sector, hence some of that reduction is truly just displacement. This applies neatly to photovoltaic panels, which have to produce two years’ worth of electricity to offset the CO2 emitted by chinese coal plants for their manufacture.

This brings me to low-hanging fruits, of which everyone talks, and low abatement cost. The common-sense solutions are right under our nose. The building codes have to evolve much faster than the C.E.C. or the D.O.E. move, so that we may stop immediately installing poor appliances, inferior insulation, and - my favourite - solar panels oriented to the north… If all non tracking solar panels in California were oriented optimally, the output would rise by 10 %. If all new buildings came with an optimally-oriented roof, it would ensure the best capacity factor for non-tracking panels from now on. As for solar thermal water-heating, efficient, proven and simple, is on no one’s radar.

Finally, building decarbonisation must make it into the next Title 24 section 6 iteration, along with high-efficiency heat pumps – except for water-heating, see above.