

*Santa Cruz Metropolitan
Transit District*



May 17, 2018

To whom this may concern:

I write in support of the California Transit Association (CTA) counter proposal to the CARB ICT, **the Draft version provide to you on or about April 30, 2018.** I have also attached a copy of the letter Santa Cruz METRO submitted to CARB on January 19, 2018 following the publication of the ICT late last year. The concerns we addressed in this letter remain.

Additional Comments:

Santa Cruz METRO's business model has not changed from day one. That is, we ARE NOT interested in mid-day (in-route/opportunity) recharging. Our model seeks to charge buses overnight and run all day, and, on all routes. We seek to minimize, if not eliminate, the potential of sub-fleets. Much to my dismay, the four buses we will receive in 2019 will constitute a sub-fleet.

- Santa Cruz METRO has 17 routes that run from 200 – 281 miles/day; 26 routes that run from 100 miles to 194 miles/day; and 36 routes that run less than 100 miles/day.
- A ZEB that can possibly run 150 miles/day on a single charge will only work on 52 of our 79 routes on day one. (could go up or down depending on HVAC, heat, operating terrain and bus operator driving characteristics)
- If the batteries degrade by 20%, that same bus will only run on 42 of our routes.
- For Santa Cruz METRO, any range less than 281 miles results in sub-fleets.
- Our LCTOP funded bus will run on a circulator route in 2019 that is about 200 miles/day.

Operationally, we will have to send the ZEB back to the yard at some point during the day and send out another bus, a CNG bus, to complete the day. Maintaining headways on the circulator route will require additional personnel. The ZEB will not result in a one-for-one personnel cost.

Other thoughts/questions:

- How is a small transit property determined? Previously it was a property with less than 100 vehicles, apparently inclusive of paratransit, cutaways and commuter buses.
 - Due to technology limitations, all paratransit, cutaways and commuter buses need to be eliminated from the Regulation and the vehicle count.

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- Small properties need to have a lag by some period of time. I suggest at least a two years lag.
- In the count for minimum thresholds, all buses currently owned and operated; all buses purchased between now and the start of the minimum threshold; and all buses on order should be included.
- “100% all electric by 2040.” What does that really mean? Assuming a 12-year life of bus, and the receipt of the last X number of CNG or diesel buses in 2027, will an agency be mandated to retire those diesel/CNG buses at the end of 2039?
 - What if the bus(es) can receive a mid-life overhaul and can continue in service beyond 2040?
 - What if the agency can’t afford to buy more ZEBs and needs to keep those last CNG/diesel buses in service beyond 2040?
 - Will that agency be in violation of law, penalized, fined?

Finally, any Regulation must have an off-ramp tied to battery technology advancements. The OEMs must continue to innovate battery technology in order to significantly increase battery energy density such that a bus can charge all night and run all day on any route an agency may operate, achieving at least a 300 mile range, after taking into consideration battery degradation, HVAC, heat, operating terrain and bus operator driving characteristics.

In order to avoid a Regulation that results in unintended additional capital and personnel costs, a ZEB must perform (mileage range) as a diesel and CNG bus does today. That is, once fueled, they can run on any route all day.

Respectfully submitted,

Alex Clifford
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