I. ABOUT THE RPS AND THIS REPORT

California’s Renewable Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country

Established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, California’s RPS obligates investor-owned utilities (IOUs), electric service providers (ESPs) and community choice aggregators (CCAs) regulated by the California Public Utilities Commission (CPUC) to procure an additional 1% of retail sales per year from eligible renewable sources until 20% is reached, no later than 2010. Governor Schwarzenegger’s Executive Order S-14-08, issued on November 17, 2008, established a further goal of 33% renewable energy by 2020. The CPUC and the California Energy Commission are jointly responsible for implementing the program.

The Commission issues this report every quarter pursuant to the 2006 Budget Act Supplemental Report Item 8660-001-0462. This report focuses on the California’s three large IOUs (referred to hereafter as “IOUs”), Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E). These IOUs provide approximately 80% of the State’s retail sales1 so analyzing this data provides significant insight into the State’s RPS progress.

1 According to the CEC’s California Energy Demand 2008-2018 Staff Revised Forecast available at http://www.energy.ca.gov/electricity/index.html#demand.
II. EXECUTIVE SUMMARY

Status of RPS Procurement

- As of June 2009, the CPUC has approved 116 contracts contributing 8,334 MW toward the RPS goal. The CPUC is currently reviewing an additional 13 contracts for 5,941 MW of capacity.
- On an aggregated basis, 13% of IOU electric retail sales were served by RPS-eligible resources in 2008.
- After an overall decline in the annual RPS percentage\(^2\) since 2003, the rate of renewable energy development has exceeded load growth for the first time in 2008.
- More renewable energy generation came online in 2008 than in the entire 2003 - 2007 time period. It is forecasted that new installed capacity in 2009 will exceed the amount that came online in 2008.
- An increasing number of bids in recent RPS solicitations are for solar thermal and solar photovoltaic (PV) projects.
- Pacific Gas and Electric and San Diego Gas and Electric have allocated all of their above-market funds to the above-market costs of certain RPS contracts.

Highlights of Recent and Upcoming Events

- Energy Division staff released the 33% RPS Implementation Analysis Preliminary Results Report.\(^3\) The final report will be issued December 2009.
- Energy Division staff released a Renewable Energy Project Viability Calculator that will be used in the 2009 RPS solicitation and future solicitations.
- The Commission approved the 2009 RPS Procurement Plans, which authorize the IOUs to initiate their 2009 RPS solicitations.
- A methodology for establishing price benchmarks and contract review processes for short-term and bilateral RPS contracts was approved by the Commission.
- Energy Division issued a Feed-in Tariff (FIT) proposal\(^4\) for renewable projects 1.5 MW to 10 MW in size.

\(^2\) Delivered energy, not signed contracts, is the measure of achieving the RPS.
\(^3\) http://www.cpuc.ca.gov/33percent
\(^4\) http://www.cpuc.ca.gov/PUC/energy/Renewables/FITPhase2.htm
III. PROGRESS TOWARDS A 20% RPS BY 2010

More than 1500 MW of RPS Contracts were Approved by the CPUC in 2009

During 2009, the CPUC has reviewed and approved ten contracts for a total of 1,574 MW of capacity. Eight of those contracts, for 1,287 MW, were for the development of new capacity. Out-of-state resources comprised 397 MW (25%) of the total capacity (1,574 MW). The CPUC has not rejected any contracts brought forward by the IOUs in 2009.

The CPUC is currently reviewing an additional 13 contracts for 5,941 MW of capacity. Of the renewable capacity currently under review, 99% is new, 49% is solar, and 54% is out-of-state. See Table 1 below for the number of contracts and associated MWs approved by the CPUC since 2002.

Table 1. CPUC-Approved IOU Contracts — New and Existing RPS-Eligible Facilities

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PG&amp;E</th>
<th>SCE</th>
<th>SDG&amp;E</th>
<th>Large IOU Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Contracts</td>
<td>MW</td>
<td>Number of Contracts</td>
<td>MW</td>
</tr>
<tr>
<td>2002</td>
<td>4</td>
<td>119</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2003</td>
<td>3</td>
<td>44</td>
<td>5</td>
<td>268</td>
</tr>
<tr>
<td>2004</td>
<td>1</td>
<td>18</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>6</td>
<td>231</td>
<td>12</td>
<td>687</td>
</tr>
<tr>
<td>2006</td>
<td>9</td>
<td>430</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>10</td>
<td>672</td>
<td>9</td>
<td>442</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>651</td>
<td>12</td>
<td>1,883</td>
</tr>
<tr>
<td>2009*</td>
<td>4</td>
<td>873</td>
<td>6</td>
<td>701</td>
</tr>
<tr>
<td>TOTAL</td>
<td>44</td>
<td>3,038</td>
<td>39</td>
<td>3,026</td>
</tr>
</tbody>
</table>

* Year to Date

More than 75% of New RPS Capacity is Under Development

Figure 1 shows the current status of new renewable projects that have been approved by the CPUC. Though procurement has been quite successful in the RPS program, more than 75% of new RPS capacity is under development. The increasing average project size, as seen in Table 1, contributes to the large proportion of new capacity that has not yet come online. The contract cancellation rate for the RPS program is only 7%. Approximately half of the cancelled contracts were from the 2002/2003 interim RPS solicitations and were relatively small bioenergy projects.
Figure 1. Status CPUC-Approved Contracts for New Renewable Projects\(^5\)

Source: California Public Utilities Commission, 3rd Quarter 2009

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**Annual RPS-eligible Percentage of Retail Sales Increased for the First Time in 2008**

The year 2008 was a turning point for the California RPS program. After four years of steadily decreasing RPS percentages for the IOUs on an aggregate basis, 2008 renewable energy development exceeded load growth. As shown in Table 2, from 2003 to 2008, SDG&E’s total renewable generation nearly doubled, PG&E’s increased by approximately 10%, and SCE’s slightly decreased. On an aggregate basis, the IOUs were at 13% renewable retail sales in 2008. Table 2 shows progress in IOU RPS energy retail sales from 2003 to 2008.

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\(^5\) The percentages shown in Figure 1 represent the capacity of new RPS projects approved by the CPUC since 2002.
Table 2. IOUs’ Aggregate RPS Percentage

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG&amp;E</td>
<td>RPS Eligible GWh</td>
<td>8,828</td>
<td>8,575</td>
<td>8,543</td>
<td>9,114</td>
<td>9,047</td>
<td>9,774</td>
</tr>
<tr>
<td></td>
<td>RPS GWh as % of bundled sales</td>
<td>12.4%</td>
<td>11.6%</td>
<td>11.7%</td>
<td>11.9%</td>
<td>11.4%</td>
<td>11.9%</td>
</tr>
<tr>
<td>SCE</td>
<td>RPS Eligible GWh</td>
<td>12,613</td>
<td>13,248</td>
<td>12,930</td>
<td>12,706</td>
<td>12,465</td>
<td>12,573</td>
</tr>
<tr>
<td></td>
<td>RPS GWh as % of bundled sales</td>
<td>17.9%</td>
<td>18.2%</td>
<td>17.2%</td>
<td>16.1%</td>
<td>15.7%</td>
<td>15.5%</td>
</tr>
<tr>
<td>SDG&amp;E</td>
<td>RPS Eligible GWh</td>
<td>550</td>
<td>678</td>
<td>825</td>
<td>900</td>
<td>881</td>
<td>1,047</td>
</tr>
<tr>
<td></td>
<td>RPS GWh as % of bundled sales</td>
<td>3.7%</td>
<td>4.3%</td>
<td>5.2%</td>
<td>5.3%</td>
<td>5.2%</td>
<td>6.1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>RPS Eligible GWh</td>
<td>21,991</td>
<td>22,500</td>
<td>22,298</td>
<td>22,719</td>
<td>22,393</td>
<td>23,394</td>
</tr>
<tr>
<td></td>
<td>RPS GWh as % of bundled sales</td>
<td>14.0%</td>
<td>13.9%</td>
<td>13.6%</td>
<td>13.2%</td>
<td>12.7%</td>
<td>13.0%</td>
</tr>
</tbody>
</table>

About Table 2:
- **Red** numbers indicate when numbers have decreased relative to the prior year.
- RPS percentages are based on generation data that was self-reported by the IOUs. In March of 2010, the LSEs are scheduled to file RPS Compliance Reports that will provide their actual 2009 generation.
- California Energy Commission (CEC) is responsible for verifying RPS generation for RPS compliance purposes. To date, the CEC has verified deliveries for 2003 to 2005.

IOUs Continue Solicitations for Renewables

The IOUs received a robust response to their 2008 RPS solicitations resulting in further progress toward meeting the RPS. There will be another two solicitations in the next 16 months that will provide another opportunity for the IOUs to procure additional renewable energy. Based on their pending and approved contracts, IOUs are expected to achieve a 20% RPS in the 2013 - 2014 timeframe. The state has also made significant progress toward achieving a 33% RPS by 2020. Figure 2 provides a forecast of energy deliveries from all IOU RPS projects approved, pending, or currently under negotiation.
Figure 2. Actual and Forecasted IOU Renewable Generation

Source: California Public Utilities Commission, 3rd Quarter 2009

**ABOUT FIGURE 2:**

- Annual RPS targets are based on the Energy Commission’s retail sales forecast; actual targets, determined by the CPUC, may change due to consumer choices that affect IOU bundled retail sales. The Annual RPS Target line represents the amount of energy required each year by current law.

- The forecast does not reflect the likelihood of contract termination, but does adjust individual project online dates to account for known sources of delay, such as permitting, siting, transmission, and financing.

- The forecast assumes 100% re-signing of expiring IOU contracts. Even if these contracts are not re-signed by an IOU, they will likely be re-signed by another California electric retail provider, and will contribute to California’s overall mix of renewable generation.

**New Installed RPS Capacity Will Continue to Increase in 2009**

Much of the new capacity in 2008 came online at the end of the year, so the full increase in renewable retail sales will not be realized until 2009. In addition, the amount of new renewable capacity that is expected to come online by the end of this year would surpass
all previous years. Figure 3 below shows the amount of new renewable capacity that has come online since 2003.

**Figure 3**. Installed RPS Capacity by Year

![Installed RPS Capacity by Year](image)

Source: California Public Utilities Commission, 3rd Quarter 2009

**Approximately 90% of New Capacity is from Wind, but Solar is Expected to Surpass Wind in the Future**

Wind, biomass, and geothermal are proven technologies that contribute approximately 75% of the large IOUs’ RPS generation. Geothermal currently generates the largest share (see Figure 4), despite only 17 MW of new capacity coming online during the RPS program (see Table 3). However, wind has taken the lead in new renewable capacity. Specifically, 90% of the new capacity over the 2003 - 2008 timeframe came from wind. Nearly half of the new wind capacity was developed out of state.

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6 Figure 3 includes only CPUC approved projects for the IOUs.
Table 3. New RPS Capacity by Renewable Source

<table>
<thead>
<tr>
<th>MW(^7)</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009*</th>
<th>Total</th>
<th>Out of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td>11</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Geothermal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>23</td>
<td>60</td>
<td>51</td>
<td>75</td>
<td>85</td>
<td>331</td>
<td>150</td>
<td>775</td>
<td>371</td>
</tr>
<tr>
<td>Small hydro</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>66</td>
<td>51</td>
<td>75</td>
<td>113</td>
<td>350</td>
<td>176</td>
<td>866</td>
<td>381</td>
</tr>
<tr>
<td>Out-of-State</td>
<td>85</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>381</td>
<td></td>
</tr>
</tbody>
</table>

* Year to Date

Solar bids have dramatically increased in recent RPS solicitations, as seen in Figure 4 below. Consequently, it is expected that solar PV and solar thermal generation will increase significantly over the next decade (see Figure 5).

Figure 4. Number of Bids by Renewable Source in IOU Solicitations

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\(^7\) Values are rounded to the nearest MW so some columns will not add up to the total because the total is rounded separately.
Deliveries of Intermittent Renewable Energy are Increasing

The amount of wind generation has already increased significantly from the beginning of the RPS program and, given the number of approved wind and solar projects that are not yet online, a significant amount of intermittent renewable generation is expected to interconnect to the California grid over the next decade. By contrast, the amount of geothermal energy is expected to remain relatively stable over the next decade, so its proportion of the overall electricity mix may decrease as the portfolio size increases.

Given these trends, the State will face an increasing challenge to integrate the higher intermittent renewable penetration without decreasing system reliability. As a result, the California Independent System Operator (CAISO) has initiated a study of the ancillary resources necessary to maintain grid reliability with a 33% RPS. Also, the CPUC is conducting a Smart Grid rulemaking in which the Commission is exploring how the addition of communications, sensors, and controls to the electric grid can help to integrate higher levels of renewable energy and energy storage. Figure 5 highlights the change that is expected in the RPS resource mix from 2005 to 2020, based on existing, approved, pending, and short-listed RPS projects.

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8 See http://www.caiso.com/1c51/1c51c7946a480.html for more details.
9 For more information on the Smart Grid Rulemaking (R.08-12-009) see http://docs.cpuc.ca.gov/published/proceedings/R0812009.htm.
Figure 5. Large IOU Renewable Resource Mix Expected to Change Over Time

Source: California Public Utilities Commission, 3rd Quarter 2009

ABOUT FIGURE 5:

- The majority of 2010 RPS generation will likely come from geothermal and wind energy, but solar energy may see the largest percentage increase in the coming years.

- Forecast assumes 100% re-signing of expiring IOU contracts. Even if these contracts are not re-signed by an IOU, they will likely be re-signed by another California electric retail provider, and will contribute to California’s overall mix of renewable generation.

RPS Program Cost

Above-MPR Contracts Have Increased in Recent Solicitations

Senate Bill 1078 (2002), the legislation that established the RPS program, directed the CPUC to calculate a market price referent (MPR) representing the non-renewable power costs that are avoided by buying renewable power. The MPR serves to control the cost of the RPS program because there are limited funds allocated for the above-MPR costs of RPS contracts. The portion of the price of a CPUC-approved RPS contract that falls below the MPR is deemed per se reasonable by the CPUC, and may be recovered by the IOU in retail rates. If a contract price is above the MPR, the above-MPR portion of the
contract price is drawn down from the above-MPR funds (AMFs)\textsuperscript{10} authorized by SB 1036.\textsuperscript{11}

The number of RPS contracts above the MPR is increasing. As shown in Figure 6, the first above-MPR contract was approved in 2007, and since then, nearly half of the projects submitted for CPUC approval have been above the MPR.\textsuperscript{12}

**Figure 6.\textsuperscript{13}** Contract Prices Relative to the Market Price Referent (MPR)

![Figure 6: Contract Prices Relative to the Market Price Referent (MPR)](image)

Source: California Public Utilities Commission, 3rd Quarter 2009

**ABOUT FIGURE 6:**

- Bilateral contracts are included in the figure, but are not subject to the MPR cost cap.
- One ‘project’ could represent more than one contract between a utility and the same generator (e.g., BrightSource).

\textsuperscript{10} The above-MPR costs are authorized for rate recovery in the same manner as the below-MPR costs.

\textsuperscript{11} Only a subset of RPS contracts is eligible for AMFs. Bilateral and short-term contracts are not eligible, but IOUs can voluntarily incur above-MPR costs from these types of contracts.

\textsuperscript{12} This data does not include contracts that were filed with the CPUC, but were later terminated.

\textsuperscript{13} Data includes contracts pending CPUC approval (in 2009), approved contracts, and contracts negotiated bilaterally.
PG&E and SDG&E’s Above Market Funds are Depleted

The RPS law provides each IOU with a fund that can be used for above-MPR contract costs. Pursuant to statutory guidelines, the CPUC adopted the AMFs for each IOU in March 2009. As part of that decision, the CPUC required the IOUs to calculate the amount of AMFs required for each of the above-MPR contracts that they have executed. As Table 4 below shows, PG&E and SDG&E have exhausted their AMFs. Pursuant to statute, PG&E and SDG&E can not be required to sign a contract that is above the MPR because their AMFs have been depleted, though they may continue to procure above-MPR renewables voluntarily.

Table 4. IOUs’ Above Market Fund (AMF) Balances ($ millions)

<table>
<thead>
<tr>
<th>Utility</th>
<th>Total AMFs</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG&amp;E</td>
<td>$382</td>
<td>$0</td>
</tr>
<tr>
<td>SCE</td>
<td>$322</td>
<td>$222</td>
</tr>
<tr>
<td>SDG&amp;E</td>
<td>$69</td>
<td>$0</td>
</tr>
</tbody>
</table>

14 While an individual project’s amount of need for AMFs is confidential, the CPUC will publicly release the IOUs’ total AMF balances twice a year, after the IOUs submit their Project Development Status Reports.
## IV. RECENT AND UPCOMING EVENTS

<table>
<thead>
<tr>
<th>Timing (in 2009)</th>
<th>Deliverable</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Second Quarter</strong></td>
<td>RPS Project Viability Calculator</td>
<td>The Calculator will be used in the 2009 RPS solicitations, and future solicitations, to help ensure that project viability is appropriately valued in the IOUs’ Least Cost Best Fit (LCBF) bid evaluation process.</td>
</tr>
<tr>
<td><strong>Second Quarter</strong></td>
<td>Decision on the 2009 RPS Procurement Plans</td>
<td>Authorized the 2009 RPS solicitations. The Decision also addressed specific guidelines for procurement in Imperial Valley.</td>
</tr>
<tr>
<td><strong>Second Quarter</strong></td>
<td>Decision Establishing Price Benchmarks and Contract Review Processes</td>
<td>Decision established guidelines for expedited review of appropriate short-term and bilateral contracts.</td>
</tr>
<tr>
<td><strong>Third Quarter</strong></td>
<td>Scoping Memo for Renewable Transmission Proceeding</td>
<td>This proceeding was created to actively promote the development of transmission infrastructure to provide access to renewable energy resources for California.</td>
</tr>
<tr>
<td><strong>Third Quarter</strong></td>
<td>Renewable Energy Transmission Initiative (RETI) Phase 2 Report</td>
<td>Phase 2 of RETI will culminate in a Statewide conceptual transmission plan and a list of prioritized transmission projects.</td>
</tr>
</tbody>
</table>

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15 The Project Viability Calculator can be found at: [http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/Project+Viability.htm](http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/Project+Viability.htm).

16 Decision 09-06-018 in Rulemaking 08-08-009 can be found at: [http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/102099.htm#P99_2599](http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/102099.htm#P99_2599).

17 Decision 09-06-050 in Rulemaking 08-08-009 can be found at: [http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/102666.htm](http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/102666.htm).

18 More information on the renewable transmission proceeding, Rulemaking 08-03-009, is available at: [http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm](http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm).

19 More information on RETI, including the draft report, is available at: [http://www.energy.ca.gov/reti/index.html](http://www.energy.ca.gov/reti/index.html).
### Timing (in 2009)  |  Deliverable  |  Notes
--- | --- | ---
Third/Fourth Quarter  |  Renewable Transmission Workshops[^20]  |  Workshops are tentatively planned on (1) the use of RETI for transmission system need determination, (2) streamlining the need determination process and (3) identification of energy resource areas that would qualify for financing to facilitate interconnection for location-constrained resources.

Third/Fourth Quarter  |  Wholesale Renewable Distributed Generation[^21]  |  The ALJ will issue a staff proposal through a Ruling on program pricing, which follows staff’s initial proposal last March. The first staff proposal included additional terms and conditions, a project size limit of 10 MW, and other program design elements (except price).

Fourth Quarter  |  Decision on use of RETI for backstop cost recovery[^22]  |  The decision will define whether a project that was prioritized by RETI should automatically be eligible for cost recovery through rates.

Fourth Quarter  |  33% RPS Implementation Analysis Final Report[^23]  |  The final report will incorporate updated cost numbers and potential implementation solutions. In addition, the CAISO is conducting its analysis of renewable integration issues and will provide initial results.[^24]

### Contact Information
For more information, please visit our website at [http://www.cpuc.ca.gov/PUC/energy/Renewables](http://www.cpuc.ca.gov/PUC/energy/Renewables) or contact Paul Douglas, RPS Program Supervisor, at [psd@cpuc.ca.gov](mailto:psd@cpuc.ca.gov).

[^20]: More information on the renewable transmission proceeding, Rulemaking 08-03-009, is available at: [http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm](http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm).
[^21]: The Staff Proposal on feed-in tariffs, in Rulemaking 08-08-009, is available at: [http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/feedintariffs.htm](http://www.cpuc.ca.gov/PUC/energy/Renewables/hot/feedintariffs.htm).
[^22]: More information on the renewable transmission proceeding, Rulemaking 08-03-009, is available at: [http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm](http://www.cpuc.ca.gov/PUC/energy/Renewables/transmission.htm).
[^23]: More information on the 33% RPS Implementation Analysis is available at: [http://www.cpuc.ca.gov/33percent](http://www.cpuc.ca.gov/33percent).
[^24]: More information on the CAISO Integration Study is available at: [http://www.caiso.com/23bb/23bbc01d7bd0.html](http://www.caiso.com/23bb/23bbc01d7bd0.html).