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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop
Additional Methods to Implement the California
Renewables Portfolio Standard Program.

Rulemaking 06-02-012
(Filed February 16, 2006)

**ADMINISTRATIVE LAW JUDGE'S RULING
REQUESTING POST-WORKSHOP COMMENTS ON 2008 MARKET PRICE
REFERENT FOR THE RENEWABLES PORTFOLIO STANDARD PROGRAM**

1. Request for Post-Workshop Comments

On March 27, 2008, Energy Division staff held a workshop where parties discussed potential modifications to the market price referent (MPR) methodology, inputs, and assumptions prior to the calculation of the 2008 MPR. Parties filed pre-workshop comments on March 6, 2008.

This ruling requests post-workshop comments that will help inform the Commission in a proposed decision on the 2008 MPR methodology. Post-workshop comments may be filed and served in accordance with the instructions in this ruling. Comments must be no longer than 30 pages, with no more than 25 pages of germane attachments. Reply comments must be no longer than 15 pages, with no more than 10 pages of germane attachments. Models or complex calculations submitted with comments must be made available to the

service list on a web site or a CD.¹ Comments must be filed and served on the service list for this proceeding not later than June 6, 2008. Reply comments must be filed and served not later than June 18, 2008.

2. Guidance for Comments

Energy Division staff provided suggestions for the structure and content of pre-workshop comments. The same format will be followed for post-workshop comments.

Many of the suggestions for post-workshop comments ask that parties revisit topics identified for pre-workshop comments. For these topics and all others addressed in post-workshop comments, parties are asked to base their comments on the presentations² and discussion at the workshop, relevant pre-workshop comments, and any additional work the parties may have undertaken since the workshop. Comments should focus on discussing specific proposals made at the workshop or in pre-workshop comments.

Commenters may address these subjects by presenting proposals for modifications to the MPR methodology or inputs, or by answering the questions developed by staff, below, or a combination of these approaches. Commenters with similar views are encouraged to present joint comments. Comments that

¹ If appropriate, a Notice of Availability should be used, in accordance with Rule 1.9 of the Commission's Rules of Practice and Procedure. Unless otherwise indicated, all subsequent citations to rules refer to the Commission's Rules of Practice and Procedure, which are codified at Chapter 1, Division 1 of Title 20 of the California Code of Regulations, and all citations to sections refer to the Public Utilities Code.

² The workshop presentations are available at <http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/faqs/04MarketPricereferent.htm> and are hereby incorporated into this ruling by reference.

are specific and provide factual information will be most useful in informing the Commission's decision.

Parties are reminded that any proposed modification to the MPR methodology, assumptions, and/or inputs should:

- be consistent with MPR guiding principles outlined in D.05-12-042;
- explain the policy basis for the proposal;
- include supporting documentation; and
- if relevant, include a modified version of the 2007 MPR model³ that reflects the proposed modifications, which must be highlighted within the modified version.

Similarly, parties are reminded that all comments should, as appropriate, refer to the decisions and resolutions implementing the MPR to date. These are:

- D.04-06-015 (establishing initial MPR methodology);⁴
- Resolution E - 3942 (implementing 2004 MPR methodology);⁵
- D.05-12-042 (stabilizing MPR methodology);⁶
- Resolution E-3980 (implementing 2005 MPR);⁷
- Resolution E-4049 (implementing 2006 MPR);⁸
- D.07-09-024 (authorizing use of GHG adder for 2007 MPR);⁹ and

³ The model may be found at <http://www.ethree.com/MPR.html>.

⁴ http://www.cpuc.ca.gov/word_pdf/FINAL_DECISION/37383.doc.

⁵ http://www.cpuc.ca.gov/WORD_PDF/FINAL_RESOLUTION/48242.doc.

⁶ http://www.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/52178.doc.

⁷ http://www.cpuc.ca.gov/WORD_PDF/FINAL_RESOLUTION/55465.doc.

⁸ http://www.cpuc.ca.gov/word_pdf/FINAL_RESOLUTION/63132.doc.

⁹ http://docs.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/73031.doc.

- Resolution E-4118 (implementing 2007 MPR methodology, including GHG adder).¹⁰

3. Subjects for Comments

3.1. MPR Non-Gas Methodology and Inputs

3.1.1. Installed Capital Costs

Applying criteria set out in D.05-12-042, staff identified the publicly available installed capital costs for the 2005 MPR combined cycle gas turbine (CCGT) proxy using the reported capital costs (in dollars per kilowatt) of comparable CCGT plants, based on two plants with publicly available cost data: Palomar (San Diego Gas & Electric Company (SDG&E)), and Cosumnes (SMUD).¹¹ The same CCGTs were used to derive the installed capital costs for the 2006 and 2007 MPR. The February ruling seeking pre-workshop comments asked parties to identify any additional CCGTs which conform to the criteria set out in D.05-12-042 that should be incorporated into the installed capital cost calculation. The Utility Reform Network (TURN) proposed including the approved cost cap for Pacific Gas and Electric Company's (PG&E) development of the Colusa CCGT power plant. Colusa is a new 657 MW CCGT that otherwise conforms to the proxy plant criteria; the cost cap equates to a fixed installed capital cost of \$1042/kW.

- Should the cost cap approved by the Commission for PG&E's development of the Colusa CCGT power plant be added to the data set used to calculate MPR installed capital costs? Please

¹⁰ http://docs.cpuc.ca.gov/word_pdf/FINAL_RESOLUTION/73594.doc.

¹¹ See Resolution E-4049, Appendix C, for a detailed discussion of how the installed capacity cost for the 2006 MPR was developed.
http://www.cpuc.ca.gov/word_pdf/FINAL_RESOLUTION/63132.doc.

- identify to what extent use of this cost cap is (or is not) consistent with the proxy CCGT's characteristics as adopted in D.05-12-042.
- If so, how should the installed costs for the plant, which is scheduled for completion in 2010, be calculated? Also, what year dollar should be assumed for escalating capital costs forward?
 - If not, why not?

In December 2007, the California Energy Commission (CEC) formally adopted its Comparative Costs of California Central Station Electricity Generation Technologies report.¹²

- To what extent should the CCGT inputs and assumptions of this report be used to update the MPR inputs and assumptions for 2008 and later years? Please specifically identify each input or assumption and provide a specific justification for the use of each for the MPR.

3.1.2. Capital Cost Escalation Rate

D.05-12-042 determined that capital costs for the 2005 MPR should not be escalated beyond 2010 because "... it should be assumed that technology improvements offset the escalation of capital costs, so no further adjustment due to inflation would be necessary." (*Mimeo.*, p. 44.) Because capital cost escalation could have significant impact on the MPR, please comment on this issue in light of your comments and proposals on other aspects of MPR methodology.

- Should the MPR methodology adopt a rolling five-year time frame for capital cost escalation, *e.g.*, the 2008 MPR would escalate capital costs through 2013; the 2009 MPR would escalate capital costs through 2014; etc.? If not, what assumptions should be made for capital cost escalation after 2010?

¹² It is available at <http://www.energy.ca.gov/2007publications/CEC-200-2007-011/CEC-200-2007-011-SF.PDF>.

Pre-workshop comments show that several parties agree that the recent increase in construction costs are not fully reflected in the MPR methodology. Southern California Edison Company (SCE), however, argues that no change is needed. The February ruling asked parties to comment on the Brattle Report¹³ and/or propose other resources which may be used as alternatives to the MPR's current capital cost escalation methodology. In comments and during the workshop, parties made an important distinction between a methodology to correctly escalate historic costs and a methodology for escalating prospective costs. Specifically, a change in the MPR methodology may require two different processes; one which would update historic capital costs using market data and another to refine the MPR methodology for forecasting capital costs.

Historic Capital Costs

- Do you agree with SCE that the current MPR methodology, which utilizes capital costs from two plants completed in 2006, fully reflects recent increases in CCGT materials and construction costs?
- If not, how should the MPR methodology be modified to more accurately reflect recent capital cost increases? Proposals should identify the assumed calendar year for the date of the estimate; in what year's dollars the costs should be expressed; and how cost indices should be applied.

¹³ In September 2007, the Edison Foundation issued a report prepared by the Brattle Group entitled, "Rising Utility Construction Costs: Sources and Impacts." http://www.eei.org/industry_issues/electricity_policy/state_and_local_policies/rising_electricity_costs/Rising_UTILITY_Construction_Costs.pdf.

- Discuss strengths and weaknesses of using installed capital costs identified in the CEC's Cost of Generation (COG) report.¹⁴ To what extent does the COG report accurately reflect historic capital cost data?
- Can the Brattle Report be used to accurately update the historic MPR capital cost calculation to reflect recent market data for CCGT materials and construction costs?
- If so, include a proposal for how information from the Brattle Report should be implemented in the MPR methodology and a modified MPR model.

Prospective Capital Cost Methodology

Given the various proposals to refine the historic capital cost methodology, how should the MPR methodology calculate capital costs prospectively? Each recommendation should describe how the proposal would be implemented in the MPR methodology and include a modified MPR model if appropriate.

- Comment on the recommendation of the Union of Concerned Scientists (UCS) to use a private report such as the Handy-Whitman Index of Public Utility Construction Costs¹⁵ or Cambridge Energy Research Associates' (CERA) Power Capital Cost Index.¹⁶
- What are the strengths and weaknesses of using private reports such as the Handy-Whitman or CERA indices, as compared to publicly available resources such as the U.S. Army Corps of Engineers' Engineering and Design Civil Works Construction

¹⁴ It is available at <http://www.energy.ca.gov/2007publications/CEC-200-2007-011/CEC-200-2007-011-SF.PDF>.

¹⁵ This index may be found at http://www.business-magazines.com/product.php?prd=135331&siteid=G_Handy_whitman.

¹⁶ This index may be found at <http://ihsindexes.com>.

Cost Index System¹⁷ or the Energy Information Administration's (EIA) 2007 Annual Energy Outlook?¹⁸

- If a preference is expressed for private indices, how would the information, which may not be publicly disclosed, be incorporated into the MPR methodology?

3.1.3. Capacity Factor

Pursuant to D.05-12-042, the capacity factor for the MPR's proxy CCGT is calculated using each utility's time of delivery (TOD) profile to estimate a statewide average capacity factor. The TOD factors are used to adjust the annual average dollars per megawatt hour (\$/MWh) price to reflect the relative value of energy delivered in each period. The current methodology of calculating a single, all-in \$/MWh MPR price is designed both to represent the energy price necessary to fully recover the cost of a new CCGT and to represent the long-term fixed price for electricity. The capacity factor allocates the fixed costs of the CCGT across an expected level of energy generation.

3.1.3.1. Revenue Assumptions

In general, discussions on the capacity factor methodology in parties' pre-workshop comments and at the workshop centered around two different revenue assumptions for the proxy CCGT:

1. A levelized fixed price that is adjusted by TOD factors, or
2. A day-ahead/spot market electricity price.

A choice between these assumptions should be identified and justified, as the first step in adopting a capacity factor methodology.

¹⁷ The September 30, 2007 update may be found at <http://www.usace.army.mil/publications/eng-manuals/em1110-2-1304/entire.pdf>.

¹⁸ [http://www.eia.doe.gov/oiaf/archive/aeo07/pdf/0383\(2007\).pdf](http://www.eia.doe.gov/oiaf/archive/aeo07/pdf/0383(2007).pdf) (p. 36).

- Discuss which of these assumptions is the more appropriate and reasonable assumption for calculating a market based, long-term fixed price for the MPR.
- Should generation be valued in different time-of-use (TOU) periods using TOD factors, forward price indices or some other method? Please identify what public data sources may be used to support your proposal.
- The IOUs' TOD factors rely on proprietary methodologies and assumptions that are not necessarily consistent with those used for the proxy CCGT. PG&E's and SCE's TOD factors are based on energy and capacity, while SDG&E's TOD factors are for energy only. Please discuss the relative significance of these inconsistencies and how these concerns may be addressed in the 2008 MPR.

3.1.3.2. Parties' Capacity Factor Proposals

Parties may comment on the strengths and weaknesses of each proposal or focus their comments on their preferred proposal. Please provide documentation and a modified MPR model and/or spreadsheet if appropriate. Parties should specifically describe how their preferred methodology:

- Reflects your comments regarding the two different revenue assumptions for the proxy CCGT identified in the above section;
- Accurately reflects the payment terms and variable operating costs of the proxy CCGT;
- Provides adequate revenue to incentivize a new CCGT under a range of future price and market conditions;
- Provides appropriate compensation for a plant operating at higher or lower capacity factors;
- Models the operating decisions likely to be made by a CCGT facing contractual terms and market conditions assumed for the MPR CCGT proxy;
- Results in a reasonable level of operation relative to CCGT plant characteristics and CCGT operating in the market;

- May result in over or under compensation for generation in each TOU period, relative to other proposals.
 - Is the problem of over or under compensation inherent in all methodologies given the assumption of an all-in fixed-price payment? Do some methods address this problem better than others and, if so, how? On balance, is this a significant problem that impacts the MPR values and administration of the RPS Program?

1. TURN proposed the use of the proxy CCGT's technical capacity factor rather than the current methodology, which assumes an economic capacity factor.

- Based on TURN's pre-workshop comments and workshop presentation, comment on strengths and weaknesses of the proposal.
- Does the current methodology of applying TOD factors for a CCGT assumed to be operating at less than its full technical capacity factor overstate or understate the all-in \$/MWh MPR in either on-peak or off-peak hours? If so, is that a significant problem that should be corrected? How can it be addressed within the current methodology?
- How would applying TOD factors to the costs of a CCGT running at its full technical capacity factor compare to the current methodology?
- If it is not appropriate to apply energy-only TOD factors to an all-in energy and capacity price, what is the best alternative? Please note that SDG&E's TOD factors are energy-only.

2. The California Wind Energy Association, the California Cogeneration Council, and the Concentrated Solar Power Companies (collectively, CalWEA) made two proposals. Both proposals rely on annual CCGT calculations published in the California Independent System Operator's (CAISO) "Annual Report on Market Issues and Performance." The CAISO analysis assumes a

proxy CCGT with a heat rate of 7100 MMBtu and perfect knowledge of forward market prices to calculate a statewide average CCGT capacity factor.¹⁹

- Please comment on the strengths and weaknesses of CalWEA's proposal to adopt a representative capacity factor based on the CAISO's report, including the difference in assumed heat rates. How would this modification be incorporated into the MPR methodology?
- Please comment on the strengths and weaknesses of CalWEA's proposal to adopt a representative capacity factor based on the CAISO's report, adjusted based on the MPR's heat rate and variable operation and maintenance cost, 2007 daily on and off peak electric market prices in the day-ahead market, and burner-tip natural gas prices in NP-15 and SP-15. How would this modification be incorporated into the MPR methodology?
- Please identify and justify any preference for one CalWEA option or a combination of options. Please compare with the other option presented by CalWEA, with TURN's proposal, and with the current MPR methodology.

3.1.4. Transmission and Line Losses

GMM

The 2007 MPR calculates a simple average of all CAISO generation meter multipliers (GMM) to derive a statewide transmission line loss value.

- Comment on CalWEA's proposal to use a generation-weighted average to calculate a statewide GMM value, as compared to the current methodology, which uses a simple system average.
- Comment on SCE's proposal that the MPR methodology be modified to reflect delivery at the busbar, rather than the current

¹⁹ CAISO "2006 Annual Report on Market Issues and Performance, ch. 2, pp. 2.51-2.56. This report may be found at: <http://www.caiso.com/1b7e/1b7e71dc36130.html>. The 2007 report may be found at: <http://www.caiso.com/1f9c/1f9c8a8cddd0.html>.

methodology which assumes delivery at the load center. SCE argues that a CCGT typically delivers at the busbar.

MRTU

In pre-workshop comments, parties generally agreed that it is premature to evaluate the impact, if any, that the CAISO's Market Redesign and Technology Upgrade (MRTU) may have on the 2008 MPR.

Please comment, nevertheless, on these topics.

- The extent to which a future MPR should be modified to reflect MRTU;
- The time at which any such modifications should be considered; and
- Any foreseeable policy and/or implementation challenges staff should consider once MRTU is implemented.

3.1.5. Other Non-Gas Topics

1. SCE stated in its pre-workshop comments that the MPR model does not properly calculate revenue payments for the proxy CCGT. Specifically, SCE points out that the current methodology does not take into account that plant revenues would be based on TOD factors.

- Do you agree with SCE that the MPR methodology should be modified to reflect TOD based revenue payments? If so, should statewide weighted average TOD factors be calculated for this purpose?
- Comment on the strengths and weaknesses of SCE's proposal. Specifically, consider the relationship of this issue to the various proposals to modify the capacity factor methodology.

2. If any other topic related to non-gas methodology or inputs should be considered for the 2008 MPR, please identify the issue and justify its inclusion. Please also make a specific implementation proposal about the topic.

3.2. MPR Gas Methodology and Inputs

3.2.1. MPR proxy plant assumptions

At the workshop, Energy and Environmental Economics (E3) began its presentation on the MPR gas methodology and fuel price risk premium theory by identifying characteristics of the MPR proxy plant, specifically:

Contractual Arrangement

1. The proxy CCGT is owned by an independent power producer, operating under long-term contract with a California Investor Owned Utility (IOU).
2. The all-in \$/MWh price should be equal to the revenue requirement necessary to cause a new CCGT to enter the market.

Fuel Procurement

1. The proxy CCGT has a long-term fixed price fuel contract;
 2. The CCGT procures fuel pursuant to a fixed-forward contract or a rolling forward contract.
- Do you agree with the MPR proxy plant operational assumptions identified above? If not, discuss which assumptions you disagree with and why.
 - If you agree that the proxy CCGT is able to secure a fixed price fuel contract, is the hedging value of a long-term fixed contract fully reflected in the price?

In pre-workshop comments, UCS and CalWEA argue that the cost of securing a long-term fixed price gas contract, which removes the risk of fuel price volatility, is not fully reflected in the MPR's gas methodology, and therefore, the MPR values are understated. UCS argues that the MPR gas methodology relies too heavily on fundamental gas forecasts, which UCS states have "weak predictive ability." Both parties favor making full use of NYMEX forward contract (settlement) data, which is now available through 2020 deliveries. In support of this proposal, the parties cite Lawrence Berkeley National Laboratory

(LBNL) reports which have identified a consistent price discrepancy between NYMEX futures contract values and the natural gas forecast of the Energy Information Administration (EIA), as supporting evidence that fundamental forecasts are inherently inferior to market data.

Please comment on the following proposals and identify a preference or alternative. If an alternative methodology is proposed, comments should include a detailed discussion of the resources that would be used and how Staff would incorporate the proposal into the MPR methodology.

Use of NYMEX settlement data

- CalWEA and UCS propose that the 2008 MPR gas methodology use the full 12 years of NYMEX settlement data, regardless of evidence of illiquid trading in the outer years. UCS argued that “illiquid trading periods should not in itself be a basis for ignoring NYMEX settlement prices in favor of data from fundamental forecasts.” Please identify and justify a preference for using the 12-year NYMEX strip or the current MPR methodology, which uses a five-year NYMEX strip. Would your preference change if trading activity in outer years increased?

Transition from NYMEX futures to fundamental forecast

- Comment on UCS’s proposal to return to MPR’s 2004 methodology of transitioning from NYMEX to fundamentals, which used the last year of NYMEX data for transitioning to the fundamental forecast, compared to the current methodology which uses an interpolation of the MPR fundamental forecasts.
- If you agree that only NYMEX data should be used to transition from the NYMEX forecast to fundamentals forecast, should the last year of NYMEX settlement data be used (*i.e.*, 2020) or an average of multiple years?
- Comment on CalWEA’s proposal to add a premium to the fundamentals forecast that reflects any observed premium in the forward market, above the fundamentals forecast, over the last five years of NYMEX data.

- At the workshop, E3's presentation included a chart which illustrated several gas forecast methodologies, including the use of regression analysis between the NYMEX futures price data and the fundamental forecast data for 2008 through 2017. For its analysis, E3 used the average daily NYMEX closing prices in 2008, and averaged the MPR's fundamental forecasts for the fundamental data. See Appendix A for a detailed explanation of the price forecast regression methodology.
 - Please comment on the strengths and weaknesses of the regression analysis described in Appendix A as a general approach for forecasting forward contract prices using fundamental forecast data.
 - How long a period of NYMEX settlement data should be included in the analysis (*e.g.*, 15 trading days, 30 trading days, one year)?
 - What period of NYMEX contract delivery months should be included in the analysis (*e.g.*, all available years, the last five years, the last year)?
 - What, if any, additional variables should be included in the analysis?
- The CEC's Integrated Energy Policy Report (IEPR) is supported by a long-term natural gas forecast which is researched and calculated by CEC staff with the support of consultants. The CEC's report forecasts natural gas prices over the 2007-2017 period and is considered as a "reference case." Please comment on whether the CEC's long-term gas forecast should be included as an additional public fundamental forecast for the MPR gas methodology.²⁰

3.2.2. Other Gas Topics

1. California Basis Adjustment

²⁰ The 2007 Final Natural Gas Market Assessment may be found at <http://www.energy.ca.gov/2007publications/CEC-200-2007-009/CEC-200-2007-009-SF.PDF>.

Pursuant to D.04-06-015, the MPR methodology includes a California basis adjustment, which reflects the price differential between NYMEX Henry Hub gas prices and the average of SoCal border and PG&E City Gate gas prices.

Currently, the MPR uses three years of NYMEX basis data and then extends the average of these years for all future years. The NYMEX now lists 72 consecutive months of exchange traded basis swaps. Identifying the strengths and weaknesses of your preferred proposal, discuss a preference for one of the following proposals:

- a. Using all available NYMEX data;
 - b. Using private basis forecasts;
 - c. Staying with the current methodology.
2. If any other topic related to gas methodology or inputs should be considered for the 2008 MPR, please identify the issue and justify its inclusion. Please also make a specific implementation proposal about the topic.

3.3. GHG Adder

Pre-workshop comments illustrate that parties have differing opinions on what a reasonable GHG adder would be and the methodology for identifying one; however, only SCE argues that there should be no GHG adder in the 2008 MPR.

- Identify key criteria the Commission should consider when evaluating parties' proposals for adopting a GHG adder for the MPR methodology.
- Comment on UCS's proposal to adopt the mid-case values in the report of Synapse Energy Economics, Inc. (Synapse), "Climate Change and Power: Carbon Dioxide Emissions Costs and Electricity Resource Planning" (Synapse Report) as the MPR's GHG adder methodology. Explain why you favor or oppose UCS's proposal.

- Comment on CalWEA's proposal to employ a 2008 GHG adder value based on the European Union's carbon market and in future years adopt the Synapse mid-case values (mentioned above) as the MPR's GHG adder methodology. Explain why you favor or oppose CalWEA's proposal.
- What concerns, legal or otherwise, should be addressed in considering whether to adopt the Synapse Report or other price forecasts in place of the current methodology? Would evidentiary hearings be necessary? Why or why not?
- In view of the GHG policy development and analysis underway in R.06-04-009 to model the cost of compliance with Assembly Bill (AB) 32 (Nunez/Pavley), Stats. 2006, ch. 488, within the electricity sector, should a comprehensive change to the MPR methodology to include a GHG adder be made now for 2008 and beyond? Why or why not? If a permanent change should be made in 2008, how should the GHG adder be developed? Please specifically identify methods, inputs, and models that should be used.
- Should another interim GHG adder be used for the 2008 MPR? If so, should the same methodology that was adopted for the 2007 MPR be used? If a different methodology is recommended, please specify the methods, inputs, and models that should be used. If the same methodology is recommended, please identify any updates to the inputs that should be included.
- If an interim 2008 GHG adder should be adopted, please comment on the process for making a permanent change to the MPR to include a GHG adder for later years.
- Please specify whether your preferred proposal should be adopted as an interim approach or as permanent change to the MPR methodology.

3.4 MPR Administration

3.4.1 MPR Contract Term Lengths

D.04-06-015, which adopted a methodology to calculate 10, 15 and 20 year MPR for use in the 2004 RPS solicitations, also authorized ED to calculate MPRs for terms other than 10, 15 and 20 years if necessary.

- Comment on CalWEA's proposal that ED modify the MPR model to accommodate 25 and 30 year RPS contracts. Specifically, identify potential benefits and risks to the RPS program and ratepayers associated with 25 and 30 year fixed price contracts.
- If any party foresees significant risk associated with calculating a 25 -30 year MPR, please recommend how that risk might be mitigated through the Commission's administration of the RPS program.

3.4.2 Confidentiality

In its pre-workshop comments, PG&E argues that recent price increases for renewable projects may be partially attributable to the fact that the MPR is public. The MPR has increased year-over-year since 2004. PG&E argues that ratepayers could ultimately benefit if the MPR were adopted on a confidential basis.

- Do you agree with PG&E that the MPR has become a price target for renewable developers negotiating contracts with the three large IOUs? If possible, provide supporting documentation.
- If so, comment on whether the MPR should be adopted confidentially and the strengths and weaknesses of doing so. How would the Commission update, evaluate and adopt future MPRs if the process were to be made confidential?
- Should the Commission keep confidential whether RPS contracts are above or below the MPR in its resolutions and decisions?

IT IS RULED that:

ATTACHMENT A E3 GAS PRICE REGRESSION ANALYSIS

E3's presentation at the workshop included a graph of several gas price forecast methods, including a regression analysis. The regression was a simple linear regression between the NYMEX futures price data and the fundamentals forecast data for 2008 through 2017. The NYMEX prices were the average closing prices for the trading days in 2008. The MPR model average of the EIA and two other gas price forecasts was used for the fundamentals forecast data.

As described below, it is possible for a more sophisticated regression analysis to represent each of the gas forecast methodologies presented at the workshop. It is simply a matter of defining the dependent variables, coefficients and term of analysis accordingly.

Price Forecast Methods

Let Y_{td} be the NYMEX futures price observed on day d for delivery in a future year t . This definition is general in that Y_{td} can be a N -day (e.g., $N = 15, 30, 60, \dots$, etc.) moving average price observed on day d . While the current NYMEX futures price data exist for $t = 1, \dots, 12$, they do not exist for $t = 13, \dots, 30$.

Let X_t be the fundamental forecast for delivery in a future year t . This forecast contains data for $t = 1, \dots, 30$. Note that this data series does not vary daily within a sample year (e.g., 2007).

The gas price forecast methods presented at the workshop include:

- Method 1: Average difference. Find the average difference between the NYMEX price (Y_{td}) and the fundamentals price (X_t) for the 12 years of NYMEX data ($t = 1, \dots, 12$), and add that difference to the fundamental forecast series $\{X_{13}, \dots, X_{30}\}$ so as to form a NYMEX-based forecast series $\{Y_{13d}, \dots, Y_{30d}\}$.

- Method 2: Growth rate. Find the year-to-year growth rates implied by the fundamental forecast series $\{X_{13}, \dots, X_{30}\}$ and use those rates to make a NYMEX-based forecast series $\{Y_{13d}, \dots, Y_{30d}\}$.
- Method 3: Time trend. Find the time trend implied by the observed NYMEX price series $\{Y_{1d}, \dots, Y_{12d}\}$ and use that trend to project the unobserved series $\{Y_{13d}, \dots, Y_{30d}\}$.

Regression Analysis

The above methods are vastly different and they can yield very different NYMEX-based forecasts, each of which can arguably be used to raise or reduce the MPR estimate. Each of the above methods can be represented with a regression formula. Furthermore, a regression analysis can use empirical data and statistical measures to evaluate and compare the different methods. To see this point, consider the following regression with error term ε_d that relates the NYMEX data to the fundamental forecast data:

$$Y_{td} = \alpha + \beta X_t + \gamma t + \phi Y_{(t-1)d} + \varepsilon_d \quad (1)$$

Equation (1) states that the NYMEX price Y_{td} for delivery year t (e.g., 2010) observed on day d (e.g., March 31, 2008) is the sum of:

- The systematic gap α , after accounting for other factors listed immediately below.
- The fundamental forecast effect βX_t : a \$1/MMBTU fundamental price change leads to β /MMBTU change in the NYMEX price change.
- The time trend effect γt : the price difference between delivery year $(t - 1)$ and t is γ /MMBTU.
- The NYMEX price escalation effect $\phi Y_{(t-1)d}$: if the price for delivery in the previous year $(t-1)$ increases by a \$1/MMBTU, the price for year t delivery changes by ϕ /MMBTU.

Equation (1) presents three hypotheses, each corresponding to one of the three suggested methods. These hypotheses are readily testable as part of the

regression analysis of NYMEX futures price data and fundamental forecast data for a sample period such as 2003-2007.

The hypotheses are as follows:

- Method 1: Average difference is an empirically valid method, then $\alpha \neq 0$, $\beta = 1$, $\gamma = \phi = 0$. The resulting regression formula is $Y_{td} = \alpha + X_t + \varepsilon_d$. The NYMEX forecast is found by adding the estimated value for α to the fundamental forecast.
- Method 2: Growth rate is an empirically valid method, then $\beta \neq 0$, $\alpha = \gamma = \phi = 0$. The resulting regression is $Y_{td} = \beta X_t + \varepsilon_d$. The year-to-year growth rates of the fundamental forecast series are the same as a NYMEX-based forecast series.
- Method 3: Time trend is an empirically valid method, then $\gamma \neq 0$, $\phi = 1$, $\alpha = \beta = 0$. The resulting regression is $Y_{td} = \gamma t + Y_{(t-1)d} + \varepsilon_d$. The year-to-year NYMEX price difference is given by the estimated value for γ .

(END OF ATTACHMENT A)

INFORMATION REGARDING SERVICE

I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the filed document to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the Notice of Availability of the filed document is current as of today's date.

Dated May 20, 2008, at San Francisco, California.

/s/ ELIZABETH LEWIS

Elizabeth Lewis