

**PROCEDURES FOR CALCULATING  
THE COMPONENTS OF THE  
VESTING CONTRACTS  
FOR 1 JULY 2023 TO 30 JUNE 2028**

**Energy Market Authority**

June 2023  
Version 3.0

## Document History

Version Number	Version Date	Summary of Changes
1.0	18 May 2023	-
2.0	29 May 2023	Clarification on Section 3.2.1.2
3.0	19 June 2023	Clarification on Section 5.1.1

## Table of Contents

<b><u>1.</u></b>	<b><u>INTRODUCTION.....</u></b>	<b><u>4</u></b>
<b><u>2.</u></b>	<b><u>NCC LOAD PROFILING.....</u></b>	<b><u>6</u></b>
<b><u>3.</u></b>	<b><u>BASE VESTING SCHEME.....</u></b>	<b><u>8</u></b>
3.1	PROCEDURE TO SET AND ADJUST QUARTERLY AND HALF-HOURLY BVQ	8
3.2	PROCEDURE TO SET BASE VESTING PRICE (“BVP”)	8
3.2.1	FUEL COST COMPONENT OF BVP .....	8
3.2.2	NON-FUEL LRMC PARAMETERS FOR BVP .....	9
3.2.3	CARBON PRICE FOR BVP .....	11
<b><u>4.</u></b>	<b><u>TENDER VESTING SCHEME.....</u></b>	<b><u>12</u></b>
<b><u>5.</u></b>	<b><u>RESIDUAL VESTING SCHEME .....</u></b>	<b><u>13</u></b>
5.1	PROCEDURE TO DETERMINE AND ALLOCATE RVQ	13
5.1.1	PROCEDURE FOR CALCULATING UEGQ.....	14
5.1.2	PROCEDURE FOR CALCULATING RVQ.....	15
5.2	PROCEDURE FOR CALCULATING THE RESIDUAL VESTING PRICE (“RVP”)	15
<b><u>6.</u></b>	<b><u>PROCESS TIMELINE.....</u></b>	<b><u>18</u></b>
<b><u>7.</u></b>	<b><u>MISCELLANEOUS.....</u></b>	<b><u>19</u></b>
7.1	ADJUSTMENT FOR FORCE MAJEURE EVENTS	19
7.2	CONSULTATIVE PROCESS	19

## 1. Introduction

---

SP Services Ltd (“**SPS**”), as the Market Support Services Licensee (“**MSSL**”), buys electricity from the Singapore Wholesale Electricity Market (“**SWEM**”) at half-hourly prices (viz. the Uniform Singapore Energy Price or “**USEP**”) for supply to the Non-Contestable Consumers (“**NCCs**”) at the Regulated Tariff.

From time-to-time, the Energy Market Authority (“**EMA**”) may, through the MSSL, issue Vesting Contracts (“**VCs**”) for hedging the price of energy to be procured from the SWEM for supply to NCCs. The VCs are structured as bilateral two-way contract-for-differences (“**CFD**”) between the MSSL (the “**Issuer**”) and a holder who is typically a commercial generation company (“**Genco**”) (the “**Holder**”).

The hedge price under the existing VCs is determined by EMA based on the long run marginal cost (“**LRMC**”) of the most efficient technology that accounts for at least 25% of the total electricity demand in Singapore which is currently the combined cycle gas turbine (“**CCGT**”).

To hedge NCC load for the next 5-year period following expiry of the existing VCs on 30 June 2023 i.e. from 1 July 2023 to 30 June 2028 (“**Vesting Period**”), EMA may issue new VCs under various schemes which will include, in the first instance, the following schemes.

### 1. Base Vesting Scheme (“**BVS**”)

- a. Under the BVS, EMA will allocate the hedge quantity referred to as Base Vesting Quantity (“**BVQ**”) underpinned by new vested gas to be supplied by Pavilion Energy Singapore Pte Ltd (“**PESPL**”). The BVQ Holders will be required to execute with PESPL the corresponding vested gas sales agreements (“**Vested GSAs**”) approved by EMA.
- b. EMA will set the BVQ in megawatt hour (“**MWh**”) based on equivalent quantities between the Daily Contracted Quantity (“**DCQ**”) level and the Maximum Daily Contracted Quantity (“**MDQ**”) level under the new Vested GSAs.
- c. BVQ will be profiled into 48 half-hourly quantities per day, differentiated by weekday and weekend (including public holiday or “**PH**”) based on historical NCC load (“**NCC Load Profiling**”).

2. Tender Vesting Scheme (“TVS”)

- a. EMA may, from time to time, tender out portions of the NCC load. A Tenderer whose Tender Offer has been accepted by EMA may source for its own fuel supply to fulfil the awarded Tender Vesting Quantity (“TVQ”).
- b. Any TVQ awarded will be (i) over and above the BVQ that EMA may allocate under BVS, and (ii) subject to NCC Load Profiling.

3. Residual Vesting Scheme (“RVS”)

- a. For a given half-hour period, there may be residual/unhedged NCC load i.e. actualised NCC load that was not hedged by the prevailing hedge quantities under the BVS, TVS and any new scheme EMA may from time-to-time introduce (“Residual NCC Load”).
- b. **Each Holder of BVQ and/or TVQ is required to participate in the RVS.** Under the RVS, the Holder will use up to its excess generation output (if any) that is uncontracted and generated using its own term gas supply (“**Uncontracted Excess Generation Quantity**” or “**UEGQ**”) to hedge any Residual NCC Load. Such vesting quantity for hedging Residual NCC Load is referred to as Residual Vesting Quantity (“**RVQ**”) and will be allocated ex-post to all Holders in proportion to their respective UEGQ on a half-hourly basis.

This paper sets out the procedures for calculating the hedge quantity, hedge price and other key parameters of the VCs for the Vesting Period. For the avoidance of doubt, EMA may from time-to-time introduce new schemes or additional hedge quantity under existing and new schemes.

## 2. NCC LOAD PROFILING

---

Where NCC Load Profiling is specified by EMA to be applicable to a specific hedge quantity, the following profiling methodology will be adopted in respect of such hedge quantity (e.g. BVQ and TVQ).

1. For each upcoming hedge period, the relevant hedge quantity (e.g. BVQ and TVQ for each hedge quarter) will be profiled, i.e. allocated to each half-hour period in the hedge period, based on historical NCC load.
2. Specifically, for a given hedge period:
  - a. Two types of NCC load profile will be adopted, one for weekdays (“**Weekday Profile**”) and one for weekends including PHs (“**Weekend/PH Profile**”). Each day-type of NCC load profile (viz. Weekday Profile or Weekend/PH Profile) will show the half-hourly NCC load profile for the day-type, i.e. the proportion of NCC load across 48 consecutive half-hourly periods for the day-type.
  - b. For a given day-type (i.e. Weekday or Weekend/PH), the NCC load profile for the day-type will be determined based on:
    - i. the historical NCC load for the same day-type during the preceding year’s quarter that corresponds to the quarter in which the hedge period falls. For example, *if hedge period falls in 3Q 2023* (i.e. 1 July 2023 to 30 September 2023):
      - a. the Weekday Profile for the hedge period will be determined based on the actual NCC load averaged over the same half-hour period across all weekdays in the historical period 3Q 2022; and
      - b. the Weekend/PH Profile for the hedge period will be determined based on the actual NCC load averaged over the same half-hour period across all the weekends/PHs in the historical period 3Q 2022; and
    - ii. adjustments to ensure that for each Weekday Profile and Weekend/PH Profile, (a) the sum of the half-hourly profiled quantities over 2 consecutive half-hour periods (“**Gas Balancing Period**”) (with the first half-hour period of such 2 consecutive periods being an odd numbered period) will be capped at 125% of DCQ and (b) any excess quantity above 125% DCQ will be transferred to adjacent Gas Balancing Periods up to the cap.
3. For the avoidance of doubt, the relevant hedge quantity (e.g. BVQ and TVQ) for a given hedge period in aggregate across the hedge period will be the same before and after applying the above NCC Load Profiling.

For a given hedge period, EMA will determine, and provide to the MSSSL, the NCC load profile in terms of the percentage allocation of the applicable total hedge quantity for the hedge period (“**NCC Load Profile**”) (e.g. total BVQ for a given hedge quarter) to each half-hourly period in

the hedge period. The MSSL will, no later than 3 months before the start of the hedge period, provide the NCC load profile and the half-hourly aggregated hedge quantity (in MWh) for all the half-hour periods in the hedge period to the relevant Holders of the hedge quantity.

By not later than ten (10) calendar days before the beginning of each Quarter from 1 Jul 2023, the MSSL will notify the Holder of the BVQ and TVQ to be allocated to the Holder for the Quarter and the Hedge Prices associated with such BVQ and TVQ, as specified by EMA.

### **3. Base Vesting Scheme**

---

#### **3.1 PROCEDURE TO SET AND ADJUST QUARTERLY AND HALF-HOURLY BVQ**

Under the BVS, EMA will allocate BVQ underpinned by term gas to be supplied by PESPL under the Vested GSAs approved by EMA. In the first instance from 1 July 2023, EMA will set the BVQ (in MWh) based on equivalent quantity at the MDQ level under the Vested GSAs.

EMA may adjust the BVQ for a given hedge quarter to an equivalent quantity between the DCQ level and MDQ level under the Vested GSAs by providing at least 3 months' notice prior to the commencement of the hedge quarter. For the avoidance of doubt, such adjustment can be to (a) increase up to MDQ level, or (b) reduce down to DCQ level.

#### **3.2 PROCEDURE TO SET BASE VESTING PRICE ("BVP")**

EMA will set the hedge price for BVQ (referred to as Base Vesting Price or "BVP") with reference to the LRMC parameters of CCGT for setting the LNG Vesting Contracts expiring on 30 June 2023, with the adjustments as set out below for the fuel cost and non-fuel cost components to determine the final LRMC for setting the BVP ("**LRMC1**").

##### **3.2.1 FUEL COST COMPONENT OF BVP**

The fuel cost component of LRMC1 consists of:

- (a) Hydrocarbon Charge in accordance with the Vested GSA with PESPL;
- (b) LNG Terminal Charge;
- (c) Gas Pipeline Transportation Charge;
- (d) Cost of Lost and Unaccounted for Gas ("**LUFG**"); and
- (e) Any other applicable fees or charges approved by EMA.

##### **3.2.1.1 Hydrocarbon Charge**

The gas price under the Vested GSA is indexed to Dated Brent (in US\$/barrel). Accordingly, the Brent Index Price (in S\$/barrel) for setting the fuel cost component of LRMC1 for a given hedge quarter ('Q') will be calculated based on:

1. the average of the Dated Brent prices available and as published by Platts for all business days in the period from the 1<sup>st</sup> calendar day of the preceding quarter ('Q-1') to the 15<sup>th</sup> calendar day of the 3<sup>rd</sup> month of the preceding quarter 'Q-1' ("**Averaging Period**"); and



2. the average of the spot US\$ to S\$ exchange rates available and quoted by Bloomberg Generic ((reference code: *BGN*) at New York 17:00 across the Averaging Period ("**Exchange Rate**").
3. For each business day in the Averaging Period, EMA will take the mid-point of the published values of Platts Dated Brent (reference code: *PCAAS00*), and the *ask price* (reference code: *SGD Currency HP*).

### 3.2.1.2 LNG Terminal Charge

For each day-type (i.e. weekday or weekend/PH) in the hedge quarter, EMA will calculate the LNG terminal charge (in S\$/mmBtu) for the day-type based on the Reservation Charge and Utilisation Charge by Singapore LNG Corporation Pte Ltd ("**SLNG**") applicable for the hedge quarter. The Reservation Charge will be applicable to 125% of DCQ, and the Utilisation Charge will be applicable to the projected amount of regasified LNG to be supplied by PESPL under the Vested GSAs to underpin the half-hourly BVQ within the hedge quarter.

The LNG Terminal Charge (in S\$/mmBtu) for the hedge quarter will then be set at the weighted average based on the number of days of each day-type in the hedge quarter.

### 3.2.1.3 Gas Pipeline Transportation Charge

EMA will calculate the Gas Pipeline Transportation Charge (in S\$/mmBtu) by PowerGas Limited ("**PowerGas**") for the hedge quarter based on the projected total gas transportation cost (in \$) comprising (i) Transmission Capacity charge, (ii) Authorised Capacity Overrun charge, (iii) Transmission Usage charge (inclusive of the Gas System Charge), and (iv) Transportation Toll Charge (i.e., the fee, in US\$/mmBtu converted to S\$/mmbtu using the Exchange Rate, paid by PESPL to PowerGas, for the transportation of the vested piped natural gas via the South Sumatra offshore gas pipelines), to ship the vested gas supply underpinning the BVQ across all the relevant injection-offtake points, divided by the total volume (in mmbtu) equivalent to the BVQ.

## 3.2.2 NON-FUEL LRMC PARAMETERS FOR BVP

EMA will adopt the Non-Fuel parameters of LRMC1 for the Vesting Period (including but not limited to the parameters, parameter values and escalation factors to update specific capital and overhead cost parameter values) with reference to the Final Determination Paper on *Review of Long Run Marginal Cost Parameters for Setting the Vesting Contract Price for 2021 and 2022* issued by EMA on 30 November 2020 ("**Final Determination Paper**"). Unless otherwise specified, the Non-Fuel parameter values will be updated in accordance with the Final Determination Paper.

A review to revalue any Non-Fuel parameter by EMA may be initiated either at the request of a Vesting Contract Holder or at the discretion of EMA where special circumstances have arisen to materially change the overall LRMC value. Where such review has been initiated, EMA will consult all Vesting Contract holders at least 3 months in advance of any new valuation taking effect. EMA will consider the comments of the Vesting Contract holders to reasonably make its final determination.

### **3.2.2.1 Non-Fuel Parameters of LRMC1 for the Period from 1 July 2023 to 31 December 2023**

For the period from 1 July 2023 to 31 December 2023, the values of the Non-Fuel parameters of LRMC1 shall be the same as that determined for the period 1 January 2023 to 30 June 2023 in accordance with the Final Determination Paper, with the exception of the emergency fuel inventory under the Working Capital Costs to compute the Fixed Annual Running Cost of a generation company. This will be updated from 60 days to the prevailing prescribed reserve level as required under the Generation Licence.

### **3.2.2.2 Non-Fuel Parameters of LRMC1 for the Period from 1 January 2024 to 30 June 2028**

For the period from 1 January 2024 to 30 June 2028, the values of the Non-Fuel parameters of LRMC1 shall be the same as that determined for the period 1 January 2023 to 30 June 2023 in accordance with the Final Determination Paper, with the exception of the following parameters which shall be updated as follows from 1 January of each calendar year:

- (a) Overhead costs, viz. the Fixed Annual Running Cost and Variable Non-Fuel Cost (excluding Carbon Price) of the generation plant, will be escalated in accordance with *Section 3.2.2.3*.
- (b) Emergency fuel inventory under the Working Capital Costs to compute the Fixed Annual Running Cost of a generation company will be updated, where applicable, to the prevailing requirements prescribed by EMA.
- (c) Land lease cost under the Land, Infrastructure and Development (“**LID**”) costs to compute the Capital Cost of a generation company will be escalated on an annual basis in accordance with Jurong Town Corporation (“**JTC**”) Industrial Property Price Index outlined in *Section 3.2.2.4*.

### **3.2.2.3 Overhead Cost Index**

The Overhead Cost Index is an inflation index to be specified by EMA to reflect the overhead cost for the prevailing calendar year relative to the base quarter as determined by EMA. In line with the Final Determination Paper, the base quarter for the Vesting Period is the 3-month period of March, April and May 2020 (“**Base Quarter**”).

The procedure for calculating the Overhead Cost Index is follows:

1. Take the MAS Core Inflation published by the Monetary Authority of Singapore (“**MAS**”) for the Base Quarter, henceforth referred to as the **Base MAS Core Inflation** (“**MASCI<sub>B</sub>**”).
2. Take (a) the mid-point of the latest MAS’ projected range of the MAS Core Inflation Rate for the year ‘t+1’ that is available as at 1<sup>st</sup> December of year t (“**MASCIR<sub>t+1</sub>**”), and (b) the MAS Core Inflation for the period in the determination year ‘t’ which corresponds to the period used in the determination of the Base MAS Core Inflation (i.e. March to May) (“**MASCI<sub>t</sub>**”).  $MASCI_t$  is

calculated as the simple average of the MAS Core Inflation for each month in that period.

3. Calculate the projected MAS Core Inflation for year 't+1':

$$\text{MASCI}_{t+1} = \text{MASCI}_t * (1 + \text{MASCIR}_{t+1})$$

4. The Overhead cost index for the next year equals  $\text{MASCI}_{t+1}/\text{MASCI}_B$ .

#### **3.2.2.4 JTC Industrial Property Price Index**

The LID costs are largely property-related items. Accordingly, EMA will adjust such costs based on the "All Industrial" Property Price Index ("PPI") published by the JTC as follows:

1. PPI set in year 't' for year 't+1' is equal to  $\text{PPI}_t / \text{PPI}_B$

where:  $\text{PPI}_t$  is to be computed using the "All Industrial" PPI for year 't' (up to the latest month available) published by JTC in year 't'.

$\text{PPI}_B$  is the "All Industrial" Property Price Index for the year 2020.

#### **3.2.3 CARBON PRICE FOR BVP**

For the period from 1 July 2023 to 31 December 2023, the Carbon Price to be included in BVP shall be the same as that determined for the period 1 January 2023 to 30 June 2023 in accordance with the Final Determination Paper.

For the period from 1 January 2024 to 30 June 2028, the Carbon Price shall be updated from 1 January of each calendar year, in accordance with the Final Determination Paper, to reflect the prevailing carbon tax.

#### **4. Tender Vesting Scheme**

---

To introduce competitive pricing to the electricity tariff for NCCs, EMA may from time-to-time tender out portions of the NCC load for interested suppliers to bid on a competitive basis. The Tender Vesting Quantity (“**TVQ**”) and the supply period/tenure shall be determined by EMA.

A tenderer whose tender offer (comprising a specified TVQ in MWh per day and a specified hedge price) has been accepted by EMA (“**Successful Tenderer**”) may source for its own fuel supply to fulfil the awarded TVQ.

Any TVQ awarded to a successful Tenderer will be (i) over and above the BVQ that EMA may allocate under the BVS, and (ii) subject to the NCC Load Profiling.

The hedge price of the TVQ (referred to as **Tender Vesting Price** or “**TVP**”) will be based on the respective Successful Tenderer’s tender offer price accepted by EMA.

Successful Tenderers who are Gencos shall participate in the Residual Vesting Scheme (“**RVS**”).

Successful Tenderers shall execute a VC or, where applicable, an addendum to an existing VC with the MSSL to effect the hedging arrangement.

## **5. Residual Vesting Scheme**

---

The Residual Vesting Scheme (“**RVS**”) is designed to hedge any Residual NCC Load, i.e. actualised NCC load that was not hedged by the prevailing hedge quantities under the BVS, TVS and any new scheme that EMA may from time-to-time introduce.

**Each Holder of BVQ and/or TVQ who is a Genco is required to participate in the RVS. Holders of hedge quantities issued under any new schemes may also be required by EMA to participate in the RVS under such schemes.**

Under the RVS, the Holder will use up to its UEGQ to hedge any Residual NCC Load. The RVQ will be allocated ex-post to all Holders in proportion to their respective UEGQ on a half-hourly basis.

Due to time needed by the MSSL to manually read and provide the meter data in respect of small contestable consumers in the Open Electricity Market (“**OEM**”), the Residual NCC Load and RVQ allocation will be calculated and settled on an ex-post basis.

### **5.1 PROCEDURE TO DETERMINE AND ALLOCATE RVQ**

For each half-hour period, the Residual NCC Load (in MWh) will be determined based on the actualised NCC load in excess of the sum of the hedge quantities in the half-hour period under the BVS, TVS and any new scheme that EMA may from time-to-time introduce. The Residual NCC Load will be allocated among the relevant Holders in proportion to their respective UEGQ produced in the half-hour period using term (excluding vested) gas supply. Each Holder’s RVQ is the amount of Residual NCC Load allocated to the Genco subject to a cap quantity which is its UEGQ in the half-hour period.

Each Holder’s UEGQ in the half-hour period is defined as its Injection Energy Quantity (“**IEQ**”) generated from the Holder’s term gas, excluding gas supplied under Vested GSAs, and net of any binding/firm contractual obligations (in MWh) under retail contracts, vesting contracts, electricity futures contracts and bilateral CFDs.

Any Residual NCC Load not allocated (i.e. the amount that was in excess of the total UEGQ across all the relevant Holders in the half-hour period) would not be hedged and the MSSL will accordingly purchase energy in the SWEM at the prevailing USEP to cover the unhedged NCC Load.

### 5.1.1 PROCEDURE FOR CALCULATING UEGQ

For each half-hour period ('HP') in the Vesting Period and in respect of each Holder participating in the RVS in the half-hour period, the Holder's UEGQ (in MWh) in the half-hour period will be calculated as follows:

$$UEGQ_{HP} = \text{Max} ( 0 , TIEQ_{HP} - CQ_{HP} )$$

where:

$UEGQ_{HP}$  means the UEGQ of the Holder in the half-hour period  $HP$ ;

$IEQ_{HP}$  means the **Injection Energy Quantity ("IEQ")** of the Holder in the half-hour period  $HP$  as determined in accordance with the Market Rules;

$TIEQ_{HP}$  means the **Term IEQ** of the Holder in the half-hour period  $HP$  which was the portion of  $IEQ_{HP}$  produced by the Holder using its term gas from the Vested GSA and other term gas supply. Such other term gas supply must be supplied to the Holder under a GSA that meets the following conditions ("**Qualified GSA**"):

- a. The GSA is not a Vested GSA;
- b. The Holder is party to the GSA as buyer and/or user of the gas to be supplied thereunder;
- c. The GSA has a contract duration of 1 year or longer;
- d. The GSA has a DCQ of 10 BBtud or more for the majority (i.e. at least 50%) of the month in which the TIEQ was produced; and
- e. The GSA was in contractual force to supply gas to the Holder for the majority (i.e. at least 50%) of the month in which the TIEQ was produced.

$WEQ_{HP}$  means the **Withdrawal Energy Quantity ("WEQ")** of the **Affiliate Retailer** in the half-hour period  $HP$  as determined in accordance with the Market Rules. The Affiliate Retailer refers to the licensed electricity retailer who is either wholly owned by the Holder or has the same parent company who wholly owns both the licensed electricity retailer and the Holder;

$AWEQ_{HP}$  means the **Adjusted WEQ** in the half-hour period  $HP$ , which is calculated as follows:

$$AWEQ_{HP} = \text{Max} ( 0 , WEQ_{HP} - ECQ_{HP} );$$

$ECQ_{HP}$  means the **Excluded Contracted Quantity** in the half-hour period  $HP$  defined as the sum of:

- a. the portion of  $WEQ_{HP}$  served by an Affiliate Genco. An Affiliate Genco refers to any Genco who is (i) not the Holder and (ii) either wholly owned by the Holder or has the same parent company who wholly owns both the Holder and such Genco;
- b. the portion of  $WEQ_{HP}$  which the Affiliate Retailer sold to its contestable consumers at wholesale electricity prices; and
- c. IEQ from generating units not owned and operated by the Holder, and such IEQ was generated using gas supplied by the Holder under a gas tolling arrangement using a Vested GSA(s) or Qualified GSA(s); and

$CQ_{HP}$  means the **Contracted Quantity** of the Holder in the half-hour period  $HP$  defined as the sum of  $AWEQ_{HP}$ , OEM load served by the Affiliate Retailer (which shall be determined in accordance with EMA's approved methodology), and all the contractual quantities (in MWh) that the Holder had firm contractual obligation to fulfil (either via physical generation or financially). Such contractual quantities include TVQ, BVQ and CFDs entered into by the Holder (such as electricity futures contracts and bilateral CFDs); exclude RVQ and quantities under any CFD entered into between the Holder and the Affiliate Retailer (since this will be accounted for in the form of  $WEQ_{HP}$ ).

### 5.1.2 PROCEDURE FOR CALCULATING RVQ

For each half-hour period ('HP') in the Vesting Period and in respect of each Holder participating in the RVS in the half-hour period, the Holder's RVQ (in MWh) in the half-hour period will be calculated as follows:

$$RVQ_{HP} = \text{Min} (UEGQ_{HP}, RNL_{HP} \times UEGQ_{HP} / \sum UEGQ_{HP})$$

where:

$RVQ_{HP}$  means the RVQ allocated to the Holder in the half-hour period  $HP$ , capped at each Holder's  $UEGQ_{HP}$ ;

$RNL_{HP}$  means the Residual NCC Load (i.e. the actual NCC load that was in excess of the sum of all the hedge quantities issued by the MSSSL under the BVS, TVS and any new scheme that EMA may from time-to-time introduce) in the half-hour period  $HP$ ;

$UEGQ_{HP}$  means the UEGQ of Holder in the half-hour period  $HP$ ; and

$\sum UEGQ_{HP}$  means the summation of the UEGQ of all Holders participating in the RVS in the half-hour period  $HP$ .

### 5.2 PROCEDURE FOR CALCULATING THE RESIDUAL VESTING PRICE ("RVP")

Same as the hedge price for BVQ (i.e. BVP), the hedge price for RVQ (i.e. RVP) will consist of a fuel cost and non-fuel cost components, collectively referred to as the LRMC. **Specifically for each BVQ Holder, two sets of RVP (referred to as “LRMC2” and “LRMC3”) will apply:**

1. Any BVQ allocated to each Holder for a given hedge quarter will be an equivalent quantity between the DCQ level and MDQ level under the Vested GSA entered into between the Holder and PESPL. EMA will fix the BVQ at least 3 months before the start of the hedge quarter, and the BVQ is subject to NCC Load Profiling (refer to Sections 2 and 3.1). The half-hourly BVQ allocated ex-ante to the BVQ Holder will accordingly be at the DCQ-equivalent quantity, or up to the maximum possible quantity at the MDQ-equivalent quantity (“MQ”), in MWh.
2. For each month ('M') and each half-hour period in the month during the Vesting Period:
  - a. Determine the amount of RVQ allocated to the BVQ Holder (in accordance with Section 5.1.2) up to an amount equal to the positive difference between MQ and BVQ corresponding to the BVQ Holder in the half-hour period (referred to as **Tranche 1 RVQ** or “**T1RVQ**”). The RVP for T1RVQ (referred to as **LRMC2**) will be the sum of:
    - i. the fuel cost component with the Hydrocarbon Charge calculated based on the actual gas price payable by the BVQ Holder to PESPL under the Vested GSA for the vested gas supply in the month 'M' (note: the gas price payable under the Vested GSA is based on the average of the Dated Brent prices in the preceding month 'M-1'); and include all the other non-hydrocarbon charge listed and as calculated in accordance with Section 3.2.1(b) to Section 3.2.1(e);
    - ii. the same non-fuel cost component as that for BVQ in the same period; and
    - iii. the same Carbon Price as that for BVQ in the same period.
  - b. Determine the amount of RVQ allocated to the BVQ Holder (in accordance with Section 5.1.2) that is over and above T1RVQ (if any and referred to as **Tranche 2 RVQ** or “**T2RVQ**”). The RVP for T2RVQ (referred to as **LRMC3**) will be the sum of:
    - i. the fuel cost component with the Hydrocarbon Charge calculated based on the BVQ Holder's **Qualified GSA** with the highest average term gas price for the month 'M' (refer to Section 5.1.1 for definition of Qualified GSA); and include, where applicable, the other non-hydrocarbon charge listed and as calculated in accordance with Section 3.2.1(b) to Section 3.2.1(e). Specifically, if the Hydrocarbon Charge is calculated based on a Qualified GSA supplying piped natural gas, the LNG Terminal Charge and cost of LUFG are not applicable in respect of the piped natural gas supply portion and accordingly will be excluded from LRMC3;
    - ii. the same non-fuel cost component as that for BVQ in the same period; and
    - iii. the same Carbon Price as that for BVQ in the same period.



As for each Holder without BVQ and who is required to participate in the RVS (e.g. Holders who hold only TVQ), the RVP of any RVQ allocated to such Holder (in accordance with Section 5.1.2) will be set at LRMC3. Specifically, for each month 'M' and each half-hour period in the month which the Holder is allocated RVQ under the RVS:

- c. Determine the amount of RVQ allocated to such Holder in accordance with Section 5.1.2. The RVP for such RVQ will be set at **LRMC3** which will consist of:
  - i. the fuel cost component with the Hydrocarbon Charge calculated based on such Holder's **Qualified GSA** with the highest average term gas price for the month 'M' (refer to Section 5.1.1 for definition of Qualified GSA); and include, where applicable, the other non-hydrocarbon charge listed and as calculated in accordance with Section 3.2.1(b) to Section 3.2.1(e). Specifically, if the Hydrocarbon Charge is calculated based on a Qualified GSA supplying piped natural gas, the LNG Terminal Charge and cost of LUG are not applicable and accordingly will be excluded from LRMC3;
  - ii. the same non-fuel cost component as that for BVQ in the same period; and
  - iii. the same Carbon Price as that for BVQ in the same period.

## 6. *Process Timeline*

---

Following the end of each month ('M') in the Vesting Period, for each and every half-hour period ('HP') in the month 'M' and in respect of each Holder participating in the RVS in the half-hour period:

1. The MSSL shall furnish to EMC, by no later than 75 calendar days after each trading day, the actual NCC load in the half-hour period 'HP' and other relevant data to EMC.
2. The Holder shall furnish to EMA, by no later than 5.00pm in the 15<sup>th</sup> business day of month 'M+1', its UEGQ (including full workings and supporting documents) in the half-hour period 'HP' for the month 'M'.
3. The Holder shall submit to EMA, by no later than 5.00pm in the 15<sup>th</sup> business day of month 'M+1', the average term gas price under a Qualified GSA of the Holder (including full workings and supporting documents) to be used for calculating the Hydrocarbon Charge in LRMC3 for the month 'M'.
4. EMA shall furnish to EMC, by no later than 5.00pm in the first business day after the 10<sup>th</sup> calendar day of the month 'M+2', the RVP (viz. LRMC2 and/or LRMC3, where applicable) to be used for financial settlement of RVQ allocated to the Holder in the month 'M'.
5. EMC will, by no later than the 10<sup>th</sup> business day after (a Trading Day + 77 calendar days) issue a Final Statement for daily settlement which would include the RVS settlement pertaining to that trading day. The Final Statement shall include the LRMC2 and/or LRMC3, where applicable, and the corresponding RVQs in a half-hourly format.
6. As more time is required for EMC's IT system to cater for the above settlement process, in the interim until the IT system is ready, additional time of minimally 31 calendar days (to the above timeline in Section 6.5) will be required to carry out the RVS settlement on a **monthly basis** due to the actualised NCC load required, and such settlement will be carried outside of the SWEM.

## **7. *Miscellaneous***

---

### **7.1 ADJUSTMENT FOR FORCE MAJEURE EVENTS**

Where a Vesting Contract Holder is affected by a Force Majeure Adjustment Event as defined in the Vesting Contract, the MSSL shall adjust the total BVQ and TVQ (where applicable) for the affected Vesting Contract Holder that would otherwise apply for the period during which the Force Majeure Adjustment Event is in effect on a pro rata basis by an amount that reflects the degree to which the Vesting Contract Holder is affected by the Force Majeure Adjustment Event.

### **7.2 CONSULTATIVE PROCESS**

EMA reserves its rights to modify the procedures and/or methods for determining the data for hedge prices and hedge quantities and/or the allocation of total Vesting Quantities at any time other than the relevant times stated, where it considers that special circumstances have arisen that, in its opinion, substantially invalidate the previous procedures and/or methods for determining the components of the Vesting Contract. In such circumstances, EMA shall consult all Holders at least 3 months in advance of the change taking effect, giving its reasons for deciding to make the change. EMA shall take into account the comments of the Vesting Contract holders and may take any other advice as it thinks fit in making its final decision. The decision of EMA shall be final.