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Mr. Kevin Kennedy and Mr. David Kennedy  
Air Resources Board  
1001 I Street  
Sacramento, CA 95812

Re: Modeling of Greenhouse Gas Emissions Reduction Mechanisms

Sempra Energy appreciates the openness of the ARB Staff in sharing the details of the GHG modeling effort and the willingness of ARB to listen to stakeholder input. The following comments concerning the proposed ARB GHG modeling and program design are offered in the same cooperative spirit, to assist ARB in analyzing various program options and attributes under AB 32.

- At the technical working group meetings, Sempra has twice inquired how the GHG modeling will be used. Can ARB discuss, at the February 29 modeling workshop, what design decisions will be impacted by the GHG modeling? This elemental question should be guided in part by the kind of questions that can be answered by the modeling, and by the degree to which the results of the model are reliable and robust. The latter cannot be known until the modeling has been undertaken, but the kind of questions that can be answered by the structure and nature of the model should be understood now.

- It would be helpful to get ARB's assessment of what the GHG model can and will address. For example, the question of point of regulation (first seller vs. load-based) would seem to produce identical conclusions in the Energy 2020 model since load serving entities have perfect knowledge in the model, all electricity can be perfectly tracked from the source (so no factors have to be used for unspecified power), and there are no impacts on the centralized electricity market. Similarly, the Energy 2020 model has few stochastic elements, so that it seems ill equipped to answer the question about the desirability of direct regulation versus a cap-and-trade market regarding concerns about market volatility and market liquidity of a cap-and-trade framework. To the extent that recommendations of the Public Utilities Commission and the California Energy Commission concerning electricity and natural gas sectors are transmitted prior to receiving model results, the development of details of the multi-sector cap-and-trade program are left to the ARB, and the details matter. Sempra would like to have a better understanding concerning whether ARB is going to use their modeling effort to design the program or more for informational purposes.

At the February 29 modeling workshop can ARB staff please discuss if the expectation that the GHG models (Energy 2020 and E-DRAM) will primarily determine, partially determine, or have no impact at all on the following policy choices:

- The choice of AB 32 structure as defined by the five scenarios (e.g., the preference between cap-and-trade and a carbon tax)
- The choice of particular direct measures if a direct regulation approach is determined to be preferred
- The point of regulation and length of compliance period if a cap-and-trade regime is deemed preferred

- Setting GHG reduction targets by sector
- Setting GHG reduction targets for entities within a sector (recognizing the carbon intensity of entities may differ at the beginning)
- The cost per metric ton deemed "cost effective"
- Inclusion/exclusion of sectors in a cap-and-trade approach (e.g. small natural gas users, agriculture, transportation sectors)
- The use of offsets regardless of the type of regulations that implement AB 32

We support the comment at the workshop that developing a matrix of the key outputs of the models, including the E3 model, as they relate to key policy decisions.

- At the workshop, you asked what we want to see as outputs of the GHG modeling. In part, that cannot be answered in full until we fully understand how the modeling will be used. Some of the results we believe might be useful information without that specific knowledge include the following:

- Marginal cost per metric ton of reduction for equivalent total statewide reductions for each scenario. Marginal cost would be the cost of the last, most expensive action taken to meet the mandate in each sector in the direct regulation case. In a cap-and-trade environment, it would be the allowance price for capped sectors and the most expensive actions in the uncapped sectors.

Requiring the same amount of GHG reduction for each scenario will allow for a better comparison of the alternatives, so that, for example, direct regulations do not artificially appear to be lower cost simply because they achieve fewer GHG reductions than a cap-and-trade framework.

- Average cost per metric ton of GHG reduction by sector. The average cost would be the total cost of all actions in the scenario

- (actions taken over the base case of the core measures) divided by tons reduced beyond the reductions achieved by the core measures.
- Metric tons of GHG reduction in each sector over the base case of the core measures.
  - The change in fuel composition in each sector. This information can be used to investigate the amount of fuel substitution that might take place. Specifically, whether electrification will be a major outcome in residential, commercial, industrial, agricultural, or transportation sectors under different scenarios should be evaluated.
- In modeling the scenarios, it was unclear from the workshop discussion how the non-capped sectors will be treated. Will the non-capped sectors be subject to added direct regulations? Or will only the core measures will be included and no additional reductions considered for these other sectors? Sempra would suggest that the non-capped sectors should have as stringent direct regulation included as under the direct regulation scenario even under the cap-and-trade scenarios. The non-capped sectors need to bear a proportionate share of the GHG reductions; it is unrealistic to think that only the capped sectors will bear the cost of AB 32 compliance.
  - If ARB believes that the GHG modeling will impact decisions on the magnitude of cap reductions in each sector, Sempra would recommend adding a cap-and-trade scenario that imposes sector-specific cap reductions to return each sector to 1990 GHG levels. Sector-specific cap reductions to return each sector to 1990 levels of GHG will accomplish the required AB 32 GHG reductions. This exercise would provide information on the total cost of reductions in each sector and by comparison to the model with trading, provide the benefits of inter-sector

trading. In addition, it could be used to provide information on the alternate sharing of the costs of GHG reductions where sectors and entities that had not undertaken early GHG reductions would bear more of the future costs of AB 32 compliance.

- Questions asked of the model should be prioritized based on their importance to answering the basic questions on AB 32 and their complexity. More complex questions that rely on the subtleties of the model should be answered after April 4 and in order of their difficulty in modeling and likelihood of providing important results. For example, the combination of Energy 2020 and E-DRAM can analyze the differential impacts of full auction or free allocation or some combination of the two. However, the effects are complex. There will be no differences in first order effects since the price of allowances will be the same for either free allocation or auction based on perfect knowledge of reduction options and equal scarcity of allowances across the methods.

There are, however, secondary effects that differ. One secondary effect is related to how auction revenues are used. If used to subsidize equipment choices (one element of Energy Efficiency), it would change relative prices and customer decisions. Conversely, if it is funneled to customers to mitigate price increases, it will have an income effect, increasing energy use and having a different impact. Free allocation will have a similar income effect for entities required to acquire allowances. A second secondary effect is related to business competition and how it is modeled in E-DRAM - as the prices rise for firms that are required to acquire allowances compared to entities not subject to the cap-and-trade, there is reduced production in-state and increased production out-of-state. This

has impacts on total GHG reduction and Sempra would suggest that production change opportunities be included and assessed in the model.

- ARB is considering a base case tied to a set of "core measures," regulations already adopted by CARB, the legislature, or the CPUC/CEC such as the low carbon fuel standard, the 20 percent RPS, and continued energy efficiency programs at the high levels. Sempra believes the core measures should assume similar levels of RPS requirements and energy efficiency for publicly-owned utilities as are currently required for California investor-owned utilities. In addition, California building and appliance/equipment standards should be added to the list of core measures if they are not already included under the category "energy efficiency beyond current programs."
- As Sempra and other parties have requested at the workshops, access to the input data used in the modeling will assist stakeholders in identifying potential inaccuracies before any conclusions are drawn from inaccurate data. Specification of assumptions regarding the core measures and direct regulation measures is particularly important. ARB has been very open to providing such data, so this point is just a reminder of commitments made in the technical working group meetings.

Thank you for allowing us this opportunity to provide comments.



Mike Murray