REVIEW OF THE VESTING CONTRACT LEVEL AND PERIOD WEIGHTING FACTORS FOR THE PERIOD 1 JANUARY 2013 TO 31 DECEMBER 2014

FINAL DETERMINATION PAPER

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1. INTRODUCTION

1.1. The Energy Market Authority ("EMA") implemented Vesting Contracts on 1 January 2004 as a regulatory instrument to curb the potential exercise of market power by the generation companies ("Gencos"). Vesting Contracts commit the Gencos to sell a specified amount of electricity (viz. the Vesting Contract level) at a specified price (viz. the Vesting Contract price). This removes the incentive for Gencos to exercise their market power by withholding their generation capacity to push up the pool price in the wholesale electricity market and in turn promotes efficiency and competition in the electricity market for the benefit of consumers.

1.2. To achieve the objective of effectively curbing the potential exercise of market power, EMA will, in consultation with the industry, review and reset the Vesting Contract level every two years based on supply and demand projections at the point of review in accordance with the procedures set out in the document "EMA's Procedures for Calculating the Components of the Vesting Contracts" ("Vesting Contract Procedures").

1.3. At the last review, EMA had determined that the Vesting Contract level required was 60% and 55% (of total electricity demand) for 2011 and 2012 respectively with a peak period weighting factor of 1.1 for both years.

1.4. EMA appointed The Lantau Group ("TLG") to assist in the review of the Vesting Contract level and period weighting factors for the period 1 January 2013 to 31 December 2014. This paper sets out EMA's Final Determination which takes into consideration the recommendations of its consultant, TLG and feedback from the two rounds of public consultation.

2. EMA'S DETERMINATION ON THE VESTING CONTRACT LEVEL AND PERIOD WEIGHTING FACTORS FOR THE PERIOD 1 JANUARY 2013 TO 31 DECEMBER 2014

2.1 As specified in the Vesting Contract Procedures, "an analytical model, preferably a market gaming model, will be used to derive the overall expected annual market prices for different contract levels" so as to determine the Vesting Contract level that is required to remove Gencos' incentives to withhold their generation capacity to raise pool prices above a certain target pool price. The target pool price is set at the long run marginal cost ("LRMC") of a theoretical new entrant using the most economic generation technology in Singapore contributing more than 25% of total demand (i.e. the combined-cycle gas turbine or "CCGT" technology). This mimics the outcome of a competitive market and ensures that appropriate price signals remain for investors to plant new and efficient generation capacity to meet demand growth.

2.2 In this respect, TLG has used a modified Cournot gaming model to simulate half-hourly pool price – more specifically the Uniform Singapore Energy Price (USEP) – which incorporates the effects of non-collusive interactions amongst the Gencos in the wholesale electricity market to sustain USEP above their respective short run marginal cost (SRMC). Following the industry feedback received from the first round of public consultation, TLG has incorporated refinements in its simulations to better reflect Gencos' actual operations[1].

2.3 Based on its simulation results, TLG recommends maintaining the Vesting Contract level at *55% for the first half of 2013*. This is to ensure adequate market power mitigation in an environment of growing electricity demand and tight supply prior to the availability of LNG. With expected keener competition among the Gencos following the start of commercial operations of the LNG terminal in Q2 2013 and additions of new/repowered CCGT capacity, TLG recommends reducing the Vesting Contract level, specifically to *50% for second half of 2013*, and *40% for the whole of 2014*. TLG recommends maintaining the *peak period weighting factor unchanged at 1.1 for 2013 to 2014*.

2.4 In the second round of consultation, there were generally no strong objections to the proposed Vesting Contract level. However, the industry has expressed a preference for a more gradual reduction in the Vesting Contract level:

a. for 2013 – suggested by a consumer (Petrochemical Corporation of Singapore) citing that there could be delays in the start-up and/or smooth operations of the LNG terminal; and

b. for 2014 – suggested by a Genco (Senoko Energy) given the possibility that gas constraints would remain even when LNG is available due to contractual restrictions and also operational constraints of the Terminal and gas network.

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[1] To better reflect the Gencos' actual operations, TLG incorporated the following refinements in its simulations, specifically: (a) the need for some Gencos to utilise more costly low sulphur fuel oil for their steam plants due to sulphur emission controls imposed by the National Environment Agency; and (b) gas supply constraints at the Genco-level (instead of system-level) which translate to lower amount of gas available for each Genco.

2.5 EMA has assessed that TLG's proposed reduction in the Vesting Contract level is sufficiently conservative for the following reasons:

a. *A delay in the LNG terminal operation is unlikely* given that the development of the LNG terminal is on schedule to start commercial operation in Q2 2013. Nonetheless, the availability of LNG is just one factor that will contribute to lower average USEP for the latter half of 2013 and 2014. *The influx of new/repowered CCGT capacity is another factor that would exert downward pressure on USEP from the latter half of 2013 by displacing less efficient capacity*.

b. While there remains a possibility of gas constraints in some form even after the introduction of LNG, *the availability of LNG would significantly ease the existing gas constraints*.

2.6 Under the existing rules, EMA has the option to conduct a mid-term review of the Vesting Contract level should exceptional circumstances arise which invalidate EMA's current assessment.

2.7 On balance, the proposed Vesting Contract level would be adequate to curb the potential exercise of market power in 2013 and 2014. The recommendations of TLG is consistent with the policy objective of Vesting Contracts and EMA's plan to reduce the Vesting Contract level over time contingent on the dilution of Genco's market power in the wholesale electricity market.

2.8 Table 1 summarises EMA's Determination of the Vesting Contract level and period weighting factors for the next two-year period from 1 January 2013 to 31 December 2014.

Table 1: EMA's Determination of Vesting Contract Level and Period Weighting Factors for 1 January 2011 to 31 December 2012

Period	Vesting Contract Level	Period Weighting factors		
		Peak	Shoulder	Off-Peak
1 January 2013 to 30 June 2013	55%	1.10	1.00	Balancing Factor
1 July 2013 to 31 December 2013	50%	1.10	1.00	Balancing Factor
1 January 2014 to 31 December 2014	40%	1.10	1.00	Balancing Factor

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