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CEO's Message

Our lead article this month discusses the just released 2004 Market Report of the National Electricity Market of Singapore (NEMS) with a summary of the key market events of 2004. The report provides an in-depth look on how the market evolved in 2004. I am proud to say that many of the developments bring the NEMS a step closer to the top electricity markets in the world.

On 1 April 2005, the automated partial wholesale settlement re-run regime was implemented bringing this initiative to a successful close. The article on page 4 provides details on why this regime was adopted and its special features. I would like to thank everyone who was involved in this project for their hard work and commitment. This is another instance of relevant parties

working closely together to bring greater efficiency to the NEMS.

Another important area of the NEMS is its governance structure. The Market Surveillance and Compliance Panel issued a statement on 6 April regarding offer variations after gate closure. Close monitoring of the offer behaviour of market participants is critical to ensure system security and fair play within the NEMS. A summary of the statement is available on page 2 and the full original statement is available on our website.

In early April, we announced the launch of the EMC Training Programme with the first course Understanding Electricity Markets to be held on 17-18 May 2005 in Singapore. This represents an important building block in our continuing education efforts. The course

provides an excellent induction to our market for anyone new to the industry while others will be able to sharpen their skills and find out more about the principles behind our successful market. As EMC staff directly involved in the NEMS operation, course presenters will provide the expertise and insights that only practitioners can offer. More details are available in an article on page 2 and on our website.

I hope you will enjoy reading this EMC Bulletin. We would appreciate your feedback and your input on specific topics that you would like to read about.

Allan Dawson CEO, Energy Market Company

Release of the 2004 Market Report

EMC published a comprehensive overview of events in the National Electricity Market of Singapore (NEMS) in 2004 on 9 May 2005.

EMC CEO, Allan Dawson commented that, "the 2004 Market Report shows that the NEMS has operated efficiently and evolved significantly in its first two years of operation." The report is available to the public on www.emcsg.com; the print version will be posted in mid May.

A summary of key market issues discussed in the 2004 Market Report follows.

Market design proved robust

The design of the NEMS proved robust in 2004 and the efficiency gains that had been created in the first year of market operation (such as price responsiveness, reserve cost savings and a switch to more efficient generation sources) were carried through to 2004.

Introduction of vesting contracts

The introduction of vesting contracts on 1 January 2004 to control market power had a significant impact on wholesale market prices leading to a \$10.00 drop in 2004



compared with 2003. Vesting contracts caused the biggest drop in wholesale market prices in the first quarter of 2004 with an upward price trend in the latter part of the year. This upward movement can be

(continued on page 2)



EMC Launches New Training Programme — Understanding Electricity Markets

17–18 May 2005 (fully booked)

16–17 August 2005

EMC has developed an intensive training course that allows course participants to understand electricity markets, with a particular focus on the National Electricity Market of Singapore (NEMS) and its unique features. With the launch of this training programme, we are adding another building block to our ongoing effort to promote an understanding of electricity markets and the NEMS.

We have distilled a large amount of information and experience into this course, which will be given by our in-house experts. The two-day course consists of the following seven modules:

- Understanding Electricity
- Overview of the Electricity Sector
- The NEMS and its Unique Features
- Pricing in Detail
- Settlement
- The Demand Side
- An Overview of Current Electricity Market Design Issues

EMC's new training programme allows employers to provide their staff with a thorough grounding in the industry with a considerable saving in time and cost compared to in-house programmes. Given its broad content and quarterly scheduling this course offers employers an ideal induction into the electricity market for new staff or a way for existing staff to expand their knowledge in new areas.

It is particularly suitable for executives and managers from the electricity, energy, legal and banking sectors as well as government officials, regulators and consultants.

Further details on the programme and the registration for the next course on 16-17 August 2005 are on our website, www.emcsg.com. For enquiries, please e-mail trainingprogramme@emcsg.com or contact Ong Pui Sze at +65 6779 3000.

MSCP Statement on Offer Variations After Gate Closure

On 6 April 2005, the Market Surveillance and Compliance Panel (MSCP) issued a statement regarding offer variations after gate closure.

In the statement, the MSCP clarified the scope of the prohibition against price changes when submitting offer variations after gate closure. Both direct and indirect price changes are prohibited.

The MSCP also indicated that with effect from 15 April 2005, enforcement action would be taken in appropriate cases where there was a breach of the gate closure rules. A minimum financial penalty of \$1,000 plus costs would be imposed for each breach and more severe enforcement action would apply to subsequent or repeated breaches.

The full statement is available on the EMC website at www.emcsg.com.

(continued from page 1)

Release of the 2004 Market Report

attributed to a combination of factors, such as a realignment of market contracting, increasing fuel prices and the associated higher vesting contract prices. A comparison of 2003 prices and 2004 prices adjusted for the vesting contract payments and oil price increases shows a price reduction of 5.15 percent in 2004.

June 29 supply disruption

Following a disruption to the piped gas supply from Indonesia on 29 June 2004, Singapore suffered a partial electricity

blackout. In response to high wholesale electricity prices, triggered as a result of the shortage of electricity supply, unaffected oil and diesel-fuelled generators responded with higher output to limit the extent and duration of the incident.

Interruptible load

Since January 2004, large consumers have been able to compete directly against generators in the reserve market by offering to have their electricity supply interrupted when there is a security event. These

interruptible loads provide a valuable source of reserve as they are not dependent on a fuel source.

Discontinuation of fast-start ancillary services

In a change from 2003, fast-start capabilities were purchased directly from the wholesale market as contingency reserve. This added 400MW of generation capacity to the market supply curve. The saving from this initiative was significant, amounting to about \$18 million.



8th Annual Asia Power Conference and Other Speaking Engagements

On 2 March, 40 delegates of the 8th Annual Asia Power Conference attended a site visit to EMC as part of the conference programme. Yip Pak Ling, SVP and Head of Market Operations at EMC, gave the delegates an overview of the NEMS market operations. This was followed by desktop demonstrations of software developed by EMC, Mview and PGrid, which help the market operations team to track on-going market developments. The delegates, who

included a government official, market operators, consultants and bankers from Asia, Europe and the US, asked many questions about the Singapore model and the desktop demonstrations sparked lively discussions. EMC received very positive feedback for this informative session, especially regarding its interactive format.

In cooperation with the Economic Development Board, EMC is presenting to

companies who are considering an investment in Singapore. A reliable electricity supply often plays a critical factor in the final investment decision of companies. EMC has already presented to several multinational companies in the pharmaceutical, chemical and biotech industries. Our presentation provides these companies with an overview of the structure of the local electricity market allowing them to better assess the reliability and cost structure of electricity in Singapore.



Yip Pak Ling presenting Mview to the conference delegates

Live Market Data on Display at EMC

Those of you that have visited our office recently may have noticed the new dynamic market summary application that is being displayed on a flat screen in the reception area.

This is the first release of the application providing real-time graphical representations of current market data, as well as a summary of the previous week's trading activities. The information displayed includes prices and system demand for all of the products traded on the NEMS.

If you have not yet seen it, come along to our office to take a look. The application is a first step in EMC's data delivery strategy to make data more accessible and understandable to a wider audience. The application allows us to prototype concepts before they are deployed via the Internet.



Automated Partial Wholesale Settlement Re-run Regime

Implementation on 1 April 2005

EMC has successfully implemented the automated partial wholesale settlement re-run system. This follows the Energy Market Authority's approval of the Rules Change Panel's proposal to adopt the new regime effective 1 April 2005. It also comes after the completion of a robust and comprehensive user acceptance test and market trial performed from 5 January to 31 March 2005. The implementation completes this initiative and brings the NEMS a step closer to providing a world-class settlement system.

Four types of settlement re-runs

Effective 1 April 2005, there are four types of settlement runs scheduled:

- preliminary run – settlement run scheduled on trading date +6 business days
- final run – settlement run scheduled on trading date +10 business days
- first re-run – first nominated day settlement re-run scheduled on trading date +48 business days
- second re-run – second nominated day settlement re-run scheduled on trading date +253 business days

During the first couple of weeks of implementation, EMC performed an average of six to seven settlement runs daily and uploaded two batches of corrected meter files from the Market Support Services Licensee that are scheduled for both first re-run and second re-run.

Why adopt an automated partial wholesale settlement re-run?

Wholesale settlement re-runs are necessitated by metering errors that are reported to EMC after final settlement statements have been issued. However, the wholesale settlement system was not designed to perform these re-runs and the rules for conducting them were unclear. Before, re-runs had to be performed offline and manually.

The old arrangement created, among others, the following inefficiencies and risks:

- Multiple adjustments for the same trading day resulted from the ad hoc notification of metering errors.
- Market participant invoices that were not subject to a quantity change also had to be adjusted because of changes in rates for administrative charges. In essence, all invoices had to be adjusted.
- As re-runs were performed offline and manually, the risk of human error was very high.

Special features of the new regime

- Nominated days, i.e., cut-off dates, are used to accumulate metering errors pertaining to a trading day. This eliminates multiple adjustments for one trading day.
- Re-runs are performed automatically after every nominated day, providing a clean and auditable process.
- The second nominated day, which is one year from a trading day, represents an effective wholesale settlement closure date for trades relating to a particular trading day.
- Only the energy portion is re-run, i.e., rates for administrative charges are not recomputed. Hence, only invoices of market participants and customers that contained metering errors are adjusted.
- The settlement adjustment amount for each of the affected market participants is calculated and posted on the next available preliminary run.

Database Split and Historical Database

EMC's strategic information technology (IT) roadmap to support our mission to become a 'world-class energy market by 2007' was completed in September last year.

Key initiatives of this strategic IT roadmap will be the implementation of the database split and the creation of an historical database. These two initiatives will help us to achieve two major objectives:

- A significant reduction of operational risk will result as all user queries will be directed to the newly created historical database rather than to the critical operational database. In turn, this will avoid the risk that user queries would degrade the performance of the operational systems.
- The creation of an historical database will provide the foundation for EMC's strategic aim of increasing the availability of market data and enhancing market transparency. To ensure fast and flexible access to data, data markets will be created to meet the different needs of various users, e.g., pricing related data market and settlement related data market.

The database split and the creation of an historical database will allow EMC to provide an enhanced service offering to market participants. These enhancements will deliver easier, faster and more flexible access to data as well as a better quality of data to facilitate decision-making.



EMC Hosts Speaker Series on Managing Energy Risks

EMC hosted its sixth Speaker Series on Thursday, 17 March at the Grand Hyatt in Singapore. Energy trading is a hot topic for Asia as our markets continue to evolve and mature, bringing new risks and opportunities.

Over 90 participants, including representatives from our market participants, the electricity and energy industry, financial institutions, law firms, consultancies and universities, attended the lunch and seminar.



Finn-Bjørn Ruyter explaining the Nordic market

The seminar opened with Allan Dawson, CEO of Energy Market Company, providing a brief overview on how the National Electricity Market of Singapore (NEMS) has evolved over the last two years. He led into our first feature presentation by asking why managing energy risks will become even more important for the NEMS and its players in the future.

Jomar Eldoy, EMC Board Member, CEO M-co Group and former head of Mirant Europe, gave an overview of energy trading worldwide, including concepts and products and what makes markets work or fail.

Mr Eldoy's presentation included a discussion of the likely evolution of trading of electricity related financial products in Singapore from the current form of bilateral arrangements through to exchange based trading.

Mr Eldoy concluded that a formalised electricity hedge market would be desirable for Singapore as it would provide a risk management environment for those exposed



(L to R) Allan Dawson, Jomar Eldoy, Finn-Bjørn Ruyter

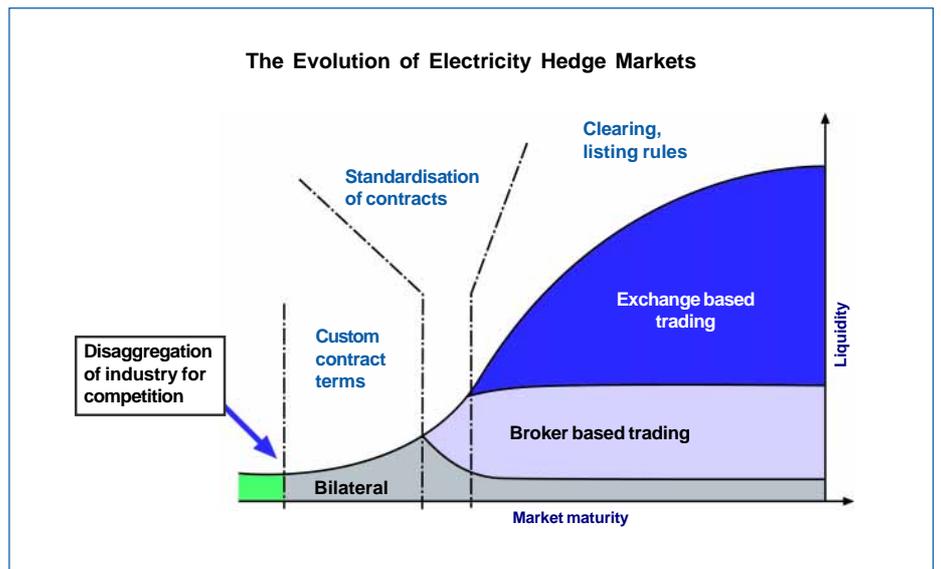
to the physical market and thus support future investment in the industry.

The second feature presentation by Finn-Bjørn Ruyter, CEO of Elkem Energy, shared the perspectives of Elkem, a power consumer, producer and trader in the Nordic power market.

Mr Ruyter provided an overview of how Elkem AS, a metal producer with high power consumption, became a major player in the Nordic electricity market. Since 1995, Elkem

has increased its annual traded volume from 8 terawatt hours to 340 terawatt hours. Mr Ruyter noted that power intensive industries in the Nordic region have a history of strong participation in the electricity market and that this has balanced the market more evenly between producers and consumers.

Judging from the questions and comments raised during the seminar, this topic has definitely given the Singapore market much food for thought.



Changes at EMC

Joining

Glenn Wong

In-house Counsel

Glenn joined EMC in March as our In-house Counsel. He has ample experience in matters related to intellectual property and Internet law, which he gained as Legal Counsel of a public organisation in Singapore. Before leaving the organisation, he held the position of Assistant Registrar.

Sharon Tan

Settlement Officer, Market Operations Team

Sharon comes from the banking and finance sector and brings over nine years of settlement experience to EMC. She was most recently responsible for providing settlement and global custody services to fund managers and financial institutions in the securities industry.

Tong Ker Yang

Database Administrator, IT

Yang is an Oracle certified professional and has three years of IT experience with a regional oil and gas company, most recently as an Analyst Programmer.

Leaving

We said good-bye to **Maggie Sim** after almost three years with the Market Assessment Unit and to **Annamalai Arunachalam** who has been with our IT Team for over two years.

We thank each of them for their valuable contributions and wish them both all the best in their new endeavours.

User Forums

New meeting format for Market Information Sharing Forum (MISF)

Attended by over 30 participants, the MISF meeting on 16 March introduced a new format. Besides the usual updates, Market Operations included statistics and analyses that will help participants to better understand their percentage shares of the market as well as a two-month outlook on market pricing. Furthermore, the meeting included a presentation by the Power System Operator (PSO) on the system demand forecast methodology. This presentation gave participants an in-depth view of the market structure and resulted in a clear understanding of how loads are forecasted.

EMC would like to thank the PSO for giving an excellent presentation, one that resulted in a better insight into market supply and demand. Going forward, we will invite other guest speakers to deliver the feature presentation as this satisfies the changing requirements and needs of our evolving market.

The next MISF is scheduled for Monday, 16 May 2005.

Settlement Initiatives Sharing Forum (SISF)

No settlement forum is currently scheduled.

Market System User Group (MSUG)

The MSUG had a special meeting on 8 March to discuss an upcoming disaster recovery exercise and held another meeting on 14 April. The April meeting included an overview of the upcoming maintenance schedule and a presentation by Alex Tan, CIO, on the IT Roadmap for 2005/2006.

The next MSUG meeting is planned for Thursday, 30 June 2005.

Send us Comments, Feedback or Questions

The *EMC Bulletin* is written by EMC for you and we are always striving to improve our service. Therefore we are interested in any feedback you might have about specific articles and topics covered or comments and suggestions about other areas you would like to see included.

Please send your comments, feedback or any questions either via e-mail to info@emcsg.com or via fax to +65 6779 3030.

Thank you in advance for your time and effort.

