BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies.	R.06-04-009 (Filed April 13,2006)

COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES ON THE ADMINISTRATIVE LAW JUDGES' RULING ON MODELING-RELATED ISSUES

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Pursuant to the November 9, 2007 "Administrative Law Judges' Ruling Requesting Comments on Modeling-Related Issues" (ALJ Ruling),[1] DRA submits the following comments on modeling-related issues for greenhouse gas (GHG) reductions in the electricity and natural gas sectors.

I. INTRODUCTION

DRA appreciates the opportunity to evaluate and provide comments on the Commission's GHG modeling efforts. The process of modeling costs associated with GHG reduction policies and programs is an ambitious one that is intended to estimate the burden of compliance for meeting GHG goals in the electricity sector. DRA shares some initial observations of Attachments A and B of the ALJ Ruling in these comments. As discussed below, DRA also recommends some general principles as guidelines for evaluating the modeling scenarios and their outputs, including a request for a sensitivity

[1] Administrative Law Judges' Ruling Requesting Comments on Modeling-Related Issues (ALJ Ruling), November 9, 2007.

analysis. As discussed in Question 9, DRA believes a sensitivity analysis would provide an essential tool for understanding the degree of uncertainty of the results, and the relative impacts the various inputs have on the results.

II. DISCUSSION

A. Questions Related to Attachment A, Identification of Emission Reduction Measures

Q1. Does Attachment A cover all of the viable emissions reduction measures available in the electricity and natural gas sectors? If not, what other measures should be considered for the purposes of forecasting emissions reduction potential within these sectors? Please include suggested data sources and references for information regarding any additional measure you purpose.

Attachment A appears to cover most, if not all, of the viable emissions reduction measures available in both the electricity and natural gas sectors. DRA does not have any additional data sources or references to add at this time.

Q2. Are there emission reduction measures identified within Attachment A that you believe, based on currently available information, should not be implemented as a means to achieving emission reductions within the context of AB 32? Please justify your answer.

DRA believes all of the emissions reductions measured identified in Attachment A can be considered for implementation.

B. Questions Related to Attachment B, Modeling Approach and Data Sources

Q7. Provide feedback, as desired or appropriate, on the structure and approach taken by E3 in its GHG Calculator spreadsheet tool.

The GHG Calculator is designed to estimate emissions levels and utility costs in 2020 for different scenarios. The fundamental building block is a "case," which includes all of the input assumptions required to calculate costs and other metrics for a single

scenario in 2020. The GHG Calculator also attempts to simplify the comparison between cases, and reports changes in many variables such as emissions, costs, and other metrics.

A "case" is defined as the inputs, calculations, and results in the GHG Calculator. At a high level, the inputs include assumptions about loads, resources to meet load, resource costs, and system dispatch. With these inputs, the GHG Calculator computes results for that case. In order to calculate the results, summary analysis from the production simulation model PLEXOS has been input into the analysis tool and is automatically modified in the spreadsheet depending on changes to the resources and loads. In addition, responsibility for emissions and costs are assigned to LSEs so that LSE-specific outputs can be calculated. The case "results" include: emissions levels, costs, rates, and renewable energy percentage.

Interpretation of the output results appears to be somewhat subjective. Some sort of visual conversion of the results, such as tables, or comparative graphs, might permit quicker case comparisons and aid explanations. It is unclear whether the modeling outputs should be interpreted differently based on various points of regulation market design.

Although the point of regulation ultimately selected by the Commission in this proceeding may not match the load-based system modeled in E3's reference case, the E3 model should have the flexibility to account for total costs passed through to consumers under any point of regulation. As noted by E3, the model results are mostly independent of point of regulation, and "all costs are assumed to be passed through to rates."[2] Decisions on point of regulation and allowance allocation may influence some scenarios, such as whether some energy efficiency options are favored over renewable energy development, but the model can be easily adjusted for various energy efficiency and renewable energy scenarios. However, some costs will be influenced by the chosen

[2] Email correspondence between Amber Mahone of E3 and Wade McCartney of CPUC, forwarded to Paul Philips of DRA, 21 December 2007.

allowance allocation method. In Phase 2, the model should be modified to allow for adjustments once the allowance allocation methodology is determined.

Q8. Provide feedback, as desired or appropriate, on the data sources used by E3 for its assumptions in its issue papers. If you prefer different assumptions or sources, provide appropriate citations and explain the reason for your preference.

On 12/21/2007, E3 provided the following information to DRA:[3]

- The 2008 case in PLEXOS was created by the WECC in 2005 using the SSG-WI database of all generators in the West.
- The 2020 cases in PLEXOS use data from the TEPPC database (also provided by the WECC). This database was developed more recently, and reflects the way the WECC expects the West to look in 2017. E3 expanded this 2017 case to 2020.

The data used seems reasonably up-to-date. However, a process (or set of processes) that describes how and when the data is refreshed and updated would be useful.

Q9. Are uncertainties inherent in the resource potential and cost estimates adequately identified? Does E3's model provide enough flexibility to test alternative assumptions with respect to these uncertainties?

There are many uncertainties inherent in any model. Many inputs are "best guesses" at future scenarios. Potential changes in costs, technology, and demand curves all introduce uncertainty. Therefore, it is important to remember that any results from this model are simply estimates. Models can be useful in setting upper/lower bounds and predicting relative cost-effectiveness. However, it would be dangerous to base policy decisions entirely on the output of a model.

[3] Email correspondence between Amber Mahone of E3 and Wade McCartney of CPUC, forwarded to Paul Philips of DRA, 21 December 2007.

It would be useful to conduct a sensitivity analysis on the inputs, so that the user can assess how greatly the accuracy of any given input will affect the results. For example, a sensitivity analysis may show, for example, that if Input A is 100% too high, then the model results would be 1% higher; meanwhile, if Input B is 100% too high, then the model results would be 90% higher. Input B therefore influences end results much more than Input A. The user then knows that if estimates for Input B are highly uncertain, then the model results are quite uncertain, whereas uncertainty in Input A estimates matter much less.

For the GHG Calculator, a sensitivity analysis would allow assessment of how changes in electricity demand, energy efficiency achievements, etc. will affect the cost estimates. A sensitivity analysis is critical for providing context to the certainty of the model results.

While the model is designed so that individual stakeholders can run their own sensitivity analyses, DRA recommends that E3 conduct such an analysis. This way, all stakeholders will have access to the same results, rather than leaving it up to stakeholders to conduct their own analysis and interpret results, which may or may not be similar.

Q11. Should E3's model, in Stage 2, attempt to model potential market transformation scenarios, in the form of cost decreases, new technologies, or behavioral changes? What might be an appropriate way to characterize such potential for market transformation?

It is very likely that some sort of market transformations will occur that will affect emission reduction costs or other scenarios. Attempting to account for these changes is an acknowledgement that current market characteristics will change over time. However, predictions of these market transformations will be based on broad assumptions and may not portray future scenarios any more accurately. Therefore, any attempts to model these potential scenarios should be kept as separate and optional components of the model. Users must be able to easily identify where these attempts are made and what the

underlining assumptions are. The model default should be set so that these potential scenarios are not automatically incorporated.

Q12. What specific flexible GHG emission reduction mechanisms to mitigate the economic impacts of achieving the desired GHG emission reductions should be modeled in Stage 2?

The economic savings from a tradable emissions permit system should be modeled in comparison to non-tradable systems. Given the administrative costs and potential for leakage and contract shuffling inherent in a trading scheme, it is important to see whether those costs and risks are outweighed by the economic gains of a cap-and-trade system.

Allowance banking should also be modeled in Stage 2. It is important that the model have flexibility in changing: (a) the percentage of allowances that may be banked, and (b) the maximum time period for which permits may be banked.

Emission offsets will be part of any discussion on flexible compliance mechanisms, and they too should be modeled. However, offsets add an additional degree of uncertainty to calculations, so this modeling must be done carefully. Assumptions must be clearly stated and should be easy to change. The total percent of emissions allowed to be offset should also be easily changeable. Also, the model should allow users to account for some sort of "offset leakage," as many offset projects (particularly involving projects outside of the U.S. or even California, projects involving carbon sequestration, and projects of questionable "additionality") are prone to leakage issues.

Q13. What output metric or metrics should be utilized to evaluate the least cost way to meet a 2020 emission reduction target for the sector?

Dollars per ton of carbon reduced.

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III. CONCLUSION

DRA believes E3 has made a solid first step in modeling costs and reductions. However, it is important to remember that any model prediction represents an approximation at best, rather than representing a true and accurate portrayal of the future. For this reason, a sensitivity analysis would be useful, as it would allow model users to assess how uncertainties in any given input might affect results.

Respectfully submitted,

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Dated: January 4, 2008

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of **"COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES ON THE ADMINISTRATIVE LAW JUDGES' RULING ON MODELING-RELATED ISSUES"** in **R.06-04-009** by using the following service:

[X] **E-Mail Service:** sending the entire document as an attachment to an e-mail message to all known parties of record to this proceeding who provided electronic mail addresses.

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Executed on January 4, 2008 at San Francisco, California.

/s/ Nelly Sarmiento

Nelly Sarmiento

N O T I C E

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