Thank you for the public workshop today. I was encouraged by the plans you outlined, especially your recognition that building readiness can vary greatly and your plans to study readiness over the range of California homes.

I have a few comments that I thought were more appropriate written than spoken:

With respect to appliance application, please realize that heat pipe water heaters generate noise and can run for hours. A neighbor just installed one in their basement and the noise in the rooms above it is so bad they are considering taking a substantial financial hit to replace it with a new gas water heater. They bought a unit that was supposed to be one of the quietest available. Methods need to be developed to damp this noise for homes where the water heater is installed in the living space (vs the typical garage installation).

With respect to installation cost, panel upgrade costs can vary substantially. CARB assumed about $3500 in the studies leading up to the SIP. It cost my wife and I $12,000 to upgrade from 100A to 200A and took over a year. Our cost was driven by Utility rules that forced the panel to change locations, which necessitated a new drop and was exacerbated by city codes that forced wiring upgrades. On the other hand, some friends in another neighborhood were able to upgrade theirs in place for about $5000 and a lead time of a few weeks. The presentation led me to believe that your studies will look account for this variability, but I wanted to highlight the issue.

A member of the public commented that using ‘efficient’ appliances can mitigate the need for panel upgrades. I believe a better term would be ‘right-sized’ appliances. Heat pump water and space heaters are all efficient. Unnecessary panel upgrades occur when building owners install appliances with more capacity than they need. Contractors need to understand and explain to their clients how to choose ‘right-sized’ appliances.

On the other hand, I believe it would be a mistake to choose the minimum capacity unit just to avoid adding a new circuit or even a panel upgrade. For example, manufacturers recommend 120V plug-in heat pump water heaters for 1-2 person households. I doubt the recovery rate of these units would be adequate for more than two people. My wife and I installed a 240V unit four months ago. It has just enough capacity for the two of us. We ran out of hot water just a couple times.

Finally, and this may not fall within your mission, it would be helpful to develop guidelines on when panel upgrades should be undertaken. I realize there are ways to avoid a panel upgrade with a 100A main panel, but is that the best approach for an all-electric home? My wife and I installed a new 200A panel with many empty slots so that we can easily support heat pump space and water heaters, an electric car, an electric dryer, electric oven and induction range as we transition away from natural gas. With this panel, we will not need switch off one high current circuit to support another. Personally, I believe it is better to upgrade to a 200A panel if it can be done reasonably, but some CARB or State of California guidance would be helpful.

Thanks for your efforts on these appliance standards. I look forward to following your progress.