

**Cost of System  
Changes to Implement  
EMA's Decision to  
Tender a Portion of the  
Non-Contestable Load**

Dated this 8 September 2009

This paper informs the Rule Change Panel (RCP) of the impact on the NEMS System and the costs to be incurred for EMC's system changes, arising from EMA's decision to tender a portion of the non-contestable load. This paper also distinguishes between the additional costs that will be claimed from the Market, versus those which were already embedded within the EMC's revenue caps determined and approved by the EMA under its existing Revenue Regulatory Framework.

## **1. EMA Decision - Tendering Of A Portion of The Non-Contestable Load**

Currently, EMA imposes vesting contracts on generation companies (Gencos) equal to 55% of the total load forecast. The prices are fixed quarterly, based on a pre-determined formula derived from the Long Run Marginal Cost of a CCGT plant. All non-contestable consumers in Singapore are fully covered by Vesting Contracts. Thus currently about 33 percentage points of the 55% vesting level are allocated to non-contestable consumers. The remaining, about 22 percentage points are allocated to retailers/ SP Services based on their share of the contestable consumers load.

To bring the benefits of competitive pricing to non-contestable consumers, while taking incremental steps towards realizing the long-term objective of full retail contestability, EMA intends to tender out 3 percentage points of the vesting contract. These contracts will be tendered in tranches of 1 percentage point each with their prices determined through the tender, and be allocated to only non-contestable consumers. The remaining 52 percentage points will continue to be allocated to both retailers/SP Services and non-contestable consumers, with the price based on the same pre-determined formula.

Gencos can submit their offers for any number of tranches in the following format:

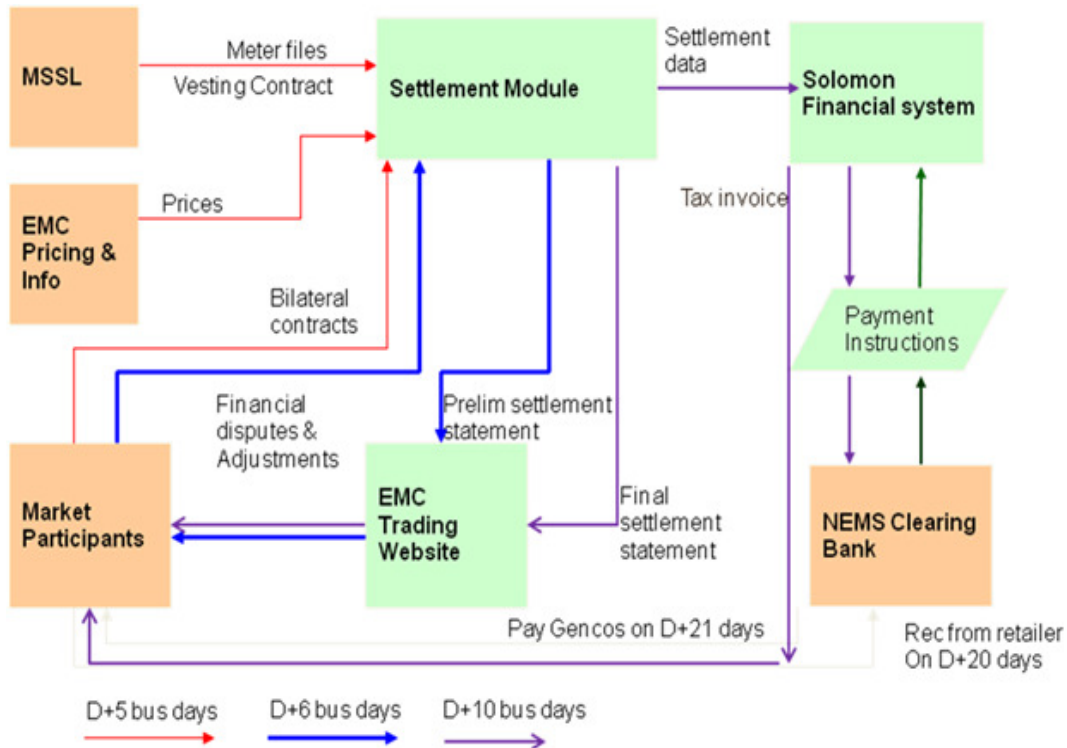
- a) a fixed non-fuel component in \$/MWh, as defined under the existing vesting contract calculation, or
- b) a discount-off-vesting-price in %, or
- c) indicate both (a) and (b)

EMA may negotiate directly with the gencos that submit the best set of offers for each tranche, before deciding the award of the contract. As with current vesting contracts, the counterparty to these tendered contracts will be SP Services. To encourage competitive offers, any unawarded tranches will be offered at the prevailing vesting price, to gencos whose offers are better ranked than others.

The tender is expected to take effect in April 2010, with the call for the tender tentatively scheduled for November 2009.

## **2. Impact on NEMS Settlement System**

The diagram below shows the NEMS Settlement system flow and its interaction with the various other NEMS components and external parties. Under the market rules, for vesting contracts, MSSL will provide EMC an electronic file containing contract quantity and strike price information for each settlement periods and for each vesting contract generator for 3 months at a time. Currently the strike price of the vesting contracts are fixed for a quarter. The tendering of vesting contracts will require systems modifications to accept and process vesting contracts with different prices.



To implement EMA's decision in the NEMS systems, the following change areas have been identified. They are :

- Settlement System (Engine and FrontEnd User Interface)
- MP-API (i.e. Market Participant-Application programming interface)/WebService
- Data Warehouse

### **Settlement System**

The settlement system is a centralized settlement system that computes the payment due and charges in accordance to the market rule (Chapter 7).

- As the current vesting contract details do not provide the additional information required to implement EMA's decision, new additional rows of data will be included in the Vesting Contract details to reflect the tendered price and quantity for each of the respective tranches and 48 daily periods in respect of these MPs that are awarded the tender. This will result in database changes to incorporate this new additional information.
- As a result of the additional information to be incorporated into the settlement system, processing and validation of the Vesting Contract to support this additional information will be required to change. This enhancement will be made at both the frontend upload user interface as well as the backend electronic link.
- Enhancement will be made to incorporate the revised market rules governing VCSC and VCRP formula into the settlement system.

- Enhancement will be made to write back the newly computed information to database which is critical for the generation of settlement information and reports.
- Enhancement will be made to display the additional information and the newly computed information on the frontend user interface for verification and validations.

### **MP-API/WebService**

The MP-API/WebService system is an interface system that provides market participants and MSSL with the timely retrieval of settlement information and reports. Market participants and MSSL can retrieve the information via the trading website or through system-to-system linkages.

- With the additional settlement information (i.e. vesting tender information and the computed information), enhancements to the existing list of settlement reports would be required.
- The formulation queries to these reports will be enhanced to include the additional information.
- The above changes will be made at different modules to support both MP-API and WebService.

### **DataWarehouse**

The data warehouse is a centralized information repository used to store all NEMS system information.

- With the additional settlement information required to implement EMA's decision, changes are required to incorporate new data elements into the warehouse.
- The SQL queries to the database for formulating the VCSC reports will be enhanced. This is to allow all the additional information to be included in the reports.
- The transformation processing of the data warehouse will require changes to incorporate the new information to be stored.

## **3. NEMS System Changes - Work Timeline and Costs to be claimed from the Market**

EMC had formed a working committee comprising the Settlement and IT Team to focus on the project scoping and cost estimation.

Based on the requirements provided by EMA, the working committee conducted the impact analysis both from business and system perspectives. Discussions were also held with MSSL to ascertain the change areas.

Considering the timeline and scope of the changes, it is assessed that the system changes will need to start by September 2009 in order to meet the deadline required by EMA.

With the requirement gathered, the working committee then proceeded in getting competitive pricing quotes for the work to be done by technology vendors.

However, during this period (September 09 – December 09), EMC is also in the process of implementing its new Settlement Revamp System (started in February 2009) for which the source program codes are yet to be handed over to EMC. Therefore, it is not practical for EMC to get alternative vendors to quote for the changes to this System as other

vendors would then be required to work on a system that has not gone live and is yet to be stabilized.

In view of the above, the working committee has requested the current vendor for its Settlement Revamp System – Orange Business Services to provide a quotation based on a Change Request to the Settlement Revamp project using the professional manpower rates as agreed in the competitive tender of the Settlement Revamp project.

For the other change areas and components, the working committee has invited different vendors (e.g. Orange Business Services, Dell Singapore, DELTEQ, Amnet, Ernst & Young etc) to provide the relevant quotations.

The working committee has reviewed the quotations and is satisfied that the development effort quoted is in line with internal estimation of the changes required for the project.

EMA has directed EMC to proceed with the work and has agreed that it recover from the Market the incremental costs incurred by EMC arising from this EMA's decision.

The table below shows a summary of the costs based on competitive quotes.

Cost of Works	Total
Development work (Data warehouse/MP- API/Web services/Settlement Engine)	\$265,400
Audit Cost	\$21,000
Total	\$ 286,400

In order to meet the project timeline, the project commencement needs to take place by 1<sup>st</sup> week of September 2009 and the project schedule will be as follow:

Activity	Target Date
Requirement confirmation	October 2009
Development	January 2010
User Acceptance Testing	February 2010
Go-Live	March 2010

**4. Other Costs' Consideration already embedded under EMC's existing Revenue Regulatory Framework**

Under the existing Revenue Regulatory Framework approved by the EMA on 21 August 2008, the revenue caps for the regulatory period FY 08/09 to FY 12/13 had been determined for EMC. The values of these revenue caps were derived from EMC's projections of its capital and operating expenditures.

In implementing this EMA's decision and the system changes required therefrom, it is anticipated too that EMC will be deploying costs other than those expenditure as mentioned

above. These other costs are already embedded under the EMC's existing revenue regulatory framework and EMC shall not be seeking recovery from the Market. Such costs are:-

i) Internal manpower resources

It is estimated that a total of 118 man days from the Market Operations and IT Team will be attributed to work on system changes arising from EMA's decision by redeploying staff from other budgeted and approved projects. As EMC manpower costs are already covered under the Revenue Regulatory Framework or in other words, under its revenue caps, such costs shall not be further recovered from the Market.

ii) Hardware and middleware licenses

To implement the system changes required by EMA's decision, it is pertinent that EMC set up a new UAT (User Acceptance Testing) environment as the current UAT environment will be converted to a live environment for the roll-out of Settlement Revamp project. This new UAT environment will be used for the benefit of testing the resultant changes in the NEMS system. While EMC had, within its revenue cap, catered in its FY 10/11 projections for the procurement of new hardware and middleware licenses (ie. Oracle Business Process Management, Oracle Business Rule Management System) meant for setting up a new UAT environment, it will now be required to bring forward by 6 months to FY 09/10 the procurement of these hardware and middleware licenses in order to function in time for the implementation of the EMA's decision.

The estimated costs for these wares to be incurred in FY 09/10 ahead of its original scheduled timeline in FY 10/11 are:-

Cost of works	Total
One-time Capital Expenditure	
- Hardware & OS Licenses	\$41,000
- Middleware Licenses	\$99,142
Operating Expenditure	
- Hardware Maintenance	\$22,400 per annum
- Middleware Licenses	

As these costs have been factored in EMC's projections embedded in the Revenue Caps of its Revenue Regulatory Framework, albeit in a different financial year, EMC shall not be claiming any further from the Market on such costs except in respect of the 6 months of additional maintenance and license costs amounting to \$11,200.

**5. Recommendation**

EMC recommends that the RCP notes the following:-

- the EMA's decision,
- the NEMS systems' enhancement needs to support the EMA's decision,
- in implementing the changes, the costs that will be incurred but have not been factored within the revenue caps in the EMC revenue regulatory framework is **\$286,400**. EMC shall be recovering such costs from the Market when the costs are incurred within FY 09/10.
- in implementing the changes, EMC will also be incurring in advance certain capital and operating expenditure in FY 09/10 from its original projected expenditure in FY 10/11 and EMC shall not be recovering such costs from the Market as they had been factored within the revenue caps except in respect of the 6 months of additional maintenance and license costs amounting to **\$11,200**.