

# **Market Surveillance & Compliance Panel Market Watch**

Issue 75

First Quarter (January to March 2025)

## Executive Summary

Energy prices in the National Electricity Market of Singapore (“NEMS”) declined on a quarter-on-quarter (“QoQ”) and year-on-year (“YoY”) comparison. The energy prices were muted in the context of a more robust supply cushion primarily due to higher supply and lower outage levels, as well as lower frequency of Demand Response (“DR”) activations and Temporary Price Cap (“TPC”) application.

Q1 2025 was characterised by lower and less volatile USEP, which was highlighted by the absence of TPC application compared to 96 periods in Q4 2024 and 100 periods in Q1 2024. In addition, fewer occurrences of high USEP were likely to have presented fewer opportunities for DR activation, which was evident in only one period of DR activation attributing to fewer DR energy bids and fewer periods of USEP clearing above the minimum DR energy bid price. Notably, there was one period of energy shortfall in Q1 2025, compared to none in Q4 2024 and one period in Q1 2024. The energy shortfall occurred on 17 February 2025 (Monday), amidst the backdrop of four Combined-Cycle Gas Turbine (“CCGT”) units on planned outage. Following a forced outage of a CCGT unit in Period 21, multiple periods of tight supply cushion, high USEP and contingency reserve shortfall were observed. The supply cushion in Period 33 at 0.34% was insufficient, in that the supply of 7,367MW was unable to fulfil both the demand of 7,343MW and transmission losses of 42MW, resulting in an energy shortfall.

The reserve and regulation prices decreased in tandem with the energy prices on QoQ and YoY comparisons, with the exception of primary reserve price increasing slightly from Q1 2024. This was not only reflective of the greater ancillary service capability brought on by a more robust supply cushion, but was also consistent with the movements in the ancillary service requirements and offers.

For primary reserve, on a QoQ basis, a greater proportion of lower-priced offers overshadowed the impact of a 0.54% increase in requirement outpacing a 0.32% increase in total offer quantity. In contrast, on a YoY basis, the requirement rose by 7.67% which was greater than a 6.59% growth in the offer quantity. As a result, the price cleared at \$1.79/MWh in Q1 2025, which was down from \$4.95/MWh in Q4 2024 but up from \$1.08/MWh in Q1 2024.

For contingency reserve, the price settled at \$4.89/MWh in Q1 2025, which was 73.15% lower QoQ and 75.31% lower YoY. On a QoQ basis, the requirement declined 0.52%, which was more than a 0.07% contraction in the offer quantity. On a YoY basis, the offer quantity swelled 18.54%, outstripping a 3.47% expansion in the requirement. The frequency of contingency reserve shortfall retreated to three periods in Q1 2025, from seven periods in Q4 2024 and 21 periods in Q1 2024.

Similar to contingency reserve, the regulation price dropped 45.27% QoQ and 55.73% YoY to \$11.86/MWh in Q1 2025. On both QoQ and YoY comparisons, the requirement was cut back by 3.10% and 4.29% while the offer quantity sank by 0.57% and 2.62% respectively. The frequency of regulation shortfall dwindled to zero in Q1 2025, from three periods in Q4 2024 and seven periods in Q1 2024.

**Table 1: Energy and Ancillary Services Prices by Quarter**

Quarter	Q1 2024	Q4 2024	Q1 2025
<b>Energy (\$/MWh)</b>			
<b>USEP</b>	159.49	141.67	105.84
<b>WEP</b>	159.57	141.62	106.01
<b>Ancillary Services (\$/MWh)</b>			
<b>Primary Reserve</b>	1.08	4.95	1.79
<b>Contingency Reserve</b>	19.76	18.25	4.89
<b>Regulation</b>	26.71	21.69	11.86

## Prices in Q1 2025

In Q1 2025, despite the fuel oil price increasing 4.93% QoQ and 4.39% YoY to \$471.87/MWh (Chart 2), the vesting contract price dropped 4.21% QoQ and 10.04% YoY to \$192.91/MWh (Chart 1), suggesting the lower contribution of other non-fuel components to the vesting contract price. In addition, the WEP declined 25.15% QoQ and 33.57% YoY to \$106.01/MWh (Chart 1), signifying the greater influence of other non-fuel factors on energy prices, such as market demand and supply conditions as well as the offer pricing of generators.

While the WEP continued to clear below the vesting contract price, the gap between the WEP and the vesting contract price widened to \$86.90/MWh in Q1 2025, which was the second widest differential since the introduction of the current five-year vesting regime<sup>1</sup> framework on 1 July 2023. This was compared to a variance of \$59.77/MWh in Q4 2024, and \$54.87/MWh in Q1 2024. Since Q3 2023, the widest spread between the WEP and the vesting contract price occurred in Q3 2024 with the WEP clearing \$94.42/MWh below the vesting contract price, while Q2 2024 marked the only occurrence of the WEP clearing above the vesting contract price.

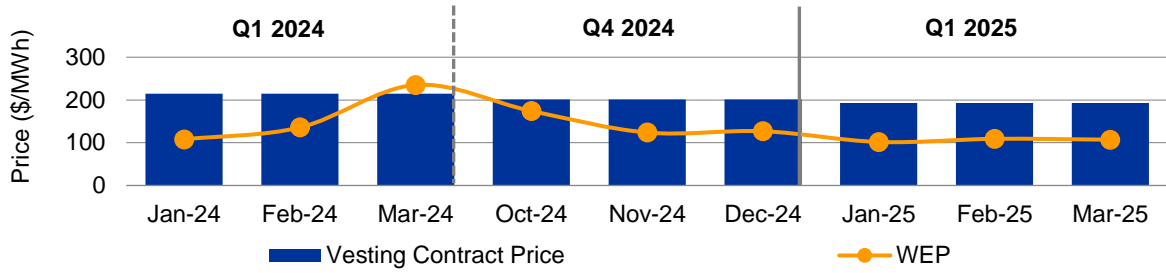
The correlation between the WEP and the metered energy quantity weakened with a lower  $r$  of 0.27 in Q1 2025, compared to 0.47 in Q4 2024 and 0.62 in Q1 2024 (Chart 3). Correspondingly, there were 16 out of 90 days in Q1 2025 when  $r$  was greater than 0.5, compared to 37 out of 92 days in Q4 2024 and 66 out of 91 days in Q1 2024. The weaker positive correlation in Q1 2025 was largely contributed by a significantly weaker positive correlation in both February and March, when there were merely one out of 28 days in February and five out of 31 days in March for which  $r$  was greater than 0.5.

Mirroring the 25.15% QoQ and 33.57% YoY decrease in the WEP, the distribution of the WEP weighted by hours (Chart 4) and by metered energy quantity (Chart 5) shifted towards the lower price ranges on both a QoQ and YoY basis. For both of the WEP distribution patterns, the frequency of WEP continued to peak in the range between \$100/MWh and \$150/MWh, accounting for 52.01% and 52.82% of the distribution weighted by hours and by metered energy quantity respectively. These proportions shrank by at least 15.00 percentage points on a QoQ comparison, but only grew by less than 3.00 percentage points on a YoY comparison.

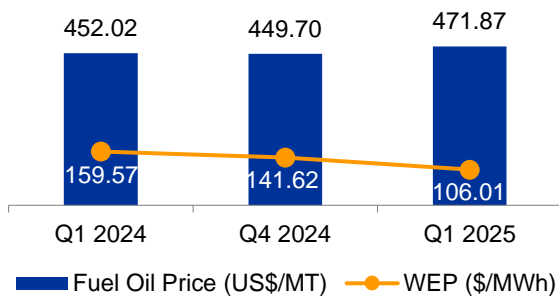
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<sup>1</sup> Vesting contracts were introduced by the Energy Market Authority ("EMA") with the objective of curbing the market power of generation companies and providing a cushion to consumers in the event of higher prices. More information are available on [EMA | Vesting Contracts](#).

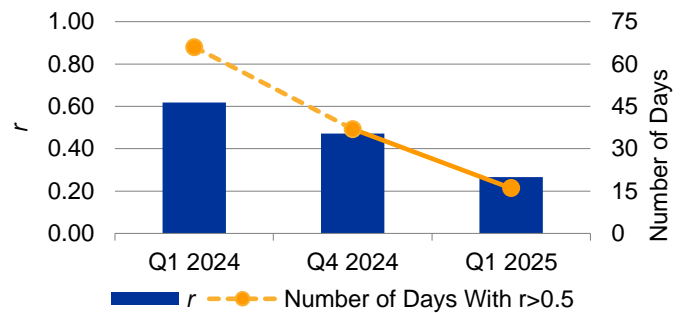
**Chart 1. Vesting Contract Price Versus WEP by Quarter**



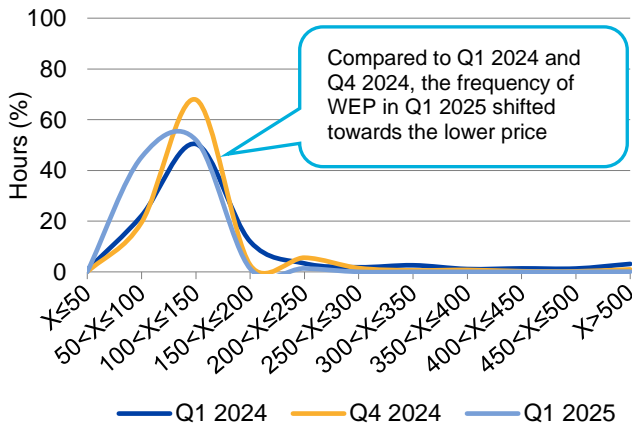
**Chart 2. WEP Versus Fuel Oil Price**



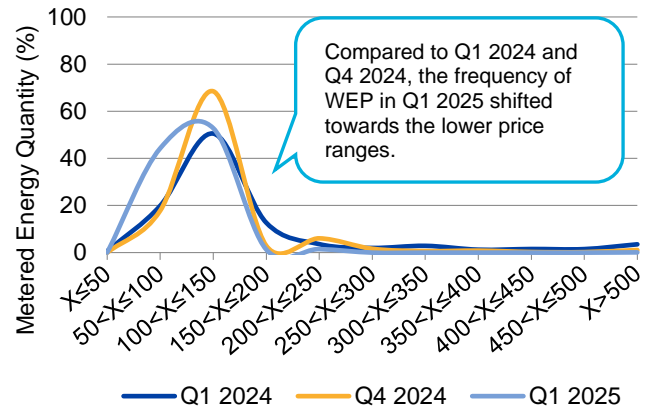
**Chart 3. Correlation Between WEP and Metered Energy Quantity**



**Chart 4. Distribution of WEP over Time**



**Chart 5. Distribution of WEP over Total Metered Energy Quantity**



## Demand and Supply in Q1 2025

In Q1 2025, the average forecast demand and actual demand weakened in tandem with the average temperature on a QoQ basis (Chart 6). Compared to Q4 2024, the average temperature decreased 0.57°C, while the average forecast demand and actual demand fell 2.36% and 1.14% to 6,307MW and 6,424MW respectively. Another factor consistent with the lower demand was the Singapore Purchasing Managers' Index (PMI), a key barometer of the Singapore manufacturing economy; the PMI registered at least 51.0 for two months in Q4 2024 but declined below 51.0 throughout Q1 2025. Consistent with the average QoQ trends, the peak forecast and actual demand alleviated by 3.16% and 2.33% to 7,343MW and 7,578MW respectively (Chart 7).

On the other hand, compared to Q1 2024 when the average temperature decreased 0.82°C, the average forecast and actual demand strengthened by 0.27% and 1.41% respectively. Alongside the higher demand, the quarterly average PMI was higher in Q1 2025 than in Q1 2024. At the same time, the peak forecast and actual demand increased 0.77% and 0.48% correspondingly.

In terms of the forecast demand and solar generation<sup>2</sup> profiles (Chart 8), the highest average forecast demand occurred in Period 39 in both Q1 2024 (at 6,804MW) and Q4 2024 (at 7,034MW), then shifted to Period 40 in Q1 2025 (at 6,901MW). The highest average solar generation forecast was recorded in Period 26 in Q1 2024 (at 528MW), and in Period 27 in both Q4 2024 (at 541MW) and Q1 2025 (at 580MW). This not only indicated a rightward shift of the highest average forecast demand amid an increasing contribution of solar generation forecast during the day, but was also consistent with the QoQ and YoY higher forecast demand.

Table 2 shows the total supply increasing off the back of lower outage levels, as well as a higher supply cushion, on both a QoQ and YoY basis. Compared to Q4 2024, the demand fell 2.36% while the supply expanded 1.92% to 7,513MW, thereby strengthening the supply cushion by 3.67 percentage points to 16.12%. On par with the fuel oil price rising by 4.93%, the proportion of energy offers priced below \$200/MWh shrank 1.83 percentage points to 90.10% in Q1 2025 (Chart 10). The more robust supply cushion outweighed the impact of a slightly smaller proportion of lower-priced energy offers, driving the USEP down by 25.29% to \$105.84/MWh (Chart 9). On a periodic level, the USEP crossed the \$1,000/MWh mark for 14 periods in Q4 2024, of which the USEP soared above \$4,000/MWh for 13 periods. In Q1 2025, the only instance of the USEP reaching above \$1,000/MWh occurred when an energy shortfall drove the USEP to the price cap of \$4,500/MWh.

The reduced frequency of TPC application and DR activations on a QoQ basis was also indicative of the less volatile USEP this quarter. Specifically, the number of periods with TPC application tumbled from 96 in Q4 2024 to zero in Q1 2025, while the number of DR activations plunged from 24 in Q4 2024 to one in Q1 2025 (Chart 11). The latter was observed alongside fewer occurrences of the USEP exceeding the minimum DR energy bid price (four periods in Q1 2025 versus 109 periods in Q4 2024) and fewer DR energy bids (17 bids in Q1 2025 versus 86 bids in Q4 2024). The spread between the average CUSEP and USEP (or RUSEP in the presence of TPC application)<sup>3</sup> narrowed from \$199.86/MWh in Q4 2024 to \$10.45/MWh in Q1 2025 (Chart 11), indicating that with each MW of consumption, consumers benefitted less from the lower estimated average cost savings for each MW of consumption.

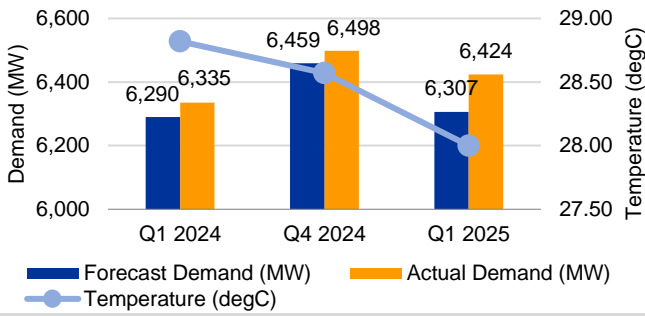
Compared to Q1 2024, the supply growth of 3.55% outpaced the demand growth of 0.27%, thus inflating the supply cushion by 2.71 percentage points. Against the fuel oil price increasing 4.39%, the energy offers became less concentrated in the lower and higher offer price ranges, i.e., below \$200/MWh and above \$3,000/MWh correspondingly. In line with the higher supply cushion, the USEP averaged 33.64% lower than the same quarter last year to \$105.84/MWh in Q1 2025. On a periodic level, the number of periods of USEP above \$1,000/MWh was down from nine periods in Q1 2024 to one period in Q1 2025.

Similar to the QoQ trends underlining the stabilising effect of the market conditions on the USEP, the frequency of TPC application and DR activations came down sharply on a YoY comparison, from 100 periods of TPC application and 144 DR activations in Q1 2024. The huge YoY drop in DR activations was registered in the context of both significantly higher number of DR energy bids (at 352) and number of periods in which the USEP surpassed the minimum DR energy bid price (at 352) in Q1 2024. The USEP reduction arising from DR, was also set back from \$85.27/MWh in Q1 2024 to \$10.45/MWh in Q1 2025.

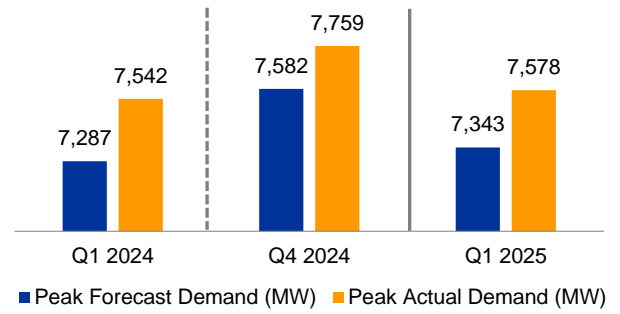
<sup>2</sup> Solar generation forecast has been made available since 21 February 2024, Period 39.

<sup>3</sup> During periods when the TPC is activated, USEP is capped at the TPC energy price cap when the RUSEP is above the TPC energy price cap, i.e. RUSEP is the price that would have cleared if no energy price cap was imposed as a result of the TPC mechanism. From 1 July 2023, when the TPC mechanism was introduced, the RUSEP is used as a comparison to CUSEP so as to reflect the true contribution of DR in lowering prices.

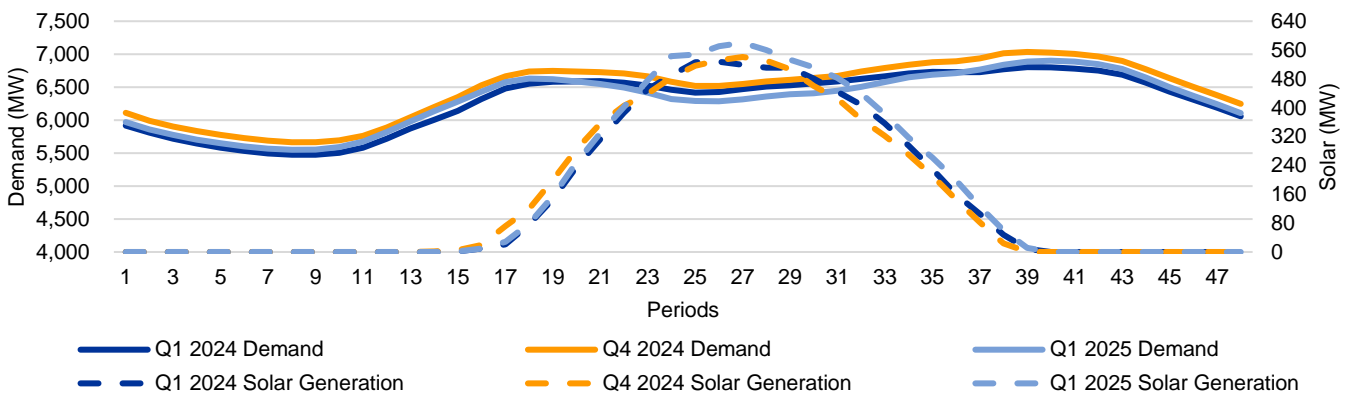
**Chart 6. Average Forecast and Actual Demand Versus Average Temperature**



**Chart 7. Peak Forecast and Actual Demand**



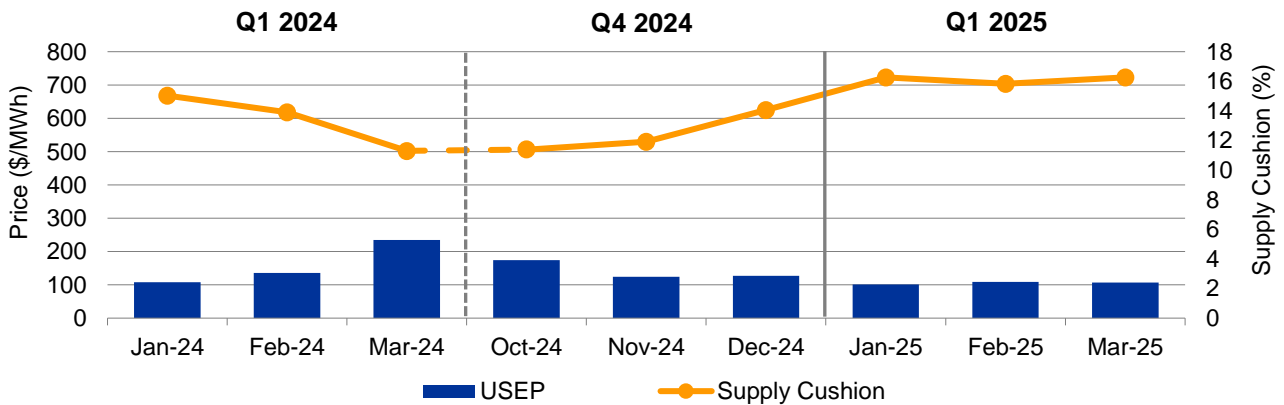
**Chart 8. Average Forecast Demand and Average Solar Generation Forecast Periodic Profiles**



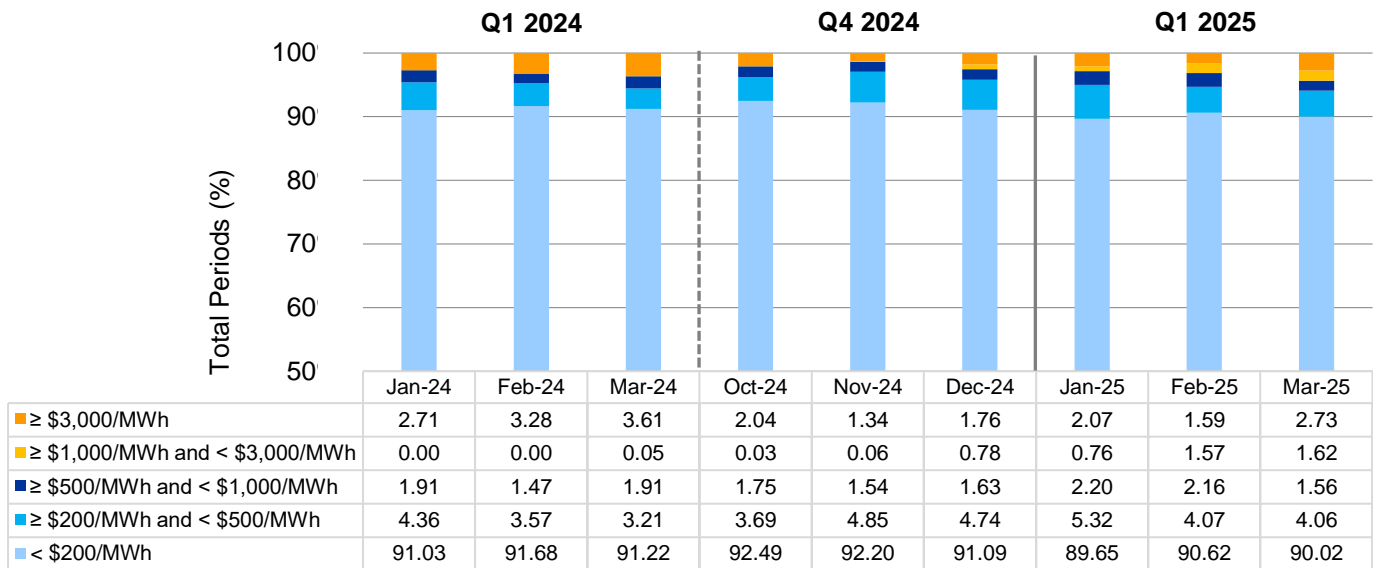
**Table 2. Total Outage, Quarterly Average Supply and Supply Cushion**

Quarter	Q1 2024	Q4 2024	Q1 2025
<b>Outage (MW)</b>			
Average Planned Outage	1335.07	1204.87	898.27
Average Forced Outage	21.00	14.30	7.18
<b>Supply (MW)</b>			
Average Supply	7,256	7,372	7,513
Supply Cushion (%)	13.41	12.45	16.12

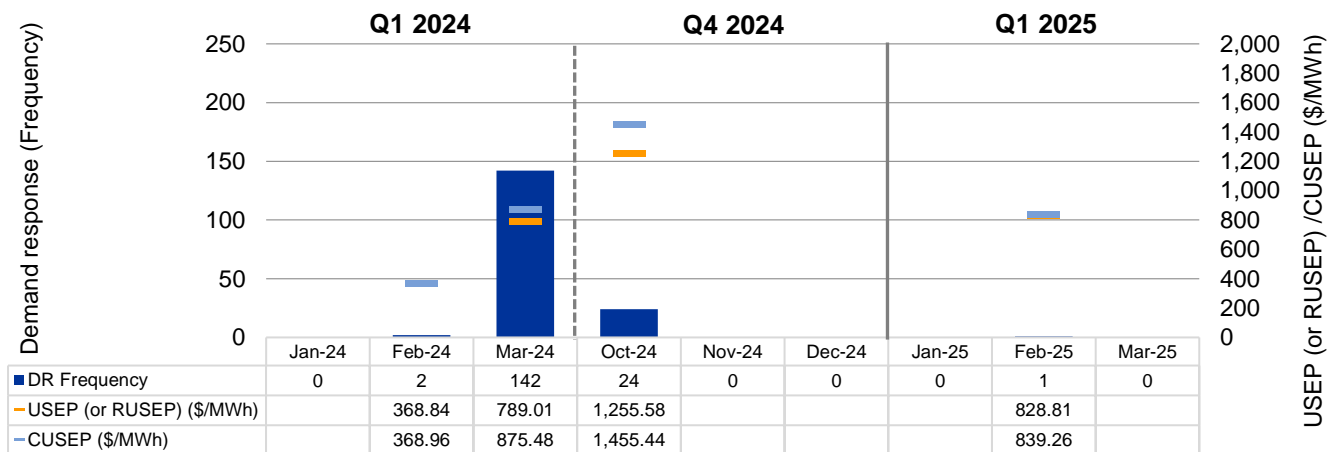
**Chart 9. USEP and Supply Cushion**



**Chart 10. Trend Of Energy Offer Price Proportion**



**Chart 11. Demand Response Activations<sup>4</sup>**

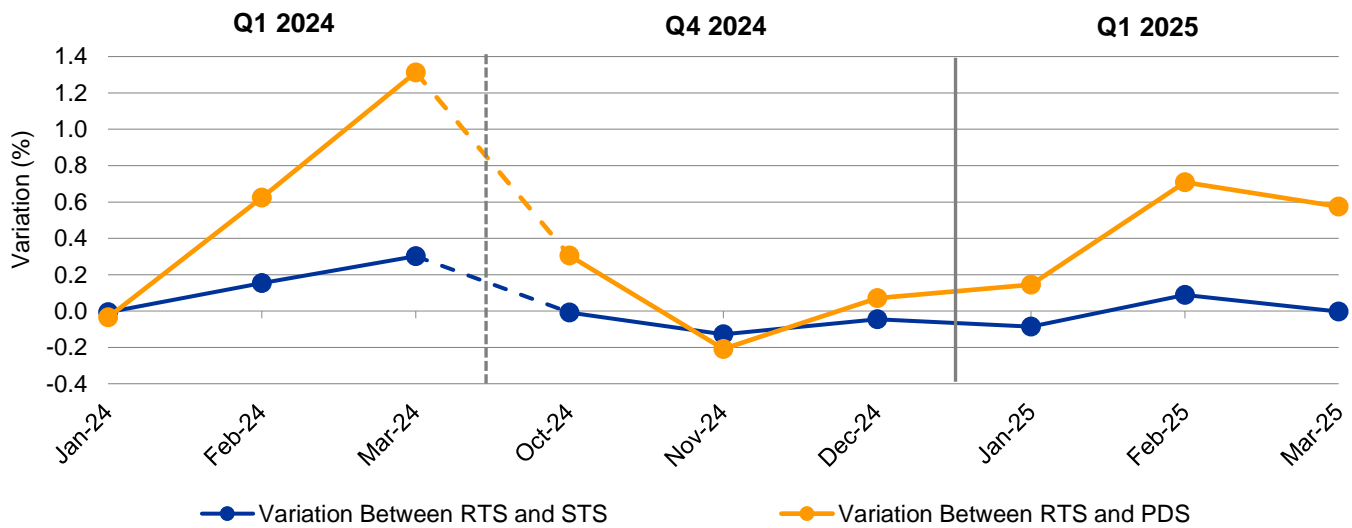


<sup>4</sup> The frequency of Demand Response (“DR”) activations and the associated average USEP (or reference USEP (“RUSEP”)) and counterfactual USEP (“CUSEP”) during those periods with DR activations, where the CUSEP (in \$/MWh) is calculated by the market clearing engine (MCE) with the assumption that there are no dispatchable energy bids.

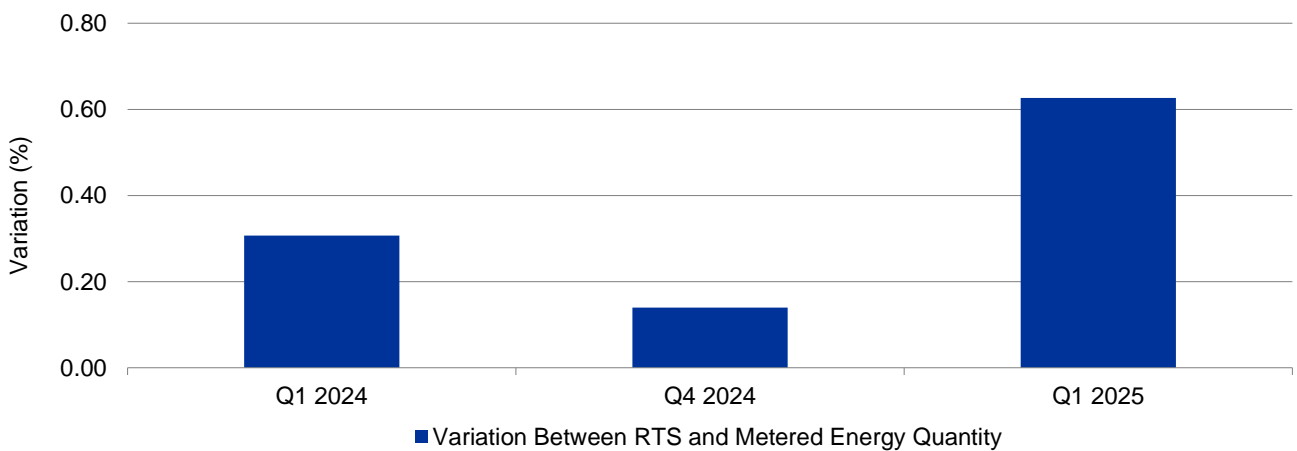
Chart 12 shows the load variations in the Pre-dispatch Schedule (“PDS”) and Short-term Schedule (“STS”) against the Real-time Schedule (“RTS”). Compared to Q4 2024, in absolute terms, the quarterly average load variation between the RTS and the STS remained at 0.06%. On a monthly level, the load was consistently over-forecasted in the STS in Q4 2024, therefore the load forecast in the RTS fell below the STS by a range of between -0.13% and -0.01%. In contrast, the load variation between the RTS and the STS was more stable and less skewed in Q1 2025, ranging between -0.09% and 0.09%. On the other hand, in absolute terms, the quarterly average load variation between the RTS and the PDS grew from 0.19% in Q4 2024 to 0.48% in Q1 2025. On a monthly level, the load variation between the RTS and the PDS ranged between -0.21% and 0.30% in Q4 2024. However, the load was consistently under-forecasted in the PDS in Q1 2025, resulting in the load forecast in the RTS climbing above the PDS by a range of between 0.14% and 0.71%.

Chart 13 shows the variation between the load forecast in the RTS and the metered energy quantity, in absolute terms. Q1 2025 registered a quarterly variation of 0.63%, up from 0.14% in Q4 2024 and 0.31% in Q1 2024. On a monthly level, the variation experienced greater fluctuation in Q1 2025 on a QoQ and YoY basis, ranging between 0.02% and 1.21% as opposed to a range between 0.06% and 0.24% in Q4 2024 and between 0.12% and 0.55% in Q1 2024.

**Chart 12. Monthly Average Variation Between Real-Time Dispatch Schedule and Forecast Load**



**Chart 13. Quarterly Average Variation<sup>5</sup> Between Real-Time Dispatch Schedule and Metered Energy Quantity**



<sup>5</sup> The metered energy quantity reflects the actual demand, while the load forecast in the RTS reflects the system demand including the station and auxiliary loads. This difference in methodology creates a variation between the RTS and the metered energy quantity, with the former being higher than the latter for the same trading period.

Compared to Q4 2024, the capacity ratios for CCGT, Other Turbines (“OT”), Steam Turbine (“ST”) and Energy Storage System (“ESS”) shrank but grew for Open-Cycle Gas Turbine (“OCGT”) and Electricity Imports (“IMPORT”) generation types (Chart 14). The combined reduction in capacity ratios for CCGT, OT, ST and ESS overshadowed the combined increase for OCGT and IMPORT, leading to an overall lower utilisation rate on par with a lower QoQ demand. The higher capacity ratio for OCGT in Q1 2025 was due to its scheduled generation output increasing more than its maximum generation capacity, following the registration of two new OCGT facilities of 341MW each. Compared to Q1 2024, the capacity ratios increased across all of the generation types, with the exception of a dip for ESS. This was consistent with a higher YoY demand commanding an overall higher utilisation rate from the generation facilities.

**Chart 14. Capacity Ratio by Generation Type<sup>6</sup>**

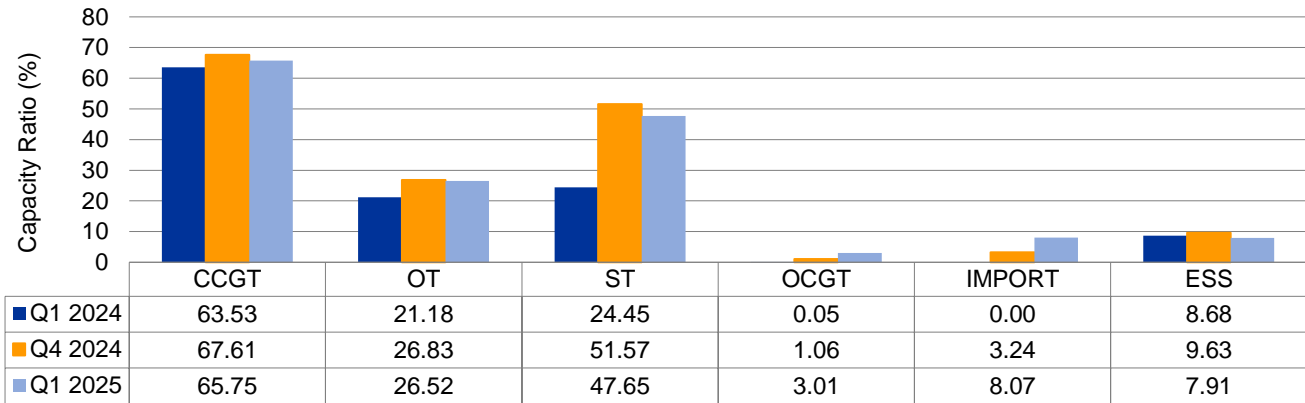
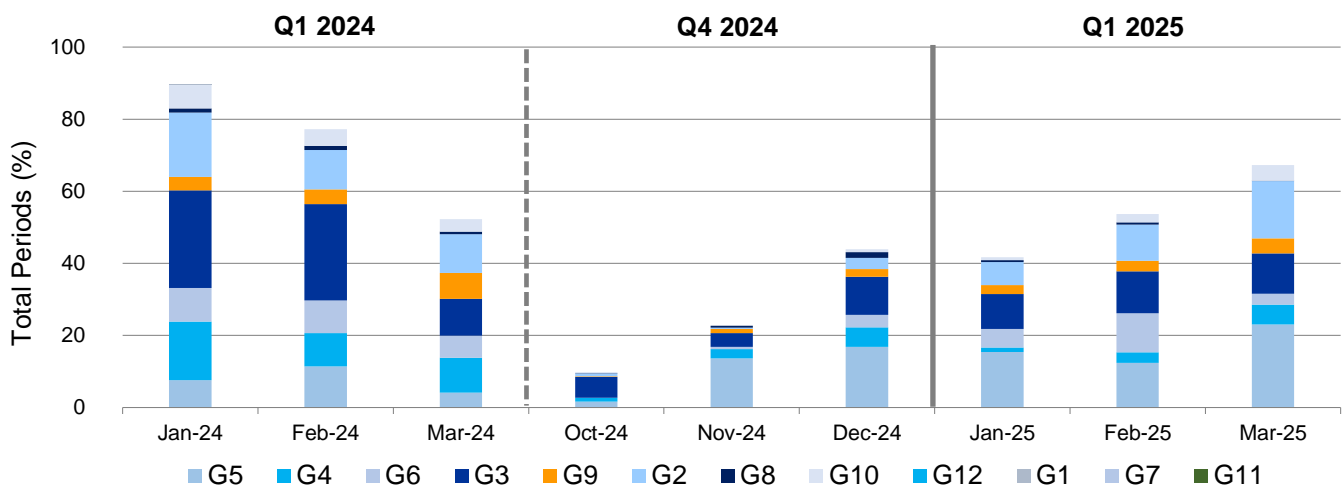


Chart 15 shows the monthly breakdown of price-setting generation companies. Compared to Q4 2024, G5 remained as the most frequent price setter for 31.58% of all periods with a price setter in Q1 2025, down from 41.79% of such periods in Q4 2024. It also set the price for 37.10% of such periods in January 2025, the peak monthly level of any generation company in Q1 2025. Compared to Q1 2024, G5 replaced G3 in the top spot which accounted for a lower proportion of 29.09% in Q1 2024. Overall, the three generation companies most frequently identified as price setters in Q1 2025 did so for 71.32% of all periods with a price setter, down from 80.12% of such periods in Q4 2024 but up from 63.38% of such periods in Q1 2024.

**Chart 15. Trend of Price Setting Generation Companies**



<sup>6</sup> The capacity ratio of a generation facility measures its scheduled generation output relative to its maximum generation capacity. The generation types are: Combined-Cycle Gas Turbine (“CCGT”), Other Turbines (“OT”), Steam Turbine (“ST”), Open-Cycle Gas Turbine (“OCGT”), Electricity Imports (“IMPORT”), and Energy Storage System (“ESS”).

## Market Concentration in Q1 2025

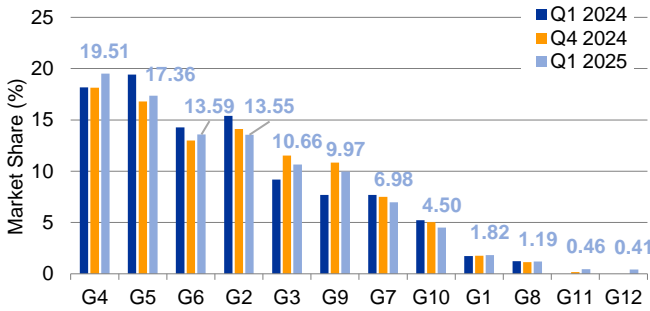
Based on metered energy quantity (Chart 16), G6 replaced G2 to join G4 and G5 in the top three positions by market share in Q1 2025. The three leading generation companies recorded a combined market share of 50.46% in Q1 2025, which was a 1.42 percentage points QoQ increase but was a 2.52 percentage points YoY decrease. On a QoQ comparison, the growth in market shares of the top three generation companies came from the decline in market shares of the next five generation companies by ranking. On a YoY comparison, the shifts in the market shares were mixed across the larger and smaller generation companies.

Based on maximum generation capacity (Chart 17), the identities of the top three largest generation companies were unchanged in all three quarters. The three largest generation companies made up 49.89% of the total generation capacity in the market in Q1 2025, down by 3.18 percentage points QoQ and 6.41 percentage points YoY. On both QoQ and YoY comparisons, the market shares were diluted across all of the generation companies, with the exception of G11 and G12 gaining market shares. This was attributed to the registration of one new facility of 50MW under G11 in December 2024, and the registration of two new facilities amounting to 682MW under G12 as a new generation company in February 2025.

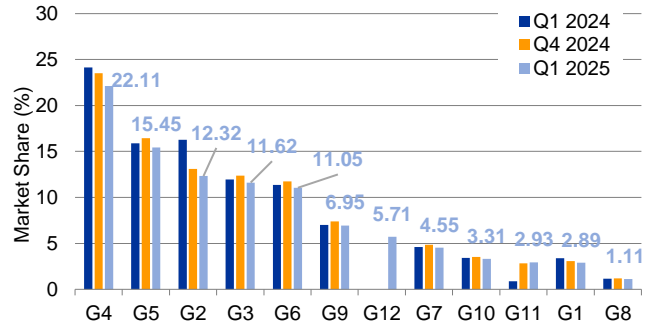
In terms of generation types on QoQ and YoY comparisons (Chart 18), the CCGT facilities continued to dominate the market share based on metered energy quantity, reflecting the CCGT facilities as the most efficient generation technology. Notably, the reduction in market share of CCGT came from its lower metered energy quantity in spite of its lower outage level, and was mainly picked up by OCGT and IMPORT which recorded higher metered energy quantity alongside an increased generation capacity. This increased generation capacity was due to the registration of two new OCGT facilities and one new IMPORT facility in Q1 2025. As a result, based on maximum generation capacity across the generation types, only the market shares of OCGT and IMPORT expanded while those of the rest of the generation types decreased (Chart 19).

Chart 20 shows the frequency of pivotal suppliers per trading period for each month. The number of periods with four or more pivotal suppliers totaled 1,131 in Q1 2025, down from 2,598 in Q4 2024 and 2,547 in Q1 2024. In particular, there were zero periods with seven pivotal suppliers and merely one period with eight or more pivotal suppliers in Q1 2025, as opposed to a combined total of 158 periods in Q4 2024 and 37 periods in Q1 2024. This was consistent with fewer periods of tighter supply cushion on a QoQ and YoY basis; among the periods of supply cushion below 15%, there were 1,834 periods in Q1 2025, which was a significant improvement from 3,063 periods in Q4 2024 and 2,841 periods in Q1 2024.

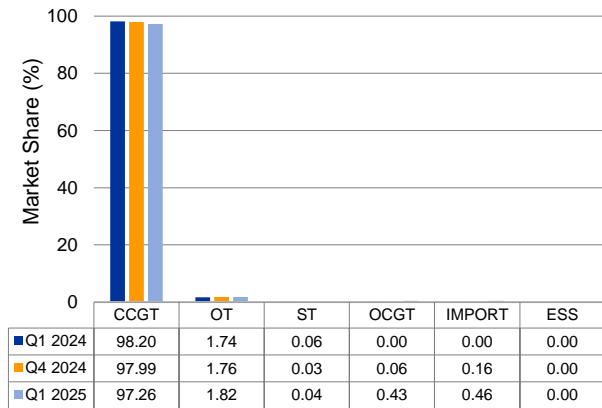
**Chart 16. Market Share of Generation Companies Based on Metered Energy Quantity<sup>7</sup>**



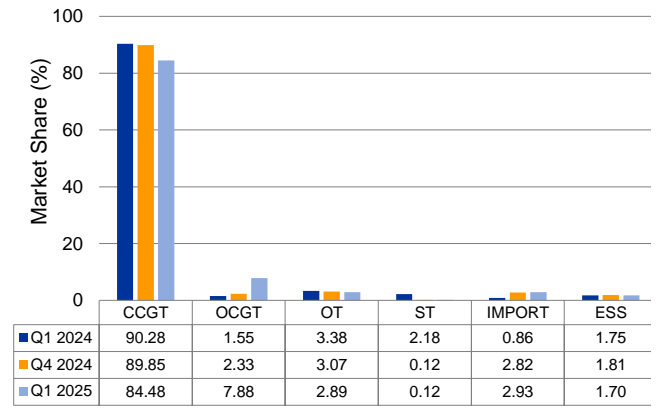
**Chart 17. Market Share of Generation Companies Based on Maximum Generation Capacity<sup>8</sup>**



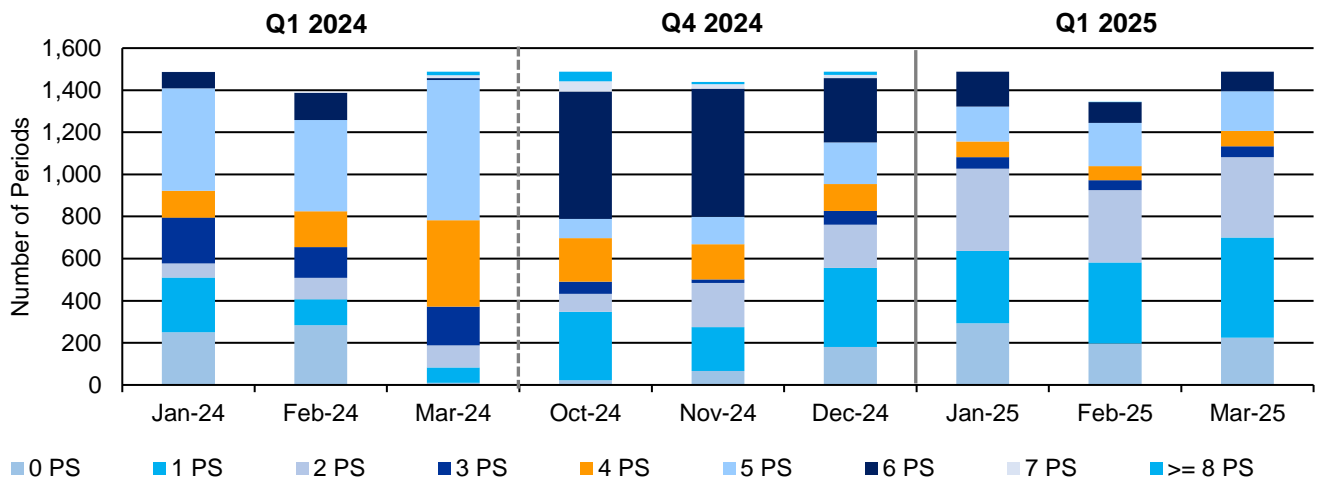
**Chart 18. Market Share by Generation Types Based on Metered Energy Quantity<sup>9</sup>**



**Chart 19. Market Share by Generation Types Based on Maximum Generation Capacity<sup>10</sup>**



**Chart 20. Frequency of Generation Companies as Pivotal Suppliers (PS) Per Period**



<sup>7</sup> Excludes intermittent generation facilities and Market Participants with net negative quarterly metered energy quantity.

<sup>8</sup> Excludes intermittent generation facilities and Market Participants with less than 10 MW maximum generation capacity. The actual capacities of the ESS facilities are used for the computation.

<sup>9</sup> Excludes intermittent generation facilities and technology type with net negative quarterly metered energy quantity.

<sup>10</sup> Excludes intermittent generation facilities and Market Participants with less than 10 MW maximum generation capacity. The actual capacities of the ESS facilities are used for the computation.

## Compliance Statistics for Q1 2025



**Potential Breaches of the Market Rules**



**Determinations\***



**Enforcement**

**118 cases in total**

**0** non-gate closure  
**118** gate closure

**143 determinations in total**

**2** cases determined to be in breach  
**6** cases determined to take no further action  
**135** cases determined not to be in breach

**1 determination in total**

**0** financial penalty  
**0** non-compliance letter  
**0** suspension order  
**0** termination order  
**0** other MSCP order  
**\$0** of financial penalty imposed  
**\$2,200** of costs awarded

\*This section includes determinations of cases referred to the MSCP in previous quarters.

The MSCP issued one rule breach determinations this quarter:

- i. 1 case from Keppel Seghers Tuas Waste-to-Energy Plant Pte. Ltd. regarding its [failure to comply with gate closure rules on 27 October 2024](#) (\$2,200 costs)

## MSCP Market Watch

The [MSCP Market Watch](#) is a quarterly report prepared by the Market Assessment Unit (“MAU”) of EMC and submitted to the MSCP. The report summarises the MAU’s day-to-day monitoring, evaluation activities and analyses, and compares the market performance for the current quarter with the quarter a year ago and the previous quarter.

All prices and percentages in this report are rounded off to two decimal places.

The [User Guide to MSCP Market Watch](#) provides a glossary of the terms used in the MSCP Market Watch among other information to facilitate readers’ understanding.

## Market Surveillance and Compliance Panel

The MSCP is established by the EMC Board in accordance with section 2.6 of Chapter 3 of the Singapore Electricity Market Rules.

The MSCP, with the assistance of the MAU, monitors and investigates the conduct of market participants, the market support services licensee, EMC and the Power System Operator and the structure and performance of the wholesale electricity markets.

The MSCP comprises the following members:

- Professor Walter Woon, Chairman
- Philip Chua
- Professor Euston Quah
- Dr Stanley Lai
- Yeo Yek Seng

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