Annex 1

RESPONSE TO INDUSTRY COMMENT ON CONSULTATION PAPER DATED 15 JUN 16

Technical Parameters

<table>
<tr><th>S/No.</th><th>Parameters</th><th>Industry's Comment</th><th>PB's Response</th></tr>
<tr><td>1.</td><td>Performance Parameters
Heat rate and capacity degradation</td><td>PacificLight Power ("PLP"):

We would request details of the annual heat rate and capacity degradation assumptions.</td><td>The annual heat rate and capacity degradation data is provided in the table below:

<table>
<tr><th>Year</th><th>Power Degr</th><th>HR Degr</th><th>Discount factor</th></tr>
<tr><td>1</td><td>2.47%</td><td>1.51%</td><td>1.0000</td></tr>
<tr><td>2</td><td>3.00%</td><td>1.85%</td><td>0.9332</td></tr>
<tr><td>3</td><td>3.09%</td><td>1.91%</td><td>0.8709</td></tr>
<tr><td>4</td><td>3.15%</td><td>1.96%</td><td>0.8128</td></tr>
<tr><td>5</td><td>3.20%</td><td>1.99%</td><td>0.7585</td></tr>
<tr><td>6</td><td>3.24%</td><td>2.01%</td><td>0.7079</td></tr>
<tr><td>7</td><td>2.78%</td><td>1.71%</td><td>0.6606</td></tr>
<tr><td>8</td><td>3.05%</td><td>1.88%</td><td>0.6165</td></tr>
<tr><td>9</td><td>3.12%</td><td>1.94%</td><td>0.5753</td></tr>
<tr><td>10</td><td>3.17%</td><td>1.97%</td><td>0.5369</td></tr>
<tr><td>11</td><td>3.21%</td><td>2.00%</td><td>0.5011</td></tr>
<tr><td>12</td><td>3.17%</td><td>1.97%</td><td>0.4676</td></tr>
<tr><td>13</td><td>2.92%</td><td>1.80%</td><td>0.4364</td></tr>
<tr><td>14</td><td>3.08%</td><td>1.91%</td><td>0.4073</td></tr>
<tr><td>15</td><td>3.14%</td><td>1.95%</td><td>0.3801</td></tr>
<tr><td>16</td><td>3.19%</td><td>1.98%</td><td>0.3547</td></tr>
<tr><td>17</td><td>3.22%</td><td>2.00%</td><td>0.3310</td></tr>
<tr><td>18</td><td>3.14%</td><td>1.94%</td><td>0.3089</td></tr>
<tr><td>19</td><td>3.03%</td><td>1.87%</td><td>0.2883</td></tr>
<tr><td>20</td><td>3.11%</td><td>1.93%</td><td>0.2690</td></tr>
<tr><td>21</td><td>3.16%</td><td>1.96%</td><td>0.2511</td></tr>
<tr><td>22</td><td>3.20%</td><td>1.99%</td><td>0.2343</td></tr>
<tr><td>23</td><td>3.23%</td><td>2.01%</td><td>0.2187</td></tr>
<tr><td>24</td><td>3.25%</td><td>2.02%</td><td>0.2041</td></tr>
<tr><td>25</td><td>3.35%</td><td>2.08%</td><td>0.1904</td></tr>
</table>
</td></tr>
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S/No.	Parameters	Industry's Comment	PB's Response
2.	**Capital cost** Method of assessment	**PLP:** We understand that in calculating the estimated capital cost for major equipment that OEMs were consulted for pricing estimates. We would request confirmation on which OEM's were approached. We note in the report that, based on feedback from OEMs, that pricing data from the GT Handbook is considered to be higher than current market prices. We would seek clarification as to whether the data from the GT Handbook has been taken into consideration when calculating the capex costs for LRMC as the report is unclear. We would advocate the continued use of the GT Handbook as a relevant data source that is transparent and credible.	The four GT OEMs viz. Ansaldo Energia, GE Power & Water, Mitsubishi Hitachi Power System and Siemens Energy were approached. The pricing data from the GTW Handbook is utilised only as a counter check because it is not geographically specific and not directly relevant for Singapore. Market soundings and information from other projects are considered more relevant and up-to-date information.
3.	**Capital cost** Initial Plant Capital Cost	**PLP:** Table 3-3 summarizes the modification made to the initial plant capital cost to reflect local conditions. For clarity, we would request confirmation on the pricing impact of these modifications. **Keppel Merlimau Cogen ("Keppel"):** It is difficult to understand the rationale for reducing the estimated engineering and plant startup cost from S$21.858 million to S$16.404 million (representing a decrease of 25%), especially when there has been a slight increase in the MAS core inflation index. Please review if such cost should be higher.	An average factor of approximately 95% was applied to the raw PEACE cost output (items 1 to 9 in Table 3-3) to align with market sounding feedback from OEMs and recent CCGT projects in the region. The 'engineering & plant startup' cost is an output from PEACE software. The EPC contractors' engineering and commissioning team are typically based offshore and not affected by MAS core inflation index. PB has assessed that the 'engineering & plant startup' cost of S$16.404 million is reasonable.

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		Senoko Energy ("Senoko"): The estimated cost of the gas compression system has decreased compared with previous reviews. What is the fundamental reason for this change? What are the quality and stages/number of filters used in the cost estimate as the value appears to be low compared to the costs incurred by Senoko?	The gas compression system capital cost is an output from the PEACE software. PB has assessed the gas compression system capital cost is comparable to its in-house data and reasonable. The cost estimate for air filters have taken into account the actual cost information provided by Senoko in the most recent mid-term review of the vesting contract capital cost parameters for 2016 and escalated by MAS core inflation index.
4.	**Capital cost** Through-life capital costs	**Senoko:** The estimated cost of the DCS on a USD basis has decreased compared to the previous reviews. What is the fundamental reason for this change? The list of capex items for replacement appears incomplete and should include: constant voltage constant frequency equipment, trapped vortex combustor, heat shields, burners, compressor blades, generator rotor rewind, stator rewind, ST nozzle block, and ST LP last stage blades. In addition, microprocessor-based system obsolescence should be catered for in systems such as: vibration monitoring, fire protection, water treatment control, chemistry analysers, digital	The estimated DCS cost is obtained from PB in-house database. PB has assessed that the cost of the DCS is reasonable. PB confirms that the list of capex items for replacement is included in the fixed maintenance and other operations cost and LTSA component under variable non-fuel cost.

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		relays, CEMS, and UPS/batteries.	
5.	**Capital Cost** Land and site preparation cost	**PLP:** We do not believe that the Vesting review should continue to use Tuas View as the reference site in the calculation of the LRMC. In EMA's 26 October 2015 consultation paper on Preparing for Future Power Generation Investments in Singapore, it was stated that prospective investors should approach the EMA for greenfield sites, as opposed to the existing practice of approaching JTC directly. Furthermore, the EMA indicated in their information report titled "Information Paper on Developments in the Singapore Electrical Transmission Network" that "we are keen to have new plants located outside of Jurong Island, and have set aside land for this purpose in Lorong Halus". Given this clear indication from the EMA of the location of the next greenfield power plant we would propose that the land price assumption should be amended to Lorong Halus. **Senoko:** EMA's Consultation Paper dated 26 October 2015 "Preparing for Future Power Generation Investments in Singapore" provides guidance on the future generation mix which is relevant to assessing the cost characteristics of the new entrant generator. The Consultation Paper indicated that a Final Determination Paper would be issued in Q2 2016.	The Tuas View location is relevant for the purpose of this review as other alternative sites will not be ready by 2017/2018.

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		Future Power Generation Investments Consultation Paper notes that EMA has safeguarded land for the development of new power plants to meet Singapore's future energy needs. We consider that this is likely to be relevant for the modelling of the Land and Site Preparation Costs in the LRMC calculation.	
6.	**Capital cost** Owner's costs after Financial Close	**Senoko:** Based on the experience of one of our shareholders that has multiple F-class facilities with various OEMs, the initial spares cost appears to be an underestimate. Their estimate is 10MSGD per unit for operational spares and 5MSGD per unit for strategic spares (combining long lead time critical spares and insurance/risk spares).	PB has assessed that the total Owner's cost after Financial Close is considered sufficient to cover the initial spares and strategic spares.
7.	**Operating cost** O&M manning and head office services cost	**PLP:** Operation and maintenance manning costs and Head Office support costs have been increased from the 2015/16 Vesting price assumption based on an escalation of <0.4%. This updated figure is not consistent with actual increases in Singapore manpower costs that have taken place since the previous Vesting Review. Based on a Survey from the Annual Wage Changes, Manpower Research and Statistics Department of the MOM the wage change in the manufacturing industry has increased by 4.9% in 2014 and 3.1% in 2015. In addition, the Singapore	The manufacturing industry comprises several clusters e.g., biomedical, electronics, chemicals, precision, etc. As there is no specific 'power' cluster, the remuneration from the 'chemical' cluster was used as a benchmark for the computation of the manpower cost. PLP may wish to submit its actual as well as any committed increase in O&M manning and head office services cost to EMA for consideration.

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		government even announced on 13 April 2016 the increase of starting salary of engineers in the Public Service by an average of 20%, thus making the proposed manpower cost understated. We would therefore propose that the consultant review their manpower costs to reflect current market conditions.	
8.	**Operating cost** Property tax	**PLP:** Based on our experience in operating a power plant operating in Singapore we believe that the valuation used for the calculation of the property tax is too low. We would request that the EMA use data from actual plants to benchmark against. Further data on PLP's valuation has been provided in a separate appendix for EMA's reference.	The computation of the property tax for this review is consistent with the IRAS e-Tax Guide and based on the current land, infrastructure and capital costs. PLP's valuation is based on cost at the point of construction of PLP's plant, and does not reflect the current land, infrastructure and capital cost.
9.	**Operating cost** Working capital costs	**Sembcorp Cogen ("SembCogen"):** Although EMA has reduced the requirement to maintain fuel reserves to cover at least 60 days of a gencos' normal operation, the existing gencos in Singapore still hold fuel stocks for 90 days' normal operation as a holdover from the previous policy. This because these gencos have long term contracts with their fuel suppliers and it is difficult even for the suppliers to get rid of the fuel stocks at this time given low oil price. Hence the existing gencos are still likely to be incurring costs for maintaining 90 days' emergency fuel supplies even though EMA has revised the policy to 60 days. In addition, the existing gencos would have purchased the emergency fuel reserves at a much	The theoretical new entrant is expected to maintain fuel reserves to cover only 60 days of normal operation at current market fuel prices. Accordingly, the 3-month average (up to the Base month of May 2016) of the gasoil 10ppm price is used to estimate the relevant cost for the theoretical new entrant. The actual cost of existing generation companies' fuel reserves is not relevant.

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		higher cost than is stated in the paper. Hence, the working capital costs for each of the existing gencos is likely to be higher than stated in the paper. Hence to be fair to the existing gencos in Singapore, we would like to appeal that a grace period be applied to the application of the reduction of the emergency fuel supply to 60 days, perhaps in the next LRCM review cycle. We would also like to appeal for the cost of the emergency fuel to be calculated as the average of fuel costs over a longer span of time, perhaps over the last 24 months. This will be more representative of fuel costs, given that oil prices have dropped drastically in the last six months. The emergency fuel reserves are bought and likely to be stored over a long period of time (since they are only for emergency purposes). Hence, it is reasonable for the cost of the fuel to be calculated from the average over a much longer time period than three months as applied in the paper. **Tuas Power Generation ("Tuas"):** Fuel reserves (60-90 days fuel) are required to be purchased and maintained on or before the commercial operation of the generating units. Subsequent usage of these fuel reserves are for testing, maintenance works and the quantities are usually small, i.e. 1% of annual fuel usage (~3.65 days) as in section 4.1.6. As such, the working capital for fuel reserves are typically the holding cost	

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		of the fuel, which are risks the Gencos have to take on as the market condition fluctuates. Oil prices have fallen significantly from US$120/barrel in 2014 to US$50/barrel in 2016. This means that the current diesel purchase price is much lower than the diesel purchased previously and the cost of a new batch of fuel reserve purchased in 2016 will be much lower than the diesel inventory currently stored on site in the Gencos' storage tanks. As such, it is proposed for the fuel reserve cost to be the average book value of the diesel inventory of the 6 vesting contract holders instead of using the average gasoil (10ppm) price from January to March 2016/ March to May 2016.	
10.	**Operating cost** Variable non-fuel cost	**PLP:** Table 4-3 identifies balance of plant, chemicals and consumables as among the variable non-fuel cost parameter. While other parameters in the table specify the source or basis of the data, for the BOP, chemicals and consumables the source of data is not stated, except that it is escalated by the MAS core index. We would request clarification as to the basis and data source for these parameters.	The balance of plant, chemicals and consumables is based on the costs used in the previous review and escalated using MAS core inflation index. It includes chemicals for water treatment, waste water treatment, boiler feed water conditioning, cooling water dosing, oil and lubricants.
11.	**Other Parameters** Economic life	**Keppel:** PB's calculated economic life is 69 years, which it has acknowledged to be not technically or commercially viable. However, there is also no	The consistent methodology for determining economic life of a new entrant CCGT (assumed to operate from 2017 in the current

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		precedent to justify PB's recommendation to apply the lower value of the technical life of the plant as the economic life of the plant. Since the current methodology is unable to provide a reasonable figure, the calculated economic life of 24 years from the previous review should be used instead. **Senoko:** We are concerned that the economic life of the reference new entrant generation unit is proposed to increase to 25 years when it was 24 years in the 2015-16 review and 22 years in the 2013-14 review. As highlighted in the draft WSP/PB Report there are significant methodological issues with the computation of economic life, which may be resulting in arbitrary increases in this parameter. We note that the current market supply cushion was reasonably forecastable at the time of the previous review, so this factor is not grounds for extending the economic life. In addition, Future Power Generation Investments Consultation Paper indicates that approximately 50% of Singapore's future generation will be sourced from a combination of advanced CCGTs, electricity imports and solar. This strongly suggests that the economic life of the existing CCGT technology should be decreasing rather than increasing. **YTL PowerSeraya :** The economic lifetime of a plant is capped by the	review) is to base on the historical trend in the improvement in the net heat rate and real capex reduction of CCGTs, and compare against the SRMC of the new entrant CCGT. The theoretical economic life of the new entrant CCGT is when it would become more economical for the owner to shut down or replace it in future, specifically when the LRMC of a newer and more efficient CCGT entering the market to provide local base-load generation capacity is lower than the SRMC of the initial new entrant CCGT. On whether to compare LRMC (of the newer and more efficient CCGT in future) with either SRMC or avoidable cost of the initial new entrant CCGT, it should be noted that any CCGT owner should be able to reasonably forecast and plan in advance before shutting down the plant and make operational decisions not to continue incurring fixed costs that can be avoided in the event of a shutdown (e.g. cease renewal of non-critical contracts/equipment). Hence, the investor is expected to base on SRMC (rather than the avoidable cost) when deciding whether to continue operating the existing plant or build a new plant in future. While there could be additional supply in future from electricity import and renewable sources, investors would invest in new base-load CCGT capacity only if they expect wholesale energy prices to on average cover at least the LRMC

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		technical lifetime but can be shorter than the technical lifetime. If the owner forecasts that after a certain time that the plant will not be profitable for the remaining technical lifetime and can reduce losses by shutting down the plant instead of continuing with operations, then it would do so. The owner may also shut down a plant earlier than the end of technical lifetime not because of unprofitability but because building and operating a new plant would reduce costs, that is the old plant has become technically obsolete. The cost comparison would be between the LRMC of the new plant and the avoidable costs for the old plant, not SRMC. The use of SRMC instead of avoidable costs for the 2015-2016 review is wrong. Avoidable costs includes not just SRMC but also other costs that can be avoided such as fixed running costs. The new plant also does not have to be an F-class plant. The Vesting Contract Price is determined based on the costs of a theoretical F-class plant but this does not mean that the comparison of the avoidable costs of that theoretical F-class plant has to be with the estimated LRMC of another newer F-class plant in the future for the purposes of estimating when technical obsolescence occurs. Technical obsolescence versus other non F-class plants could take place at an earlier date with such non F-class plants replacing the F-class plants to reduce costs. The consultant should also look at estimating technical obsolescence versus other non F-class plants and possibly other generating	of the new CCGT. It is therefore reasonable to determine the theoretical economic life of the initial new entrant CCGT based on the expected LRMC of a new and more efficient base-load CCGT capacity in future. It is uncertain whether investors would continue to adopt the F-class in Singapore or switch to more advanced (e.g. H-class) CCGTs in future, as the latter have significantly larger unit size which results in higher reserve cost allocation in the wholesale market. In any case, the derived theoretical economic life of the initial new entrant CCGT, whether F-class or more advanced CCGT, is significantly longer than the typical technical life of 25 years for CCGTs in Singapore and the region. Based on the above considerations, PB has assessed that it is reasonable to set the economic life of the new entrant CCGT for the current review at 25 years.

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		technologies, not just thermal plants. In the future, renewable energy paired with energy storage could possibly displace thermal plants. In determining the LRMC used for estimating technical obsolescence, a longer term projection of fuel costs should be used instead of Vesting fuel costs which is for too short a timeframe. Concerns about fuel procurement with take or pay risks also result in expectations that Economic Lifetime would be less than expected technical lifetime. Longer term fuel procurement is used to underpin operations as it is expected to result in lower fuel prices on average than relying on spot or short-term supplies, but it comes with take or pay requirements. Towards the end of the expected technical lifetime, there would be concerns about plant availability and therefore being able to meet take or pay requirements, so such longer term fuel procurement for reasons of prudency would end before the end of expected technical lifetime. Whether the plant would continue to operate after that through spot or short-term supplies is uncertain, so investors would match their investment horizon and expected Economic Lifetime to the end of such longer term fuel procurement. In Singapore, procurement of gas for CCPs has been for less than 25 years, closer to 20 years. The technical obsolescence method to estimate Economic Lifetime has been shown in this review to be subject to a lot of volatility. Consideration should be given to setting the Economic Lifetime at a	

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		constant 20 years as was the case for the 2009-2010 review and before. Note that KPMG which is advising EMA on the financial parameters did a bank sounding on cost of debt based on 15-20 years which is indicative of the expected Economic Lifetime.	
12.	**Other Parameters** Average Expected Utilization Factor	**Tuas:** As stated in the draft report, the average historic capacity factor of the existing F-class plant for the previous 12 months leading up to the base month (March-16) is 60.2%. However, this has not taken into consideration the potential reduction in electricity sales due to expansion in embedded generation and the government facilitated adoption of solar power which is targeted to hit 350MWp by 2020, i.e. more than 200MWp solar power (based on linear interpolation) and 178MW of embedded generation from ExxonMobil and SRC are to be expected to be in operation by 2018. The actual demand growth is also expected to be lower than forecasted demand growth of 2.36%[1] given that the Q1 GDP in Singapore is at 1.8%. Given the market situation, it is unlikely that the load factor of 60.2% will be maintained for the period of 2017-2018. In addition, the load factor provided in the draft report has also not taken into consideration the full impact of Tuaspring's 395.7MW entry into the market in March 2016 and this will further reduce the load factor of the existing units.	EMA has updated the plant load factor to 58.5% which takes into account the actual performance of existing F-class CCGTs in operation (including Tuaspring's CCGT) over the period Jun 2015 to May 2016, and the additional supply from embedded generation that are expected to come into operation in 2017 and 2018. The generation output from solar in 2017-2018 is expected to remain immaterial for the purpose of determining the plant load factor.

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		Considering the above factors, it is proposed to reduce the utilization factor from 60.2% to 58%. [1] https://www.ema.gov.sg/Budget_and_Fees.aspx# **SembCogen:** The paper states that the plant load factor is determined from the historical capacity factor for the last 12 months as provided by EMA. We observe that solar and embedded generation planting is increasing and is likely to increase at a faster rate in the coming years. This will displace the demand from a thermal CCGT plant. It is hence important to factor this in as well. As such, simply taking a historical view of the capacity factor would yield a plant load factor that is too high. We would like to propose that the number be adjusted by taking into account the expected solar and embedded generation planting for the time period in question.	

Financial Parameters

S/No.	Parameters	Industry's Comment	KPMG's Response
1.	**Market Risk Premium**	**SembCogen:** Our view is that the selection of the comparator companies to compute the market risk premium are not the most appropriate for Singapore's market because the financial health and credit ratings of the existing gencos in Singapore are expected to deteriorate, given the difficult market conditions. With the current market conditions, we can expect some gencos to rate B or even junk bond status. With these difficult market conditions, we can expect a much higher market risk premium to be imposed on companies who intend to plant in Singapore.	It is important to clarify that comparator companies have not been used to compute market risk premium. Instead, market risk premium has been determined through the use of various benchmarks as outlined in 2.10 of our Draft Report. The market risk premium is the additional risk over the risk free rate faced by equity investors when investing in the market portfolio. The sector-specific risk of equity (relative to the market risk premium) is reflected by the equity beta component of the Capital Asset Pricing Model used to determine the cost of equity. Please refer to S/No. 2 for our response on equity beta.
2.	**Equity Beta**	**PLP:** While the screening criteria for the selection of the comparator companies selects companies that are as relevant as possible, not one of them fully reflects a new entrant merchant power plant. Key differences include being a vertically integrated company, having long term contracts of more than 20 years or operating a portfolio of power stations. All the above reduces risks and hence the beta for these companies should be lower than a new entrant merchant plant who operates at a higher risk compared to these comparator companies. The beta of the comparator companies in 2014 was	A commonly used approach in regulatory determinations has been adopted by estimating the equity beta through the use of comparator companies. The comparator companies have been selected based on the five assessment criteria. These criteria have been selected to reflect the market structure and risk profile faced by a theoretical new entrant in Singapore. However, it is noted that it is difficult and highly unlikely for a comparator company to fully reflect the risk and market conditions that a new generation entrant would be exposed to. Given the

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		calculated as 0.71 with an equity beta used for the LRMC calculation of 1.0, which indeed recognised that the comparator companies were not an exact match to the risk profile of a genco operating a merchant plant. In 2016 the beta of the comparator companies has risen to 0.9 but in this review no adjustment has been made to the equity beta for the LRMC calculation which has also been set at 0.9. Given the extremely competitive nature of electricity generation and the associated risks in the absence of long-term power purchase agreements, there is no reason for an investor to accept a return lower than the market by accepting a beta lower than 1. We note that since 2011 the average uplift between the comparator beta's and the beta used for the LRMC calculation has been 0.21. **Keppel:** The beta approximated for a theoretical new generation entrant is 0.9, which is lower than the previous value of 1.0. Given that the EMA has consistently adjusted the equity beta to 1.0 for past determinations based on the expectation that the return for Generation Licensees in Singapore would be closely correlated with general economic returns, the same approach should also be adopted in this review. **YTL PowerSeraya:**	expectation that the returns for generation companies in Singapore would be closely correlated with general economic returns, the equity beta has been adjusted to 1.0.

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		For comments on equity beta, please see attached paper "EMA Vesting Contract WACC Review: Beta and Debt Premium" prepared by First Economics dated 5 July 2016. Taking into account the arguments presented, the equity beta should be set to no lower than 1. **Tuas Power:** It is observed that the comparator companies are mainly power plant operators. However, the computation of LRMC in the vesting contract price focuses on the cost of building and operating a new facility, as a new generation entrant in the market. The latter poses higher risk, particularly construction risk to meet the timeline and budget, the lack of long term power contracts, i.e. vesting contracts, for investors compared to mature companies with more stable streams of revenues. In particular, it is observed that the following comparator companies are less risky investments than a new entrant Genco: 1) SES is a vertically integrated company which generates, transmits/ distributes and supplies electricity. The networks part of the company is regulated and protected from competition. 2) Capital Power Corporation has more than a third of its generating capacity/ output bind to long-term purchasing contracts, some stretching up to 2037. 3) Calpine Corporation and NRG Energy are large Gencos with installed capacities at 27GW and	

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		49GW respectively with diversified generation portfolios. The comparator companies are used to determine the beta parameter, which represents the risk involved in investing in the assets of the new entrant Genco. It should be recognized that the comparator companies are less risky investments compared to a new entrant Genco. Therefore, it is proposed for adjustment to be made increase the beta to 1.0 as per the previous reviews. **Senoko:** KPMG's comparator sample consists of companies that engage in a diverse range of activities and which should be expected a priori to have lower betas than a pure-play genco. By comparison, the new entrant genco faces a number of challenges that merit a higher beta. Regulatory precedent from Singapore and overseas points towards the continued use of an equity beta estimate of 1.0. Therefore, Senoko proposes an equity beta of 1.0.	
3.	**Debt Premium**	**Singapore Power:** We have the following observations in relation to the cost of debt determination in past reviews: • EMA had taken into consideration other relevant market information (such as bank quotes) from its	There is no restriction on a new generation entrant in Singapore to raise debt through corporate bond issuance and/or project financing. Taking into account market

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		consultants and industry in addition to • the average yield to maturity from the Moody's Bond Indices. A cost of debt that references bank quotes would provide a more accurate reflection of actual financing cost from the local context. We note that as the Moody's Bond Indices comprise only US utilities, it would not account for the Asian premium incurred by local utilities when raising debt. EMA can consider selecting the relevant index and bank quotes based on the target gearing and corresponding credit rating of the comparator companies, to enhance reasonableness in derivation of the cost of debt. Referencing bank quotes in the determination of the cost of debt would therefore allow for a more balanced view of the relevant financing cost. **PLP:** Consistent with the comments we have made in previous Vesting Reviews, a new entrant looking to finance a power project in Singapore would not be able to secure financing from a bond issue. The only financing available would be via Project Financing, whose debt premium would be much higher than that of a long term bond. This is supported by historic evidence from both PLP and other generators who have obtained Singapore financing.	information including the Moody's Bond Indices for US utilities as well as available bank quotes for project financing by several local and foreign financial institutions active in the Singapore power market, we have assessed the cost of debt of 5.15% to be reasonable (a debt premium of 2.61%).

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		Based on historic data the premium above bond yields is 75 basis points. **YTL PowerSeraya:** For comments on debt premium, please see attached paper "EMA Vesting Contract WACC Review: Beta and Debt Premium" prepared by First Economics dated 5 July 2016. Taking into account the arguments presented, at least 75 bps should be added to the debt premium in the Consultation Paper. **Tuas Power:** Financing for the new entrant Genco in Singapore is likely to be through either bank loan or project financing. It may not be appropriate to use the spread between a utility bond index and a risk free rate to estimate the debt premium as such bond yields are typically lower than the cost of debts from a bank loan. Based on recent financing transactions from the Project Finance & Infrastructure Journal, it is observed that projects of similar scale and loan amount as that in the review yield a 3-3.25% debt premium at a tenor of 7 to 9 years. However, we understand from EMA/ KPMG's recent clarification on the debt premium to the banks is based on a tenor of 15 to 20 years. As such, we would expect	

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		the debt premium to be higher than 3-3.25%. It is proposed to increase the debt premium to 3.5% or more such that the total cost of debts is more reflective of the true cost of debt. **Senoko:** The draft KPMG Report focuses on pricing in the investment-grade corporate bond market, when the evidence is that the new entrant genco would have to finance itself through bank debt /project finance. The EMA has observed previously how bank debt for new build has been priced some way above the market bond yield indices given to it by its consultants. There have been no new transactions in Singapore in the last two years, but a look across to recent power plant financings overseas indicates that a difference in margins continues to persist. There remain grounds, therefore, for adding around 75 basis points to observed bond market credit spreads. Therefore, Senoko proposes adding at least 0.75% to the debt premium.	
4.	**Return of Equity**	**Singapore Power:** Notwithstanding the update on the financial parameters, it is important that investor confidence is preserved by adopting a longer-term perspective on these parameters to ensure a stable Return of Equity.	In determining the cost of equity, a medium to long term view has been taken using a reasonable estimate of the long term risk free rate and various benchmarks of historical and forward-looking market risk premium. It is

S/No.	Parameters	Industry's Comment	KPMG's Response
		A long-term Return of Equity would also be better aligned to the long-term investments on these assets.	further noted that the cost of capital determination is updated for each determination period to reflect the market conditions faced by a theoretical new entrant in that period.
5.	**Overall WACC**	**Senoko:** The market evidence that is cited in the draft KPMG Report shows that power company betas and bond market debt premia have increased since the last review in 2014, yet KPMG is proposing values which are lower (in the case of beta) and broadly unchanged (in the case of debt premium) when compared to the values used in the EMA's last determination. This counter-intuitive situation arises because KPMG has departed, without explanation, from the EMA's practice of adjusting both beta and the debt premium up from comparator benchmarks to reflect the comparatively higher riskiness of the new entrant genco in Singapore.	Refer to response in S/No. 2 and S/No. 3.