CEO's Message

The National Electricity Market of Singapore (NEMS), which started trading in January 2003, completed ten years of successful trading in December 2012.

Coincidentally, the market welcomed its tenth embedded generation (EG) unit at the close of this milestone year, when ExxonMobil Asia Pacific registered its second 110MW EG unit in November 2012.

In the last two months of the year, the Uniform Singapore Energy Price (USEP) remained mostly stable and stayed close to the $200/MWh level. See the market updates on page 3 for more details.

Still on the market, three rule changes were recently approved by the Energy Market Authority. Of these, two of them - the update of the Market Operations Market Manual and the rule change on the exceptions to gate closure during an emergency operating state - have already taken effect. The third rule change on the tie-breaking of offers will take effect on 18 April 2013. Details of these rule changes can be found below.

In November 2012, EMC hosted a delegation from Hong Kong. Six delegates from the Environment Bureau of Hong Kong visited EMC to learn more about Singapore's electricity market in view of their own review of Hong Kong's electricity market regulatory framework. The visit is covered in the article on page 2.

Finally, we end the year by welcoming the re-appointment of Thean Lip Ping as the Chair of the Market Surveillance and Compliance Panel. The EMC Board has re-appointed Mr Thean for a new three-year term beginning 1 January 2013.

To commemorate the first decade of the NEMS, the NEMS Market Report 2012 which is currently in production will provide an overview of the key statistics over the last ten years. We look forward to sharing the report with you in the first quarter of 2013.

I would like to convey my heartfelt appreciation to all our market participants (MPs) for their ongoing support and dedication towards the betterment of the NEMS over the years. I look forward to continuing the partnership with our MPs and other stakeholders, as the NEMS continues to evolve as a world leading electricity market.

Dave Carlson
Chief Executive Officer

Rule Change Updates

The following rule changes took effect on 21 December 2012 with the exception of the rule change on “Tie-Breaking of Offers”, which takes effect on 18 April 2013.


The Market Operations Market Manual (Standing Offers, Offer Variations and Standing Capability Data) was last updated on 28 June 2011. As there were subsequent changes to the Market Rules and Market Operations' systems, a review of the Market Manual was conducted to reflect these changes. This review also incorporated a rule change to reflect that offers accepted as valid prior to the commencement of any market schedule run would be used in that market schedule, removing the previous provision that valid offers received five minutes prior to a market schedule run are not guaranteed to be included.

2. Exceptions to Gate Closure during an Emergency Operating State

Under the Market Rules, offer changes for a given dispatch period are not allowed 65 minutes prior to the start of a given dispatch period. The 65-minute period, termed “gate closure”, is imposed to enable the power system operator to manage system security and allow generation companies to prepare their units for dispatch. There are, however, exceptions to this rule for system security reasons, such as when offer changes can alleviate an energy surplus or an energy/reserve/regulation shortfall situation, in response to a market advisory.

While market advisories are issued only in conjunction with market schedule runs, which commence at fixed timings, an Emergency Operating State (EOS) may be declared at any time by the Power
System Operator (PSO). As such, some inflexibility arose under the current arrangement. Where an EOS is caused by a shortage of energy, reserve or regulation, an additional offer quantity for the relevant product could relieve the shortage. Thus, a rule change was proposed to allow offer changes (specifically additional energy, reserve or regulation offers) when an EOS has been declared by the PSO. This will allow for greater responsiveness in alleviating shortfall situations and enhance system security.

3. Tie-Breaking of Offers
Currently, the Market Clearing Engine clears two or more tied offers (offers for the same product at the same effective price) that are bound by the demand curve (marginal unit) or by other constraints (non-marginal unit) in a random manner even though these offers are equally qualified to be scheduled. As random allocation could result in dispatch instability, a rule change will be implemented to incorporate a tie-breaking algorithm into the Singapore Wholesale Electricity Market formulation.

The tie-breaking method attaches a tie-breaking constraint with a very small penalty factor of $10^{-6}$ to the objective function, such that any tied offers between a pair of facilities that are not allocated with scheduled quantities in proportion to their offer quantities will reduce the overall net benefit slightly. This method thus addresses tied offers by allocating facilities with scheduled quantities that are proportionate to their individual tied offered quantities. This method will be applied across all products and all types of facilities.

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Visitors to Energy Market Company
EMC had the pleasure of hosting six delegates from the Environment Bureau of Hong Kong on 2 November 2012.

The delegation led by Vivian Lau, the bureau’s Deputy Secretary for the Environment, was in Singapore to learn more about its electricity market, from the regulatory framework to consumers structure, as they embark on a review of the regulatory framework for their own electricity market.

The delegates wanted to know more about the operations of the wholesale electricity market of Singapore. The areas that generated much interest were the vesting contract regime, possible futures market and contestable consumers in Singapore.

EMC values such visits as they are excellent platforms for the exchange of ideas and experiences with our regional counterparts.

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Re-appointment of MSCP Chair
The EMC Board has re-appointed Thean Lip Ping as Chair of the Market Surveillance and Compliance Panel (MSCP) for a new three-year term beginning 1 January 2013.

EMC would like to express its appreciation to Mr Thean for continuing to devote his time and effort to the National Electricity Market of Singapore.
Market Update

Uniform Singapore Energy Price (USEP) remains steady in November and December 2012 despite rare spike

Average daily USEP hovered around $200/MWh in the last two months of 2012 except for one day. Apart from 26 November, the USEP remained steady throughout November and December, averaging daily between $147/MWh and $234/MWh in these two months. The average USEP for November would have been at an annual low of $192/MWh if 26 November was excluded.

<table>
<thead>
<tr>
<th>Month</th>
<th>Average</th>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
<tr>
<td>January</td>
<td>$210.48</td>
<td>$160.18</td>
<td>$3,676.88</td>
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<tr>
<td>February</td>
<td>$228.35</td>
<td>$166.09</td>
<td>$656.72</td>
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<td>March</td>
<td>$243.35</td>
<td>$171.65</td>
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<td>$245.62</td>
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<td>$152.90</td>
<td>$533.24</td>
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<td>July</td>
<td>$210.96</td>
<td>$109.86</td>
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<tr>
<td>October</td>
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<td>$131.00</td>
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<tr>
<td>November</td>
<td>$218.67</td>
<td>$131.18</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>December</td>
<td>$193.61</td>
<td>$100.43</td>
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On 26 November, the USEP surged to a record high of $997/MWh due to a supply crunch. On that day, supply was partly affected by two combined-cycle gas turbine units that were on maintenance as well as the unavailability of steam turbine units that could have been offered to the market.

In addition, supply also suffered temporary shocks from two instances of forced outage. As a result, the half-hourly USEP fluctuated greatly between a low of $142/MWh and a high of $4,500/MWh on that day.

Second new embedded generation (EG) unit in the National Electricity Market of Singapore (NEMS) in 2012

Following its first EG unit in June, ExxonMobil Asia Pacific registered its second EG unit in November. This second EG has the same generation capacity as the first at 110MW. An EG is a generation unit that generates electricity to its onsite load principally for self-consumption. There are now ten EG units in NEMS with a total generation capacity of 331.9MW. The registered capacity of embedded generators now comprise 3.1 percent of the total registered capacity in the NEMS.
User Forum

Market Information Sharing Forum (MISF)
Debbie Tse from Market Operations, EMC, presented the 66th session of MISF on 14 November 2012. She covered extensively the market performance of the National Electricity Market of Singapore (NEMS) for September and October 2012, as well as the latest updates on the current system enhancements.

Ms Tse also shared in-depth the following two feature topics:
• Study on price separation incidences in the NEMS, 2003 to 2011; and
• Clarification on reporting of demand (Forecasted vs Metered vs System).

On a separate note, Market Operations invited Market Participants, who are interested in presenting at future sessions, to come forward as this forum is a platform for sharing market information within the industry.

The first MISF in 2013 on 17 January was presented by Chen Jian Hong, Pricing and Information Manager from the Market Operations Team. The forum touched on market performance for the NEMS in November and December, along with a progress update on the latest system enhancements and feature topics.

Market Systems User Group (MSUG)
The bi-monthly MSUG forum was held on 20 December 2012. EMC IT updated Market Participants on the following:
• NEMS Systems’ availability figures from April to November 2012;
• One-hour maintenance downtime on 28 December 2012 to apply application patches to the NEMS Systems; and
• Market incidents details and action plans taken to address these incidents for November and December 2012.

EMC IT also shared on the planned Disaster Recovery Exercise scheduled from 5 February 2013 to 15 March 2013. The key objectives of this exercise are to test the business continuity process of the EMC IT Systems as well as the rollout of the Server Replacement Project during this period.

EMC IT also provided an update on the latest status of four projects i.e. Generation Type Tagging, Abnormal Condition Advisory Alerts, Settlement Enhancement for LNG Vesting Contracts and the Server Replacement Project. The next MSUG forum is tentatively scheduled for Thursday, 21 February 2013.

EMC Training Programme – Next Course on 21 and 22 February 2013
EMC will be holding the next run of its two-day training course, Understanding Electricity Markets, on 21 and 22 February 2013. Our staff will be conducting six sessions covering the following topics:
• Understanding Electricity
• Overview of the Electricity Sector
• The National Electricity Market of Singapore and its Unique Features
• Pricing in Detail
• Settlement
• The Demand Side

The course dates for the rest of the year are as follows:
16 – 17 May 2013
15 – 16 August 2013
14 – 15 November 2013

We advise you to book early to secure your place in the course of your choice and benefit from our early-bird discount.

Further details on the programme and on how to register are on our website, www.emcsg.com. For enquiries, please e-mail trainingprogramme@emcsg.com or contact Jan Lee at +65 6779 3000.

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Thank you in advance for your time and effort.