

**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.

Rulemaking 06-04-009
(Filed April 13, 20'06)

**ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA**

DOCKET	
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DATE	JAN 04 2008
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In the Matter of:

AB 32 Implementation: Greenhouse Gases

Docket 07-01IP-01

**OPENING COMMENTS OF THE
LOS ANGELES DEPARTMENT OF WATER AND POWER
ON THE ADMINISTRATIVE LAW JUDGES' RULING REQUESTING COMMENTS ON
MODELING-RELATED ISSUES**

January 4, 2008

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**OPENING COMMENTS OF THE
LOS ANGELES DEPARTMENT OF WATER AND POWER
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MODELING-RELATED ISSUES**

In accordance with Rule 14 of the Rules of Practice and Procedure of the Public Utilities Commission ("CPUC" or "Commission") of the State of California, the Los Angeles Department of Water and Power ("LADWP") hereby files the following Opening Comments submitted in response to the "Administrative Law Judges' Ruling Requesting Comments on Modeling-Related Issues," filed November 9, 2007 , in CPUC Rulemaking R.06-04-009 ("Rulemaking") and California Energy Commission (CEC) Docket # 07-OIIP-1.

I. INTRODUCTION

The LADWP appreciates the opportunity to provide opening comments on issues related to modeling work developed by Energy and Environmental Economics, Inc. (E3) to date (Attachment B of the Ruling), and the CPUC Staff workpaper entitled "Greenhouse Gas Emissions Reduction Measures for the Electricity and Natural Gas Sectors Under Consideration as Part of R.06-04-009 (Attachment A of the Ruling). We recognize the critical importance of this modeling effort to inform the California Air Resources Board's (CARB or ARB) macroeconomic modeling of the broader economic impacts of potential greenhouse gas (GHG) emission reduction measures across all sectors and to support the CARB's efforts to establish sector- and entity-specific GHG emission reduction requirements.

The LADWP's participation in this joint CPUC/CEC proceeding reflects our primary goal, which is to work in partnership with the State to achieve real environmental benefits through GHG reductions, to protect customers from unfair cost

burdens and rate spikes and to preserve electric system reliability. The LADWP strongly supports AB 32 and California's efforts to develop a comprehensive GHG emission reduction program with reductions beginning in 2012 that encompass all electricity sector emissions, in-state and imported. The LADWP appreciates the efforts of the CPUC/CEC to develop a single, state of the art, transparent, non-proprietary analytical model for use by all parties to better evaluate different policy options.

However, we also caution against the potential to ignore the fundamental limitations of economic models as California moves forward to develop the AB 32 Scoping Plan. California's electricity sector is and will continue to undergo a major transformation. It is very possible that the electricity sector could ultimately be required to reduce emissions more than its proportional share. With tens of billions of dollars and stability of the electricity sector at stake, it is in everyone's interest that California develops a GHG emission reduction program that is transparent, cost-effective, fair, and results in real emission reductions.

II. SPECIFIC COMMENTS

A. *Economic Models Have Fundamental Limitations That Must Be Recognized and Acknowledged*

There is much to like in the analytical process outlined by the CPUC/CEC. E3 is a competent, professional organization that has clearly committed the "best and the brightest" to a monumental task on an extremely tight schedule. The PLEXOS production cost model, which extracts its data from the Western Electric Coordinating Council (WECC), Transmission Expansion Planning Policy Committee (TEPPC) load and resource data base, is an appropriate choice for the basic building blocks of the analytic engine. This choice ensures consistency with several other related WECC-

wide modeling efforts. Despite this model's attributes, a cautionary "warning label" must be applied to constantly remind all parties that no perfect model exists. There is no set of input assumptions or multiple sets of alternate input assumptions that will discerningly and accurately portray the distant future. This fact cannot be "papered" over with false precision in the pursuit of total accuracy and final "objective" scientific judgment. Use of scenario analysis, which relies on multiple input assumptions, and/or allowing parties to document, submit, and use their own input assumptions in a transparent process are helpful. However, the ultimate usefulness of the model results is unknown.

The LADWP has previously submitted to E3 corrections to the TEPPC database for its own system.¹ Notwithstanding this previous input and current review of the CPUC GHG Model Stage 1 activities and documentation, LADWP's greatest concern and principal message remains, namely, that the entire analytical effort is headed in a direction that threatens to derail the process of producing a reasoned, generally accepted, politically understood and endorsed set of policy recommendations for electricity sector compliance with mandated emission targets in the ARB AB 32 Scoping Plan decision.

The problem is not with E3, PLEXOS, or the GHG Calculator, but with the proposed use of these tools to attempt to actually design the overall AB 32 compliance plan for the State (i.e. Scoping Plan). The use of a simple spreadsheet accounting tool to judge the "optimum" allowance allocation methodology and quantification of rate impacts of this allocation scheme on individual load serving entities (LSEs) places an

¹ On November 29, 2007, the LADWP submitted to E3 staff corrections to the "Generator Data and Generator Ownership/Contract Assignments to LSE" Excel file posted for review on the E3 website.

impossible burden on E3 and the multi-agency staff that oversees the effort.

B. Policy Must Drive the Economic Modeling, the Model Cannot Be Used to Establish Policy

The ARB Scoping Plan, which will chart much of the future of the electricity sector in California and the West, is scheduled for adoption by the end of 2008. The ALJ Ruling requesting these comments may produce stakeholder input that is only superficial in nature, such as correcting “errors” in input databases, recommending alternate assumptions for key input variables, or simply pointing out specific “inaccuracies” in the analytic algorithms. However, such strict review of the modeling documentation does not eliminate the State’s obligation and responsibility to step back and make sure the broader picture remains in focus. The models cannot be used to design the procurement strategies and compliance plans of the individual LSEs.

Our primary issue can be stated as follows:

The use of the TEPPC data base to run the PLEXOS production cost model and GHG Calculator in a serial and deterministic fashion for ANY given set or sets of input assumptions to produce a single point answer “by which the impact of alternate policy means of achieving emission reductions within the electricity sector under AB 32 may be quantified”² is fatally flawed.

The focus of the analytical support for AB 32 compliance must be the adopted and approved resource plans of the LSEs, not the output of the PLEXOS model. The task for PLEXOS should be to aggregate approved resource plans and check for issues like whether the AB 32 sector targets are met by these resource plans and whether major common infrastructure investments such as new long line transmission paths within the WECC region could facilitate cost effective compliance. The LADWP

² ALJ Ruling at 2.

recognizes that these resource plans are living documents that will change over time and thus there would be no “answer” in 2008 if this alternate analytical process were followed. That is precisely the point.

C. *A Single WECC-Wide Economic Dispatch On The Basis Of Variable Cost with No Variable Adder for Carbon Will Never Correctly Reflect Dispatch Decisions By Individual California LSEs*

To illustrate the primary issue presented in the previous section, the LADWP submits the following example from the GHG Model Stage 1 Documentation. E3 made the assumption that the LADWP has an ownership share entitlement of 477 MW of baseload coal generated electricity from the Navajo Generating Station in Arizona in the year 2020.³ E3 cannot make that assumption. Decisions on resource planning or dispatch in 2020 or any other year will be made by individual LSEs and POUs in response to numerous evolving factors that cannot possibly be known today. The Navajo Project Co-Tenancy Agreement expires December 31, 2019 and the LADWP does not have any plans to renew the contract, particularly given the restrictions of SB 1368.

Nevertheless, and for illustrative purposes only, when the E3 model assumes that LADWP continues to retain the Navajo entitlement in 2020, major consequences arise in the model if that assumption is later found to be wrong. When E3 conducted

³ CPUC GHG Modeling Stage 1 Documentation, Table 1. Out-of-State and Nuclear Generators Assigned to LSEs, page 12. E3 referenced the LADWP's Draft 2006 Integrated Resource Plan (IRP) that stated that the 477 MW Navajo entitlement share was assumed to be in force in 2020. However, the LADWP Draft 2006 IRP was prepared prior to the passage of SB 1368, which restricts all LSE and POU long-term financial commitments in baseload generation exceeding 1,100 lbs/MWh. The LADWP expects to publicly release and ultimately adopt a 2007 IRP that has, among other things, been updated to reflect the passage of SB 1368 and AB 32. The LADWP will provide the 2007 IRP to CPUC/CEC and E3 upon adoption by the Board of Water and Power Commissioners, which is expected in the very near future.

the Stage 1 analysis, the PLEXOS model, quite naturally, completely dispatches the LADWP's entitlement share of Navajo Generating Station along with approximately 4 million tons of CO₂ emissions. One of the generic vulnerabilities of the PLEXOS model is that it assumes a single WECC-wide economic dispatch on the basis of variable cost with no variable adder for carbon. Thus the Navajo Generating Station, as a relatively efficient coal plant, will almost always be completely dispatched by PLEXOS to serve some load within the WECC—regardless of ownership or the load-resource balance within a specific control area.

Because the GHG calculator believes this dispatch comes from a “specified” import allocated to LADWP, it incorrectly attributes or assigns the 4 million tons of CO₂ emissions to LADWP (roughly 25% of LADWP's total 2020 GHG emissions). The cost of this “misallocation” of emissions liability would range from \$100-\$200 million for year 2020 compliance alone, assuming a cost of \$25-\$50/ton for emission allowances. Given that E3 also added approximately 1,000 MW of energy efficiency and approximately 2,000 nameplate MW of renewable resources to LADWP's “TEPPC specified” resource mix in all of the policy cases studied, the LADWP control area would be significantly over-resourced in all cases. Without the Navajo entitlement, the LADWP control area would be in load-resource balance in all policy cases.

LADWP's understanding of the GHG calculator algorithm is that this surplus energy would result in an “imputed sale” to the Southern California unspecified pool with an emissions attribution of approximately 2 million tons of CO₂ (at the pool average carbon intensity), incorrectly leaving LADWP with the remaining balance of 2 million tons of CO₂ emissions (as a specified source). However, the exact calculation of this

attribution is not clear in the model documentation and could not be adequately explained when conferring with E3 staff. Thus the ultimate consequence of E3's assumption regarding the Navajo entitlement is that LADWP's net carbon emissions for the year 2020 would be overstated by at least 2 million tons and possibly by as much as 4 million tons in all the policy cases that have been run for Stage 1.

Sensitivity of the model to that one decision to completely dispatch Navajo to serve load in the year 2020 results in a huge error that has rippling effects throughout the model. Such unintended consequences bring into question the use of the model for any entity-specific results.

D. PLEXOS Dispatch Ignores Resource Divestment

A California LSE that no longer has an ownership interest in a generating resource should not be assigned the emissions liability associated with continued WECC-wide dispatch of that resource to other entities. However, it appears that this is precisely what the E3 modeling does. The fact is, decisions are going to be made by LSEs and POUs regarding their resource planning and dispatch, and no amount of adjustments to the model today can make it a better indicator of LSE rate impacts several years into the future. Instead, this illustrates another generic problem of using a single WECC-wide economic dispatch (without a carbon adder) in the PLEXOS model when mechanically cranking that dispatch through the GHG calculator to attribute emission liabilities to individual California LSEs. In the example above regarding the Navajo Generating Station, making an adjustment in LADWP's Navajo 2020 entitlement share would convert the former LADWP share of Navajo emissions from a "specified" import to an "unspecified" import. The PLEXOS dispatch would be identical regardless of ownership of the Navajo entitlement. However, the GHG calculator would reduce total

California GHG emissions from electricity imports by the difference between the specified and unspecified value.

In this example, it appears that LADWP would still be attributed the “excess” emissions because it would still be in the same surplus load-resource balance. It does not appear to be possible to calculate the precise impact of this resource divestment in the model because the load-resource balance in the PLEXOS output is only checked by geographic region, not by individual LSE. However, this flaw is not isolated to this example of LADWP’s Navajo entitlement share, and would likely have similar implications for any California LSE that divests of, or reduces, its take of a generating resource.

E. Stage 1 Electricity Sector-Wide Modeling Does Not Readily Transition To or Interface With Stage 2 LSE-Specific Analysis of Impacts

The example of LADWP’s Navajo entitlement share illustrates the potential consequences of one single technical error potentially causing a \$100-200 million per year “misallocation” of one LSE’s emission reduction obligation. It should give the CPUC/CEC, ARB, and parties in this proceeding pause to consider the consequences of the inherent uncertainty in deterministic model results. Unavoidable “errors” will occur in any gas price forecast, load forecast, or renewable resource stack assumptions. These errors will also appear due to failure to achieve economic optimum in the actual dispatch as a result of transmission constraints or “seams issues” between and among the numerous balancing authorities in WECC that operate under radically different market rules. The LADWP believes that with care and professional judgment, the policy consequences of these “errors” are at least somewhat manageable when only aggregated WECC-wide results are desired, as in Stage 1.

In contrast, when extrapolating to LSE-specific results, as would be done in Stage 2, unintended consequences can arise. This occurs when the spreadsheet-based accounting allocation formula in the GHG calculator is layered on top of “errors” in a PLEXOS economic dispatch. Such consequences may not be obvious and, therefore, are difficult to reliably assess. Such errors will be compounded in uncertain ways when the GHG calculator then takes the final step and converts these uncertain emission attribution results into a “rate impact analysis” that assumes perfect foresight, as well as instant and identical decision-making by LSEs across the West. It is a basic accounting concept to use caution when building economic assumptions into accounting rules in opaque ways.

F. All Regulated Entities Do Not Think and Act Identically

Perhaps the most important consideration of all is that the model makes the implicit assumption that the decisions of real people and real institutions, with complex and differing political and economic oversight mechanisms, all operating on imperfect information, can be adequately represented by a few lines of computer code that assume all regulated entities think and act identically and that they only respond to short run variable cost economic signals. Neither E3 nor PLEXOS should drive policy decisions for AB 32 regulations; nor should policy assumptions built into the model be accepted.

The models cannot be used to design the procurement strategies and compliance plans of the individual LSEs. Further, basing climate change emission allocation policy decisions on these models is inappropriate and ill advised. To further illustrate the point that caution must be used when determining the value of these models, a review of certain assumptions from the model is helpful. The model

incorrectly assumes that, along with all other regulated entities in the electric sector, the LADWP senior management, its governing board, and the Los Angeles City Council will support a compliance plan that collectively does the following:

- Builds 6,600 MW of new conventional coal plants while keeping every MW of the existing 44,000 MW of existing coal plants in service;
- Spends roughly \$40 billion dollars on renewable projects off of a limited menu of current options that assumes static technology and static prices for the next twelve years, and only loosely considers transmission construction, environmental review, and other challenges associated with development of renewable energy projects;
- Hangs achievement of compliance on total success of an extremely ambitious⁴ multi- faceted energy efficiency program that manages to completely modify human behavior in an ever advancing, energy-consuming, technological era that is increasing demand for electric service; and
- Requires 30-40% rate increases.

None of these are factual assumptions that are in line with possible options for the City of Los Angeles and the LADWP.

Additionally, there is a factual assumption within the model that all LSEs dispatch in a universal fashion, using a universal oversight body. There is no model assumption which recognizes that the various other California LSEs have different load dispatch protocols, and that resources are balanced through separate control areas. The LADWP and SMUD, for example, are balancing authorities independent of the California Independent System Operator (CAISO), and as such, will dispatch resources differently from the CAISO.

If California learned anything from the searing experience of AB 1890, and the subsequent energy crisis, it would be to exercise extreme caution and not turn the

⁴ The LADWP agrees that robust energy efficiency strategies that eclipse historic results is the correct policy response, but believes that some margin of error needs to be built into the planning process.

future of California's critical electric utility infrastructure over to a select group of people to decide what the analytic issues and input assumptions should be, and then rely on the best possible mathematical model to yield a desired policy result.

G. Load Growth Assumptions Are Likely Underestimated

There are, perhaps, no two areas, other than load growth and natural gas price forecasting, that are more important in capturing both a single point estimate of the future, as well as the range of plausible outcomes in order to gauge the robustness of any AB 32 compliance plan or any LSE allowance allocation methodology.

The LADWP generally agrees that the California Energy Demand 2008-2018 Staff Revised Forecast (CEC Forecast) published in October 2007 by the California Energy Commission (CEC) is the best publicly-available forecast of California Energy Demand. However, we disagree with the forecast of load growth in the LADWP service area. LADWP's in-house forecast is significantly higher. The CEC too heavily discounted recent developing trends, and underestimated population growth and construction activity in the LADWP service area. The LADWP recommends that before the CPUC/CEC adopts any decision regarding GHG emissions, that the CPUC review the policy under different load growth assumptions within the State. In Stage 2 entity-specific analysis, the LADWP anticipates the opportunity to submit more detailed comments regarding such forecasts as they are applied to the LADWP's service territory.

H. Publicly-Owned Electric Utilities Have A Strong Commitment to Reducing GHG Emissions

We believe that it is important that other parties understand the level of commitment and the sense of purpose that is driving the City of Los Angeles and the LADWP to reduce GHG emissions. On May 15, 2007, Los Angeles Mayor Antonio Villaraigosa released the “GREEN LA – An Action Plan to Lead the Nation in Fighting Global Warming” (Green LA Plan)⁵ that has an overall goal of reducing the City’s overall GHG emissions by 35% below 1990 levels by 2030. The cornerstone of the GREEN LA Plan is increasing the City’s use of renewable energy to 35% by 2020. The GREEN LA Plan and our commitment to reach its stated goals clearly illustrates our continued and unwavering support, as a self-governed publicly-owned electric utility of the City of Los Angeles, for the successful implementation of AB 32 in a way that is cost-effective, equitable and achieves real emission reductions. POUs, and their governing boards and councils, are equally committed to the reduction of greenhouse gas emissions.

III. CONCLUSION

The LADWP strongly recommends that the CPUC/CEC not ask the modelers to over-reach their critical but limited capabilities. It is not fair to E3 or the CPUC/CEC staff, and it certainly is not fair to the many regulated entities, their governing bodies and their customers to use the modeling for policy determinations.

Instead, the LADWP recommends the following:

1. Focus on the considered, published, politically and economically vetted long-term resource plans of the individual LSEs. Each of the IOUs must

⁵ The GREEN LA Plan is available on the City of Los Angeles website at the following link:
http://www.lacity.org/EAD/EADWeb-AQD/GreenLA_CAP_2007.pdf

periodically file a Long Term Procurement Plan (LTPP)⁶ with the CPUC that is approved in a public process with each Commissioner registering their vote certifying that the plan is consistent with legislatively mandated goals, including AB 32. Each of the major POU's periodically publishes an Integrated Resource Plan⁷ which is the functional equivalent of an IOU LTPP.

2. Collect these documents and use the analytical tools developed in this proceeding to aggregate important planning data rather than allocate. Use them to keep track of the accounting, and not to predict the economic or public policy choices. Use them to perform a check that the sum of those LTPP/IRP plans meets the twin goals of a reliable, cost-effective integrated and interactive grid that ensures compliance with AB 32, while preserving and empowering existing oversight over the basic utility function.

⁶ The most recent LTPP filings were approved (with modifications to ensure conformance with GHG emission reduction targets) in D. 07-12-052 on December 21, 2007.

⁷ In the case of LADWP, we must also conform to initiatives like the Mayor's "GREEN LA – An Action Plan to Lead the Nation in Fighting Global Warming" (GREEN LA Plan) that calls for overall citywide CO2 emission reductions of 35% below 1990 levels by 2030.

The LADWP appreciates the opportunity to provide these opening comments to the CPUC and CEC for your consideration.

Dated: January 4, 2008 Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the attached:

OPENING COMMENTS OF THE LOS ANGELES DEPARTMENT OF WATER AND POWER ON THE ADMINISTRATIVE LAW JUDGES' RULING REQUESTING COMMENTS ON MODELING-RELATED ISSUES

on all known parties to R.06-04-009 by transmitting an e-mail message with the document attached to each party named in the official service list, updated January 2, 2008. See attached service list. I served a copy of the document on those without e-mail addresses by mailing the document by first-class mail addressed as follows:

See attached service list.

I also caused courtesy copies to be delivered as follows:

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Executed this 4th day of January 2008, at Los Angeles, California.

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