**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

**ENERGY DIVISION** **RESOLUTION E - 3942**
**July 21, 2005**

# R E S O L U T I O N

Resolution E-3942. The 2004 Market Price Referent (MPR) outlined in the February 11, 2005 Assigned Commissioner's Ruling "Issuing Revised 2004 Market Price Referent for the Renewables Portfolio Standard Program" are approved with modifications.

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## SUMMARY


**2004 MPR values have been finalized for use in 2004 Renewables Portfolio Standard (RPS) solicitations.**

This Resolution formally adopts the 2004 MPR values for baseload and peaking proxy plants for the use in the 2004 RPS solicitation. This Resolution is made on the Commission's own motion after staff reviewed party comments on the draft 2004 MPRs released in a February 11, 2005 Assigned Commissioner's Ruling.

The 2004 MPRs in the table below reflect MPR values modified pursuant to party comments and Staff recommendations. The 2004 MPRs with project on-line dates later than 2005 can be found in Appendix A.


| **Adopted 2004 Market Price Referents**<br>At Specified Zonal Delivery Points (e.g., NP15 or SP15)<br>**(cents/kWh – 2005$)** | | | |
|---|---|---|---|
| **Resource Type** | **10-Year** | **15-Year** | **20-Year** |
| Baseload MPR | 5.78 | 5.88 | 5.99 |
| Peaking MPR | 11.02 | 11.17 | 11.33 |

Note: MPRs above reflect a 2005 project on-line date

## BACKGROUND

### Release of 2004 MPRs is consistent with prior Commission decisions

In D.04-06-015, we adopted a methodology to calculate MPRs for use in the 2004 renewable power solicitations, as generally set forth in Pub. Util. Code §§ 399.11-399.16.[1] D.04-06-015 set forth the following process under which MPRs would be disclosed:

> "[W]e conclude that the MPRs should be publicly and simultaneously disclosed to all parties after bidding has closed, but before completion of the utility's final short list. The MPR will be available to parties before negotiations are complete, to allow additions to the tentative short list, and the informed negotiation of payment streams. In order to implement this approach, each utility must notify the Commission via letter to the Executive Director that bidding has concluded, and that the utility expects to complete its tentative short list by a specified date. The Commission will coordinate the public and simultaneous disclosure of the MPR to all parties with this information in mind. After the parties have negotiated and finalized their bids based on subsequent release of the MPR, each utility will submit its final short list of bidders to the Commission staff and its PRG.[2]"

PG&E and SDG&E submitted their letters to the Executive Director notifying the Commission that their preliminary short-lists were complete, October 22, 2004 and December 13, 2004, respectively.[3] We note here that SCE did not issue a renewables solicitation in 2004, as it was still in the process of negotiating contracts from its 2003 interim renewables solicitation, which was not subject to the 2004 MPRs. Thus, SCE did not make a similar submittal.

On February 4, 2004 an Assigned Commissioner's Ruling (ACR) and attached MPR Staff Report was issued, which publicly disclosed the draft 2004 MPRs[4]. On February 7, 2004, it came to staff's attention that there was a technical error in the

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[1] An act to add Sections 387, 390.1, and 399.25 to, and to add Article 16 (Sections 399.11 - 399.16) to Chapter 2.3 of Part 1 of Division 1 of, the Public Utilities Code, relating to renewable energy.
[2] D.04-06-015, p.29-30
[3] PG&E issued its 2003 renewables solicitation on July 15, 2004 and ended it on August 23, 2004. SDG&E issued its renewables solicitation on July 1, 2004 and ended it on August 12, 2004.
[4] http://www.cpuc.ca.gov/published/rulings/43848.htm

MPR calculation.[5] Specifically, the 20-year gas forecast used in the MPR model should have been in nominal dollars rather than 2004 constant (real) dollars. Staff made the necessary corrections and the Commission reissued the draft 2004 MPRs (see table below) and corrected MPR Staff Report via a revised ACR[6] on February 11, 2005.

| **February 11, 2005 ACR - Revised 2004 Market Price Referents**<br>At Specified Zonal Delivery Points (e.g., NP15 or SP15)<br>**(cents/kWh – 2005 $)** | | | |
|---|---|---|---|
| **Resource Type** | **10-Year** | **15-Year** | **20-Year** |
| Baseload MPR | 6.05 | 6.05 | 6.05 |
| Peaking MPR | 11.41 | 11.42 | 11.42 |

The February 11, 2005 ACR requested parties to file comments[7] and reply comments[8] on the draft 2004 MPRs, February 28, 2005 and March 15, 2005, respectively. The 2004 MPRs adopted by this Resolution incorporate those comments.

## DISCUSSION

### Party comments on 2004 MPR will guide future MPR calculations

In D.04-06-015[9] the Commission determined that the Ruling disclosing the MPRs will have attached to it a staff report containing assumptions and inputs used to calculate the MPRs. Parties would be provided an opportunity to comment on the staff report, and the report and comments would provide the basis for a Commission decision that will guide future MPR calculations. Final approval of the MPRs would be by Commission Decision. Consequently, refinements in the MPR methodology should operate prospectively and considered in a public forum before CPUC adoption.

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[5] On February 7, 2005 PG&E (Antonio Alvarez) communicated to Staff that the gas forecast should be in nominal dollars rather than 2005 constant (real) dollars, as presented in the February 4, 2005 MPR Staff report (http://www.cpuc.ca.gov/PUBLISHED/RULINGS/43850.htm). Staff confirmed with SCE that their MPR Cash Flow model requires the gas forecast to be in nominal dollars.

[6] http://www.cpuc.ca.gov/published/rulings/43824.htm

[7] Parties that filed comments: PG&E, SCE, ORA, GPI, and CalWEA/CBEA/CCC

[8] Parties that filed reply comments: PG&E, SCE, SDG&E, GPI, and UCS

[9] D.04-06-015 (Footnote 21, p.30)

Several of the parties, specifically SCE, ORA, GPI, CalWEA, identified in their comments various aspects of the 2004 MPR methodology and inputs that they felt needed to be revisited before the Commission could formally adopt the 2004 MPRs. The bulk of their concerns focused around the capital cost inputs and the MPR gas forecast.

While their comments were substantive, all parties were allowed ample opportunity to present their positions on the desired input values prior to the Commission's adoption of the MPR methodology. The Commission fully considered the parties' suggested inputs and adopted only those that were found to have merit in its decision adopting the methodology for calculating the MPR (See, D.04-06-015). Consequently, we encourage the parties to present their proposed modifications in their comments on the 2005 MPR methodology.

Given that party comments guide future MPR calculations, the Staff was left with determining if parties had identified any material mechanical problems with the 2004 MPR methodology. After reviewing party comments Staff determined that there was one material mechanical error and several other previously unidentified issues that needed to be addressed before the Commission could formally adopt the 2004 MPRs. The modifications to the 2004 MPR methodology are outlined below.

**SCE Cash Flow model had a formula error**

In D.04-06-015, the Commission adopted a cash-flow model simulation methodology to calculate 10-, 15-, and 20-year baseload and peaking MPRs based on the long-term ownership, operating, and fixed-price fuel costs of combined cycle and combustion turbine proxy generating plants, respectively. The operating instructions for the cash-flow simulation model failed to explain that, in order to calculate the levelized variable component of the 10-, 15-, and 20-year MPRs, the net present value (NPV) formulas on the variable component worksheet must be changed to levelize only the values corresponding to the applicable term. SCE identified this technical error in its comments and the error was highlighted again in SCE and PG&E's reply comments[10]. Outlined below are the corrective modifications Staff made to the SCE Cash Flow model.

[10] GPI was the only party to disagree with SCE's proposed model corrections (reply comments pg. 4). Specifically, GPI argued that the capital recovery should be computed for a 20-yr period, even in the case of a 10 and 15 year MPR. Staff does not disagree with GPI that capital recovery is over 20 yrs. However,

Modifications to SCE Cash Flow model:

- Three variable cost worksheets were added to the model, which calculate 10, 15, or 20 years of variable costs. (SCE Cash Flow model – Variable_10yr, Variable_15yr, and Variable_20yr Tabs)
- Contract term scenario function was added to the model. It calculates the NPV of the variable costs based on the contract term the user enters. (SCE Cash Flow model – Control Tab)

**2004 MPR adjusted for different project on-line dates**

Staff determined that the 2004 MPR inputs, including capital costs and gas forecast, should be adjusted in order to calculate a series of MPRs corresponding to different on-line project dates. Staff reached this conclusion after numerous discussions with the IOUs regarding how to operationalize the MPR after its release (i.e., how to compare the 2004 MPRs to the 2004 RPS bids)[11]. The two issues that needed to be addressed:

1. Conversion of the 2004 MPR, which is in 2005 constant dollars, to the same nominal dollars as the all-in bid price.
2. Extending the 2005 – 2024 data set used in the MPR calculation to take into account projects with contracts that extend beyond 2024 (e.g., 20-year project starting in 2010).

When the IOUs compare the 2004 MPR to the all-in bid price they will need to adjust the MPR so it is in the same nominal dollars as the all-in bid price[12]. The 2004 MPR can be converted into the appropriate nominal dollars in two ways: (1) apply an inflation factor to the all-in MPR or (2) inflate the appropriate inputs in the SCE Cash Flow model and recalculate the MPR. Given that the sub-components of the MPR either increase or decrease over time, Staff believes that applying one inflation factor to the all-in MPR (option #1) would be inappropriate. Consequently, Staff elected to go with option #2.

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the formula error identified by SCE computes levelized variable costs, not capital costs. Consequently, Staff rejected GPI's recommendations.

[11] This issued was raised at the 2005 MPR workshop on June 21, 2005 – no party disputed the issues or Staff's subsequent modifications to the SCE cash Flow model.

[12] Portion of bid price above the MPR requires Supplemental Energy Payments (SEPs) from the California Energy Commission.

The second issue that needed to be addressed was the extension of the 2004 MPR data set to take into account projects with contracts that extend beyond 2024. An example would be a 20-year project that comes on-line in 2010. Because the original SCE Cash flow model used a data set that ended in 2024, the 20-year MPR that it calculated would not have captured the variable costs of a 20-year project starting in 2010. Given this issue and the need for the MPR to be in the same nominal dollars as the all-in bid, Staff modified the SCE Cash flow Model to resolve both issues.

Outlined below are the modifications Staff made to the SCE Cash Flow model:

- Capital costs (built costs) are escalated on an annual basis, from 2005 to 2010, using the escalation rate (2% / year) used elsewhere in the model. The assumption is that there will be no significant technological improvements (i.e., heat rate efficiencies) to offset increases in capital costs until after 2010. (SCE Cash Flow model – Inputs Tab)
- Fixed and variable costs are escalated on an annual basis, from 2005 to 2010, using the escalation rate (2% / year) used elsewhere in the model. (SCE Cash Flow model – Inputs Tab)
- The 20-year MPR forecast was extended beyond the 2024 end date to 2029 by using Excel's TREND function. (SCE Cash Flow model – Inputs Tab)[13]
- Project on-line date scenario function was added to the model. When a user enters the project on-line date (range 2005 to 2010) the model will look up the matching data set for that year to calculate the 2004 MPR. (SCE Cash Flow model – Control Tab)

Staff expects that the methodology for calculating MPRs reflecting different project on-line dates will be fully vetted by the parties in their comments addressing the 2005 MPR methodology.

## MPR gas forecast correction

The 2004 MPR gas forecast methodology[14] averages four fundamental gas forecasts together and then uses the average of the 4 forecasts to derive an annual escalation rate, which is used to escalate the last year of NYMEX futures data out

[13] Note: 20-yr gas forecast, which is generated by the 2004 MPR gas forecast model, is an input in the SCE Cash Flow model.

[14] See the February 10, 2005 "Revised 2004 Market Price Referent Staff Report" for a discussion of the 2004 MPR gas forecasting methodology (http://www.cpuc.ca.gov/PUBLISHED/RULINGS/43825.htm)

to 2024. Before the 4 forecasts can be averaged together they need to be converted into 2004 constant dollars.

Staff discovered an error in the conversion of the fundamental gas forecasts into 2004 real dollars and corrected the error. The correction produced an immaterial change in the 2004 MPR gas forecast - 10 cent downward shift in the levelized baseload gas forecast and an even smaller change in the peaker gas forecast (see table below).

**20-Year Levelized MPR Gas Forecasts (2005 $)**

| | MPR Forecast[15] | MPR Peaker Forecast[16] |
|---|---|---|
| Revised ACR – 2 / 7 / 05 | $6.11 | $5.85 |
| 2004 MPR Resolution – 6 / 29 / 05 | $6.02 | $5.86 |

See Appendix B for the 2004 MPR gas forecast (2005 – 2029).

### Long-term MPR issues beyond the scope of 2004 MPR calculation

Several parties identified issues that are beyond the scope of the 2004 MPR calculation. Specifically, UCS and ORA proposed that the societal cost of greenhouse gases (GHG) be incorporated into the MPR calculation. Likewise, PG&E suggested that the Commission establish a long-term plan for adjusting the baseload MPR operating characteristics to reflect the operating characteristics of the various renewable resources.

We agree with PG&E's long-term planning approach. Consequently, the parties are encouraged to raise the above issues when the CPUC drafts a long-term plan for refining the use of the MPR through timely coordination with other regulatory proceedings, such as the resource adequacy phase of the generation procurement proceeding (R.04-04-003), and Phase 3 of the Avoided Cost Proceeding (R.04-04-025).

## COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment

[15] Used for baseload MPR calculation
[16] Used for peaker MPR calculation

prior to a vote of the Commission. Section 311(g) (3) provides that this 30-day period may be reduced or waived pursuant to Commission adopted rule.

The 30-day comment period has been reduced by the Commission pursuant to Rule 77.7 (f)(9). This rule enables the Commission to reduce or waive the 30-day comment period if the public interest in adopting a decision before the expiration of the 30-day review clearly outweighs the public interest in having a full 30-day review and comment period. A full 30-day review and comment period would mean that the earliest this resolution could be adopted is August 25, 2005, the next scheduled Commission meeting. The public interest is better served by having this resolution considered at the July 21, 2005 meeting. Specifically, a delay in adopting the 2004 MPRs would generate uncertainty over the MPR values and jeopardize the prompt execution of contracts being negotiated pursuant to the utilities' July 2004 RPS solicitation. The prompt execution of these contracts is needed to maintain the steady progress toward California's goal of 20 percent renewables by 2010.

Comments on this resolution shall be due no later than 11 from the mailing of this draft resolution.

On July 15, 2005 PG&E, SCE, and ORA provided comments on the draft resolution.

In its comments PG&E noted that the 2004 MPR was acceptable to PG&E. PG&E also supports the Staff's determination that the 2004 MPR inputs, including capital costs and gas forecast, should be adjusted for different project on-line dates. For the purposes of calculating future MPRs, however, PG&E disagrees with some of the MPR elements, particularly the gas forecast methodology, and will raises its concerns in its comments on the 2005 MPR.

In its comments SCE noted that the 2004 MPR was acceptable to SCE. Specifically, the input values and methodology outlined in the draft resolution are appropriate for use in the 2004 RPS solicitation and provide useful points of reference for future MPR calculations. SCE also endorses the Staff recommendation to determine the MPR in future years by inflating appropriate inputs in the SCE Cash Flow model. However, like PG&E, SCE argues that certain refinements to the MPR methodology and input values, particularly the gas forecast methodology, should be considered for use in 2005 MPR calculations.

In its comments ORA focused on issues that it felt needed clarification. Staff reviewed ORA's suggested clarifying changes and made the appropriate modifications to the draft resolution. ORA did not comment on the actual 2004 MPR values outlined in the draft resolution nor whether they were appropriate for use in the 2004 RPS solicitation.

## FINDINGS

1. The release of the 2004 MPRs was consistent with prior Commission decisions.
2. Party comments on the 2004 MPR will guide future MPR calculations.
3. The 2004 MPR values for baseload and peaking proxy plants have been finalized for use in the 2004 Renewables Portfolio Standard (RPS) solicitations.
4. The public interest is better served with a reduction in the 30-day review and comment period for this resolution.

## THEREFORE IT IS ORDERED THAT:

1. The 2004 MPRs in Appendix A are approved for use in the 2004 RPS solicitations.

2. This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on July 21, 2005; the following Commissioners voting favorably thereon:

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STEVE LARSON
Executive Director

MICHAEL R. PEEVEY
PRESIDENT
GEOFFREY F. BROWN
SUSAN P. KENNEDY
DIAN M. GRUENEICH
JOHN A. BOHN
Commissioners

# APPENDIX A

## 2004 Baseload MPR Matrix

**Based on Project Start Date (Nominal $/kWh)**

| | Contract Term | 10 year | 15 year | 20 year |
|---|---|---|---|---|
| **2005** | MPR All-in | 0.0578 | 0.0588 | 0.0599 |
| **2006** | MPR All-in | 0.0574 | 0.0587 | 0.0600 |
| **2007** | MPR All-in | 0.0575 | 0.0591 | 0.0605 |
| **2008** | MPR All-in | 0.0582 | 0.0600 | 0.0615 |
| **2009** | MPR All-in | 0.0594 | 0.0614 | 0.0629 |
| **2010** | MPR All-in | 0.0608 | 0.0628 | 0.0644 |

## 2004 Peaker MPR Matrix

**Based on Project Start Date (Nominal $/kWh)**

| | Contract Term | 10 year | 15 year | 20 year |
|---|---|---|---|---|
| **2005** | MPR All-in | 0.1102 | 0.1117 | 0.1133 |
| **2006** | MPR All-in | 0.1103 | 0.1123 | 0.1142 |
| **2007** | MPR All-in | 0.1111 | 0.1135 | 0.1155 |
| **2008** | MPR All-in | 0.1127 | 0.1154 | 0.1175 |
| **2009** | MPR All-in | 0.1151 | 0.1179 | 0.1201 |
| **2010** | MPR All-in | 0.1177 | 0.1206 | 0.1228 |

# APPENDIX B

## 2004 MPR Gas Forecast

**Revised ACR - February 7, 2005**
($/ MMBTU)

| Year | MPR Gas Forecast | MPR Summer Peaking Gas |
|---|---|---|
| 2005 | $6.43 | $6.16 |
| 2006 | $6.06 | $5.80 |
| 2007 | $5.61 | $5.37 |
| 2008 | $5.30 | $5.07 |
| 2009 | $5.51 | $5.28 |
| 2010 | $5.68 | $5.44 |
| 2011 | $5.78 | $5.54 |
| 2012 | $5.77 | $5.53 |
| 2013 | $5.88 | $5.63 |
| 2014 | $6.03 | $5.78 |
| 2015 | $6.25 | $5.99 |
| 2016 | $6.41 | $6.14 |
| 2017 | $6.56 | $6.28 |
| 2018 | $6.77 | $6.49 |
| 2019 | $7.04 | $6.74 |
| 2020 | $7.36 | $7.05 |
| 2021 | $7.54 | $7.23 |
| 2022 | $7.74 | $7.41 |
| 2023 | $7.93 | $7.59 |
| 2024 | $8.14 | $7.79 |

**2004 MPR Resolution - June 29, 2005**
($/ MMBTU)

| Year | MPR Gas Forecast | MPR Summer Peaking Gas Forecast |
|---|---|---|
| 2005 | $6.43 | $6.16 |
| 2006 | $6.06 | $5.80 |
| 2007 | $5.61 | $5.37 |
| 2008 | $5.30 | $5.07 |
| 2009 | $5.34 | $5.12 |
| 2010 | $5.42 | $5.20 |
| 2011 | $5.53 | $5.30 |
| 2012 | $5.66 | $5.42 |
| 2013 | $5.80 | $5.56 |
| 2014 | $5.99 | $5.73 |
| 2015 | $6.20 | $5.94 |
| 2016 | $6.32 | $6.06 |
| 2017 | $6.47 | $6.20 |
| 2018 | $6.68 | $6.40 |
| 2019 | $6.92 | $6.63 |
| 2020 | $7.15 | $6.85 |
| 2021 | $7.34 | $7.03 |
| 2022 | $7.53 | $7.22 |
| 2023 | $7.72 | $7.39 |
| 2024 | $7.93 | $7.59 |
| 2025 | $8.10 | $7.76 |
| 2026 | $8.30 | $7.95 |
| 2027 | $8.52 | $8.16 |
| 2028 | $8.74 | $8.38 |
| 2029 | $8.97 | $8.59 |

2025 - 2029 escalated using Excel TREND function