



**REQUEST FOR PROPOSAL TO BUILD, OWN AND OPERATE NEW
GENERATION CAPACITY**

Issued on: 18 Aug 2023

Version 2.0

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Document History

Version No.	Version Date	Summary of Changes
1.0	31 Jul 2023	-
2.0	18 Aug 2023	<ul style="list-style-type: none">• Amendments:<ul style="list-style-type: none">➤ Figure 1 of Annex C • Deletion:<ul style="list-style-type: none">➤ Paragraphs 1a and 1e of Annex C

SECTION 1: INTRODUCTION

- 1.1 Electricity demand is driven by factors such as temperature, population and economic activities. Singapore’s system peak demand has been increasing steadily and is projected to grow at a Compound Annual Growth Rate (“CAGR”) of 2.6% - 5.3% (or 2.1GW - 5.1GW) from 2023 to 2032. Over the next five years (2023 to 2028), system peak demand is projected to grow at a CAGR of 3.4% - 6.5% (or 1.4GW - 3.1GW).
- 1.2 Projected demand growth over the next decade is expected to be higher than the historical CAGR of 1.5% between 2013-2022. This is driven largely by the growth in existing electricity-intensive sectors as well as emerging electricity-intensive sectors. Specifically, industries within the advanced manufacturing, digital economy, food and transport sectors are likely to experience significant growth over the next decade. During the pandemic years of 2020-2022, the demand growth from some of these sectors contributed to a 2.8% CAGR growth in peak electricity demand.

Table 1: Projected System Peak Demand (GW)¹

Year	Total (Upper/Base/Lower)
2023 ²	8.5 / 8.1 / 7.9
2024	8.8 / 8.6 / 8.2
2025	9.3 / 9.0 / 8.5
2026	9.9 / 9.5 / 8.8
2027	10.8 / 10.1 / 9.1
2028	11.6 / 10.5 / 9.3
2029	12.4 / 10.9 / 9.6
2030	12.9 / 11.3 / 9.8

- 1.3 Table 2 shows the total electricity supply projected in the coming years. These projections take into account the planned retirement of generating units and projected growth of other generation resources (e.g. solar photovoltaic, waste-to-energy facilities, electricity import, embedded generation)³. For avoidance of doubt, the projected electricity supply has taken into account the following:
- a. About 1GW of existing generation capacity is expected to retire over the next 5 years as these plants will be relatively old (>35 years old);

¹ The numbers are rounded to the first decimal place.

² Based on historical demand between 2018-2022, system demand typically peaked during May-Jun and Aug-Oct. As of May 2023, system peak demand of 7.9 GW was recorded. With continual growth in economic activities throughout the year, demand may increase in 2H 2023.

³ A load factor of 70%, derived from historical generation data, is used to determine the capacity contribution of waste-to-energy facilities and embedded generation to the required reserve margin.

- b. Projected domestic solar PV growth to 2GWp by 2030 with a solar PV effective capacity of 27%⁴;
- c. 100MW of electricity imports from Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (“LTMS-PIP”); and
- d. New generation capacity by Meranti Power (680MW), Keppel Sakra Cogen (600MW) and Sembcorp Cogen (600MW) in 2025 and 2026.

Table 2: Projected Electricity Supply (GW) and Reserve Margin (%)⁵

Year	Projected Total Electricity Supply	Projected Reserve Margin corresponding to the Projected System Peak Demand (Upper/Base/Lower)
2023	10.7	26 / 32 / 35
2024	10.9	23 / 27 / 34
2025	11.5	24 / 27 / 36
2026	12.8	29 / 34 / 45
2027	12.8	19 / 28 / 41
2028	12.8	10 / 22 / 37
2029	12.6	2 / 15 / 31
2030	12.6	-2 / 11 / 28

1.4 **Looking at the demand and supply outlook presented in Tables 1 and 2, the projected reserve margin for 2028 – 2030 is expected to fall below the 27% reserve margin⁶ if demand grows in line with base projections. EMA’s 1-year ahead base demand projections have a historical average accuracy of 98%, while the 5-year ahead base demand projections have a historical accuracy of 94%. Given this, EMA anticipates that additional generation capacity will be needed in 2028 to ensure sufficient generation capacity to meet the projected growth in demand and our reserve margin requirements. EMA is launching a request for proposal (“RFP”) for the private sector to build, own and operate (“BOO”) new generation capacity by end-2027.**

1.5 This RFP is not and does not purport to be a tender for electricity supply or sale to EMA or any other party/user in Singapore and shall in no circumstances whatsoever be construed as such. Any agreement or acceptance of any

⁴ With a solar PV effective capacity of 27%, this means that 2GWp (equivalent to 1.54GWac) of solar provides about 416MWac of effective supply during peak periods. More details on the solar effective capacity are available on <https://go.gov.sg/solar-effective-capacity>.

⁵ The projected electricity supply is rounded to the first decimal place, and the projected reserve margin is rounded to the nearest whole number.

⁶ In Singapore, the minimum reserve margin has been set at 27% to ensure system security. The reserve margin is a system-wide indicator. For more details, please refer to <https://go.gov.sg/required-reserve-margin>.

proposal or any indication of agreement or acceptance as regards any proposal or matter under this RFP shall not create any contractual or legally binding relationship between EMA and any party or impose any legally binding obligations on EMA or any party. The RFP Winner (as defined below) is required to ensure that it has built and/or reserved the relevant rights and access to the relevant infrastructure capacity and generated electricity, as necessary for its project.

SECTION 2: RFP REQUIREMENTS

Size and Technology of the New Generation Capacity

- 2.1 The power system requires one new Combined Cycle Gas Turbine (“CCGT”) of at least 600MW⁷ by end 2027. Nonetheless, EMA is open to other types of generation technology if it is demonstrated to be superior in terms of performance and capabilities.
- 2.2 Participants proposing for a larger generating unit greater than 600MW will be allowed to license and register the new generating unit above 600MW only if the participant provides additional backup capacity (i.e. primary and contingency reserves). Else, the licensed and registered capacity of the new generating unit shall be capped at 600MW.
- a. To ensure power system security, the new generating unit will need to be coupled with a dedicated supply of online reserves (i.e. both primary and contingency reserves) to cover its generation capacity above 600MW. For example, if the new generating unit is registered with Energy Market Company (“EMC”) to potentially offer and be scheduled by EMC to supply up to 800MW of energy plus online reserves for any half-hour trading period, the participant shall install and register one or more facilities capable of instantaneously delivering in aggregate no less than 200MW of online reserves whenever there is a forced outage of the new generating unit (“Dedicated Backup Facilities”).
 - b. While the Dedicated Backup Facilities are not required to be connected at the same voltage level as the new generating unit, they must be connected at 66kV or above. Allocation of online reserves cost based on the modified runway method under the Market Rules will be capped at 600MW subject to the participant ensuring that the Dedicated Backup Facilities are available to fully backup the new generating unit’s scheduled supply above 600MW.

Timeline

- 2.3 Interested participants who wish to participate in the RFP (each a “**Participant**”) shall submit their proposals in accordance with the requirements set out in **Section 4** (each a “**Proposal**”) by no later than **3pm Singapore time on 31 October 2023 (“Closing Date”)**.

⁷ The maximum generation capacity at an ambient temperature of 32 degree Celsius.

- 2.4 The Participants are strongly encouraged to commence engaging Centre for Protective Security on Security-by-Design process, Urban Redevelopment Authority (“URA”) on Environmental Impact Assessment (“EIA”), and PowerGas and SP PowerGrid on its gas and electricity connections respectively so as to factor the lead time required for each process towards the delivery of the new generating capacity.
- 2.5 Thereafter, EMA will commence the evaluation period which will end with the notification to each Participant of the result of the RFP by **31 December 2023** (“**Evaluation Period**”). EMA will evaluate the Proposals based on the selection process set out in **Section 3**.
- 2.6 The awarded Participant (“**RFP Winner**”) will be issued a generation licence and be required to commission the new generating unit no later than **31 December 2027**.
- 2.7 EMA reserves the right to not award any Proposals.

Performance Bond

- 2.8 EMA will shortlist a Participant to award the RFP to (“**Shortlisted Participant**”). Prior to being officially awarded the RFP, the Shortlisted Participant will be required to furnish a bond (“**Performance Bond**”)⁸ in favour of EMA for a sum of \$100 million within 14 days of EMA’s notification of being shortlisted. Failure to do so may result in the Shortlisted Participant being disqualified, which will entitle EMA to shortlist another Participant. After the Shortlisted Participant furnishes the Performance Bond to EMA, EMA will notify the Shortlisted Participant on the official award of the RFP (“**Notice of Award**”). For the avoidance of doubt, the Shortlisted Participant shall not be regarded as being awarded the RFP until and unless the Shortlisted Participant receives the Notice of Award from EMA.
- 2.9 The Performance Bond shall be in the form of an irrevocable on-demand performance bond and shall be issued by a local bank, wholesale bank, qualifying full bank or full bank or insurance company approved by Monetary Authority of Singapore.
- 2.10 The Performance Bond serves to secure (i) the RFP Winner’s timely delivery of the new generating unit (through interim project milestones) and (ii) the RFP Winner’s due and faithful performance and fulfilment of the performance parameters as declared in the Proposal and/or as agreed with EMA ((i) and (ii) collectively known as “**Performance Conditions**”).

⁸ Participants may refer to Annex B for more details on the Performance Bond.

- a. The interim project milestones stipulated in the Performance Conditions shall include but not limited to (1) Signing of Engineering, Procurement and Construction (“EPC”) Contract; (2) Receipt of URA’s Provisional Permission; (3) Delivery of Gas Turbine(s) to Site; and (4) Registration as Generation Registered Facility (“GRF”) with EMC. Participants shall include the proposed completion month and year for each milestone in their Proposals.
- b. The performance parameters stipulated in the Performance Conditions shall include but not limited to (1) Start-up Time; (2) Fuel Changeover (“FCO”) Capability; (3) Low Gas Pressure Trip Setting; (4) Efficiency; and (5) Flexibility for Simple Cycle Mode. The RFP Winner shall demonstrate its due and faithful performance and fulfilment of the performance parameters as declared in the Proposal and/or as agreed with EMA during registration as GRF.

The Performance Conditions shall be specified in EMA’s notification of being shortlisted for the award of the RFP to the Shortlisted Participant, and/or EMA’s Notice of Award to the Shortlisted Participant.

- 2.11 EMA reserves the right, in its sole and absolute discretion, to forfeit the Performance Bond or such part of it as EMA deems necessary for breach of any of the Performance Conditions.
- 2.12 EMA will reduce the Performance Bond sum progressively upon completion of each project milestone, as stipulated in the Performance Conditions and/or EMA’s Notice of Award. The remainder sum of the Performance Bond shall be returned to the RFP Winner after the registration of the new generating unit as GRF with EMC or a date mutually agreed between the parties, whichever is later, provided the RFP Winner has fulfilled all the Performance Conditions.

Gas and Electricity Connection

- 2.13 As commissioning of the new generating unit is dependent on the completion of its gas and electricity connection, and availability of network capacity, all Participants shall consult PowerGas and SP PowerGrid on the gas and electricity connection of their Proposals respectively. PowerGas and SP PowerGrid will require at least 8 weeks to provide their assessments on the connection schemes. Hence, Participants are strongly encouraged to engage PowerGas and SP PowerGrid as soon as reasonably possible.

- 2.14 The email contact of PowerGas and SP PowerGrid are: Mr Tan Yong Wah at (yongwahtan@spgroup.com.sg) and Mr Chen Li (chenli@spgroup.com.sg) respectively.
- 2.15 As part of the consultation, Participants shall provide the information listed in Table 3 to PowerGas and SP PowerGrid.

Table 3: Requirements by PowerGas and SP PowerGrid

Type of Connection	Information that Participants shall provide for PowerGas' and SP PowerGrid's assessments
Gas Connection	<ul style="list-style-type: none"> i. Plant location plan (including gas entry point and gas metering station etc). Please note that the final gas entry point shall follow as proposed by PowerGas during consultation ii. Gas injection source iii. Maximum Daily Quantity (BBtu/day) iv. Maximum Instantaneous Flowrate (BBtu/day) v. Projected 5 Years Load Profile (BBtu/year)
Electricity Connection	<ul style="list-style-type: none"> i. Target date of commissioning of each generating unit ii. Target date of energization of Connection Circuits iii. Location of the power plant (including switchhouse etc) iv. Capacity of each generating unit v. Load requirement for auxiliaries vi. Switchhouse switchgear configuration vii. Conceptual Single Line Diagram (SLD) up to grid connection point viii. Calculation Report for maximum prospective initial symmetrical three-phase (3Ph) and single line to ground (SLG) short-circuit currents at the switchhouse bus without grid connection to demonstrate that the fault current contributions from proposed generating unit does

	not exceed the limit given by SP PowerGrid during consultation. The calculation should base on International Electrotechnical Commission (“IEC”) 60909
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Planting Site

- 2.16 EMA’s preference is for the new generating unit to be built on Participants’ existing available land to optimise land use. Such Proposals would be scored more favorably in **Section 3**. However, a greenfield site has been made available for any Participant without available land to build. Details about the greenfield site can be found in **Annex C**.
- 2.17 To optimise usage of the greenfield site, which could accommodate two generating units, if the RFP Winner takes up the greenfield site referred to in paragraph 2.16 to BOO the new generating unit, the RFP Winner would be required to participate in the subsequent/future three (3) RFPs called by EMA, to BOO a second new generating unit in the remaining land of the greenfield site. The offer in the subsequent/future RFP for the delivery of the second new generating unit shall minimally be able to meet the cardinal requirements of the subsequent/future RFP and shall minimally be no worse off with respect to the Performance Conditions. For avoidance of doubt, only the plot required for the first generating unit will be accorded to the RFP Winner in the first instance and the remaining land may be accorded upon winning subsequent/future RFP.

Revenue Support

- 2.18 EMA will not be providing any revenue support in relation to this new generating unit by the RFP Winner to avoid creating an unlevel playing field with the existing generating units in the system, which would distort competition in the market.

SECTION 3: RFP SELECTION PROCESS

3.1 The RFP selection process consists of two levels: Cardinal Requirements and Evaluation Criteria.

Cardinal Requirements

3.2 Proposals that do not meet the following cardinal requirements will be disqualified for further evaluation:

- a. **Timely Delivery of the New Generating Unit:** The Participant must demonstrate its ability to deliver and register the new generating unit as GRF with EMC no later than 31st December 2027. The design and performance of the new generating unit shall not have any adverse impact on the gas and electricity networks when connected and shall comply with the requirements as stipulated in the Transmission Code, Gas Supply Code, and other relevant codes of practice and standards of performance issued or approved under the Electricity Act.
- b. **Legal and regulatory requirements:** The Participant must be a Singapore-incorporated company that will hold, if granted, the generation licence if selected by EMA through the RFP. If the Participant is a consortium, the consortium must be a Singapore-incorporated entity.
- c. **Financial Ability and Experience:** The Participant must demonstrate its ability to finance the proposed generation business and have the capability and experience to perform the duties under the Electricity Act and the electricity licence.
- d. **Submission of Generation Licence Application:** The Participant must submit a Generation Licence application (if it is not an existing Generation Licensee) or submit a modification to Schedule A of its Generation Licence (if it is an existing Generation Licensee) via the GoBusiness Licensing portal as part of the Proposal. This shall be done prior to the Closing Date.
- e. **Impact on Existing Generation Capacity:** Proposals which involve retirement of any existing generating units will be disqualified if such retirement was not approved by EMA as part of the framework for retirement of generating units prior to RFP publication.

- f. **Emission Standards:** Demonstrate ability to meet prevailing Tier 1 requirements under the Emission Standards Framework⁹.

Evaluation Criteria

- 3.3 Proposals that meet the Cardinal Requirements will be further evaluated based on the evaluation criteria outlined in Table 4:

Table 4: Evaluation Criteria

S/N	Criteria	Weightage	Description
1	Optimized Use of Land	25%	Proposals will be assessed based on the type of planting site (i.e. existing site or greenfield site) as well as the amount of land used. Proposals utilising existing site will be scored more favorably.
2	Availability & Reliability of the New Generating Unit	20%	<p>Proposals will be assessed based on the track record of generating units of the same make and model, using the following formula:</p> <ul style="list-style-type: none"> • Availability (%) = [(AH + OH)/Total Hours] x 100% Where, <ul style="list-style-type: none"> ➤ AH is the number of hours the generating unit was available but not in the operating state ➤ OH is the number of hours the generating unit was in the operating state ➤ Total Hours is the total number of hours over the generating unit's total length of service ➤ AH, OH and Total Hours will be based on available aggregated data¹⁰ • Reliability (%) = [OH/(OH + FOH)] x 100% Where,

⁹ Please refer to <https://go.gov.sg/consultation-emissions-standards-framework> for the Emission Standards Framework.

¹⁰ The aggregated data shall be based on all the units (same make and model) installed world-wide and does not consider non-generating unit causes (e.g. balance of plants).

			<ul style="list-style-type: none"> ➤ OH is the number of hours the generating unit was in the operating state ➤ FOH is the number of hours generating unit was in forced outage state ➤ OH and FOH will be based on the same aggregated data used for Availability <ul style="list-style-type: none"> • Track Record will be based on Total Hours Where, <ul style="list-style-type: none"> ➤ Total Hours is the total number of hours over the generating unit's total length of service ➤ Total Hours will be based on the same aggregated data used for Availability
3	Earlier Delivery	15%	Proposals will be assessed based on its declared date for registration as GRF with EMC.
4	Market Concentration	5%	Each Proposal will be assessed based on its impact on the market's Herfindahl-Hirschman Index ("HHI"), against that of other Proposals, considering expected generation capacity retirements and expected new entry.
5	Commitment to offer Price Competitive Contracts for any uncontracted capacity	5%	Participant to commit to supplying energy to any person(s) nominated by EMA: <ul style="list-style-type: none"> • using any available and uncontracted capacity of the proposed new generating unit and its existing generating unit(s) (if any), capped at the licenced capacity of the new generating unit; and • at an energy price (in \$/MWh) equal to the actual short-run

			<p>marginal cost (“SRMC”) of the marginal capacity used to supply such energy plus a Specified Fixed Margin (“SFM”) no higher than the non-fuel component of vesting long-run marginal cost (“LRMC”).</p> <p>Proposals will be evaluated based on the price competitiveness of the SFM.</p>
6	Start-up Time	5%	<p>Proposals will be assessed based on the start-up time from each stage (i.e. cold, warm and hot). Start-up time is measured from Notification given to achieving full load. Participant shall provide the supporting document to demonstrate the new generating unit’s start-up time capability.</p>
7	Fuel Changeover Capability ¹¹	5%	<p>Proposals that can complete FCO operation earlier than ten (10) minutes¹² upon initiation of FCO process to alternative fuel, and have a wider permissible loading level for FCO operation, will be assessed more favorably. For avoidance of doubt, this criterion does not consider blending of any H2 volume.</p> <p>Participants may refer to Appendix F13 of the Transmission Code for FCO requirements.</p>
8	Low Gas Pressure Trip Setting	5%	<p>Proposals will be assessed based on the use of natural gas as primary fuel, and gas pressure trip setting lower than 16barg¹³ will be assessed more favorably.</p> <p>Low Gas Pressure Trip Setting is measured at the System Offtake Point in</p>

¹¹ Clause 6.11.4 (f) of the Transmission Code states on the design of fuel changeover of generation facility.

¹² Transmission Code states that each newly commissioned generation facility, which is to be registered with EMC on or after 1 January 2021, shall be designed to complete FCO operation within 10 minutes upon initiation.

¹³ Transmission Code states that each newly commissioned generation facility, which is to be registered with EMC on or after 1 January 2021, shall be designed to operate at its rated MW Capacity with a low gas pressure trip setting no greater than 16barg.

			accordance to the definition in Section A of the Gas Network Code (“GNC”).
9	Efficiency	5%	Proposals will be assessed based on the efficiency while firing on natural gas and alternate fuel (e.g. diesel).
10	Flexibility for Simple Cycle Mode	5%	Proposals with flexibility to operate on simple cycle mode will be scored more favorably. Participant shall provide supporting documents to demonstrate the new generating unit’s operating mode capability.
11	Innovative and/or Decarbonised Technologies	5%	Proposals that include any innovative and/or decarbonized technologies will be scored more favorably.

SECTION 4: INSTRUCTIONS FOR PRE-SUBMISSION AND SUBMISSION OF PROPOSALS

PRE-SUBMISSION

Official point-of-contact

- 4.1 For the purpose of the RFP, the official email contact of EMA is: Capacity_Development@ema.gov.sg.
- 4.2 Each Participant shall provide its official contact details (listed in below Table 5) via email to EMA at Capacity_Development@ema.gov.sg as soon as reasonably possible. This is to provide an official contact point between the Participant and EMA, such that any official information or notification with regard to the RFP will be disseminated to the relevant official contact points. Should there be any change to such official contact point during the course of the RFP, the Participant is to update EMA via email.

Table 5: Official Contact Details

Participant Name:	
Name of Contact Point:	
Designation:	
Email:	
Contact Number:	
Fax Number:	

SUBMISSION OF PROPOSALS

Requirements for submission of Proposals

- 4.3 Participants shall fully comply with all terms, conditions and requirements set out in this RFP document without any modifications. Failure to comply may result in disqualification.
- 4.4 The Proposal shall minimally comprise the following sections:
- a. An Entity Section that specifies the Participant's identity, relationships, experience and capabilities;
 - b. A Project Section that covers the project management aspects of the Proposal, and performance and capabilities of the proposed new generating unit;

- c. A Commercial Section that describes the commercial aspects of the Proposal; and
- d. Any other information that the Participant may deem relevant for the purposes of this RFP.

4.5 The Proposal’s Entity Section shall contain the following:

- a. Structure and organisation of Participant, including information and details of all members of any consortium (collectively “**Consortium Members**”, and each a “**Consortium Member**”) using the format given in the **Form of Submission**, including **Form A** and **Form B**;
- b. Details of the Participant to be licensed as a Generation Licensee if appointed by EMA, namely: (i) a certified true copy of the entity’s Certificate of Incorporation; and (ii) certified true copies of relevant ownership documents, including documents lodged with the Accounting & Corporate Regulatory Authority (“**ACRA**”) showing the shareholder structure, names and addresses of significant shareholders and the composition of the board of directors;
- c. Credentials of the Participant, including all Consortium Members, if any, with respect to their capability and experience to perform the duties under the Electricity Act and the electricity licence. This includes documents such as audited financial statements for the last 2 full financial years, financing plan with details of sources of capital and repayment schedule and resume/CV of key appointment holders;
- d. Participant and all Consortium Members, if any, shall provide more information on persons empowered to act in **Form C** and other information in **Form D**; and
- e. Undertaking by Participant and all Consortium Members, if any, to Safeguard Official Information using the **Form E**.

4.6 The Proposal’s Technical Section shall contain but not limited to the following information:

- a. Detailed project schedule including but not limited to the key project milestones listed in Table 6a and Table 6b:

Table 6a: Performance Conditions - Milestones

S/N	Project Milestones	Declared Date
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1	Signing of EPC Contract	
2	Receipt of URA's Provisional Permission	
3	Delivery of Gas Turbine(s) to Site	
4	Registration as Generation Registered Facility with EMC	

Table 6b: Other Milestones

S/N	Project Milestones	Declared Date
1	Delivery of Steam Turbine(s) and Heat Recovery Steam Generator(s) to Site	
2	Gas Admittance Date of Gas Connection	
3	Energisation Date of Electricity Connection	

- b. Location and Plant layout (including gas entry point and gas metering station, switchhouses etc) clearly demarcating the land to be occupied by the new generating unit and the land occupied by existing generating units (if any). For EMA's identified greenfield site, the Participant shall clearly demarcate the amount of land to be occupied by first and second new generating units;
- c. Declared performance and capabilities of the new generating unit as listed in Table 7a and Table 7b:

Table 7a: Performance Conditions – Performance Parameters

S/N	Type of Performance and Capability of the new generating unit	Declared Parameters
1	Efficiency at maximum capacity while firing using primary fuel (%)	
2	Efficiency at maximum capacity while firing using alternate fuel (%)	
3	Start-up time from Hot Stage (minutes)	
4	Start-up time from Warm Stage (minutes)	
5	Start-up time from Cold Stage (minutes)	
6	Time taken to complete FCO operation (minutes)	
7	Permissible loading level(s) for FCO operation (%)	
8	Low Gas Pressure Trip Setting while firing on Primary Fuel (barg)	
9	Flexibility for Simple Cycle Mode (Yes/No)	

Table 7b: Other Performance Parameters

S/N	Type of Performance and Capability of the new generating unit	Declared Parameters
1	Type of generation technology	
2	Maximum generation capacity at 32°C (MW)	
3	Gas consumption while firing at maximum capacity	
4	Grid connection point	
5	Voltage level (kV)	
6	Short-circuit currents at the switchhouse bus without grid connection (kA)	
7	Availability (%)	
8	Reliability (%)	
9	Track record (hour)	
10	Type of primary fuel	
11	Type of alternate fuel	

- d. Supporting documents (e.g. technical datasheets or undertaking letter from Original Equipment Manufacturer, assumptions, reference source) for the declared performance and capabilities listed under paragraph 4.6(c);
- d. Letters or emails issued by PowerGas and SP PowerGrid for the proposed gas and electricity connections respectively; and
- e. Any innovative technology or design that could potentially enable greater decarbonisation and/or energy optimisation. This includes, but not limited to:
 - i. technologies that enable the use of low/ zero carbon fuels such as low carbon hydrogen, blending of above 30 vol% H₂ with natural gas etc.;
 - ii. technologies that allow for efficient and cost-effective CO₂ capture; and/or
 - iii. design to optimise energy utilisation such as the ability to use shared utilities and/or cold and/or heat energy integration with adjacent facilities etc.

4.7 The Proposal's Commercial Section shall contain the following information:

- a. The commitment to supply energy to any person(s) nominated by EMA, using any available and uncontracted capacity of the new generating unit and its existing generating unit(s) (if any), capped at the licenced capacity

of the new generating unit. In addition, please indicate the SFM which should be no higher than the non-fuel component of the vesting LRMC.

- 4.8 Each Participant shall, together with the submission of its Proposal to EMA, furnish a Performance Bond Undertaking in the form set out in **Annex A**. Failure to furnish the Performance Bond Undertaking will render the Participant's Proposal incomplete and therefore invalid.
- 4.9 The Proposal and any other documents provided shall be in the English language. All monetary values shall be clearly specified and denominated in Singapore Dollars.

Mode of Submission

- 4.10 Participants are required to submit their Proposals through softcopy submissions via email to EMA at: Capacity_Development@ema.gov.sg.
- 4.11 The soft copies shall be submitted in both Microsoft WORD and PDF format. Multiple emails are allowed because of the email size limit. Each email shall be below 25 MB. Participants must clearly communicate the references to the Proposals if multiple emails are submitted.

Deadline for Submission

- 4.12 All Proposals must reach EMA via email by no later than the Closing Date. Any Proposal submitted after the Closing Date will not be considered by EMA.
- 4.13 EMA will acknowledge receipt of all submissions electronically within three (3) business day from the Closing Date. Please promptly contact EMA (Capacity_Development@ema.gov.sg) if you have not received an acknowledgement of your submission by then.

Validity of Proposals

- 4.14 Proposals that have been submitted shall remain valid and binding for one hundred (100) days from the Closing Date.
- 4.15 Proposals shall neither be modified nor withdrawn after the Closing Date, unless approved by EMA.

Clarifications before Closing Date

- 4.16 Participants may engage EMA for clarifications on this RFP document. All clarifications must be formalised in writing to EMA and sent via email to EMA

from the email address specified in Table 5. Formal clarifications by EMA will be in writing only.

- 4.17 Notwithstanding the above, EMA is open to meeting Participants to clarify any aspects of this RFP. These meetings serve only as informal discussions, and nothing said or communicated by EMA during such meetings shall be taken as a formal response.
- 4.18 EMA may invite Participants to make presentations to EMA with regard to their Proposals. Details of such presentations, if necessary, will be arranged by EMA. In the event EMA requests for written clarification with regard to any aspect of the Participant's Proposal, the Participant shall use reasonable endeavour to provide full and comprehensive responses within three (3) business days of such request.

Compliance with Instructions

- 4.19 Participants shall submit their Proposals in accordance with all the requirements set out in this RFP document. Incomplete submissions may be deemed invalid and may not be considered by EMA.
- 4.20 EMA shall not be liable to any Participant for any information in this RFP which is incomplete or inaccurate. It is the Participant's responsibility to acquaint itself with the information contained in this RFP document and all other information that it may need to know in order to prepare its Proposal or to subsequently function and operate as a Generation Licensee if appointed by EMA.
- 4.21 All expenses incurred in the preparation and submission of any Proposal shall be borne by the Participant and no claims for any costs or expenses incurred will be considered by EMA, regardless of the acceptance or rejection of any Proposals.
- 4.22 Participants shall not make use of any information or material obtained directly or indirectly from EMA, without the prior written consent of EMA, other than for the purposes of this RFP.
- 4.23 Participants shall not disclose any information or material obtained directly or indirectly from EMA, without the prior written consent of EMA, to any third parties.
- 4.24 EMA is not obligated to disclose any information with regard to any Participant's Proposal.

- 4.25 EMA reserves the right to accept or reject any or all Proposals and its decision shall be final and shall not be subject to any appeal. EMA will not entertain any correspondence concerning the acceptance or rejection of any Proposal (including but not limited to the reasons for the acceptance or rejection of any Proposal).
- 4.26 The validity, interpretation and performance of this RFP and any Proposals submitted by Participants in response to this RFP shall be governed by and construed in accordance with the laws of the Republic of Singapore without regard to the principles of conflicts of law thereof. By submitting a Proposal, the Participant hereby irrevocably submits to the exclusive jurisdiction of the courts of the Republic of Singapore.
- 4.27 A waiver by EMA of any term or condition of this RFP in any instance shall not be deemed or construed as a waiver of such term or condition for the future, or of any subsequent breach of the RFP process thereof.
- 4.28 Prior to the Closing Date, EMA reserves the right to make changes to this RFP document (including but not limited to the RFP process, selection criteria) through the issuance of a corrigendum or addendum thereto. Where EMA issues a corrigendum or addendum, EMA and the Participants shall, if EMA considers necessary, execute such further documents and take such further steps as may be reasonably necessary or desirable to effectuate the purpose of this RFP.
- 4.29 All information related to this RFP shall remain the property of EMA. All documents submitted by the Participant in response to this RFP shall become the property of EMA. However, any intellectual property in the information contained in the Proposal submitted by the Participant shall remain vested in the Participant. EMA will keep the details of all Proposals confidential unless it is required by law to disclose any information related to a Proposal.
- 4.30 This RFP is furnished solely for the purpose of assisting Participants in making their own independent evaluation of the roles and requirements of a Generation Licensee. It is not meant to be all-inclusive or to contain all the information that a Participant may require to submit a Proposal, and/or to subsequently perform the role of a Generation Licensee if appointed by EMA. Participants shall make their own assessment regarding the relevance and adequacy of the information contained in this RFP and shall carry out their own due diligence to assess/determine whether or not to submit a Proposal in response to this RFP and/or subsequently perform the role of a Generation Licensee if appointed by EMA.

- 4.31 No part of this document shall be construed as forming part of or used to interpret any subsequent contracts entered into by the Participant, whether with any downstream retail customer or any other party.
- 4.32 EMA does not make any representation or warranty, express or implied, as to the accuracy, completeness or reasonableness of the information contained in this RFP document or any modification, corrigendum or addendum issued thereto, or any other written statement which is otherwise communicated or made available to the Participants, whether by or on behalf of EMA, nor does EMA accept any liability in relation to any such information or statement for any lack of accuracy, completeness or reasonableness.
- 4.33 EMA reserves the right to terminate or suspend the RFP process at any time before the appointment of any Generation Licensee(s) without giving any reason and shall not be liable for any expenses or costs incurred by any Participant or any other person up to or arising from such termination or suspension.

FORM OF SUBMISSION

REQUEST FOR PROPOSAL FOR PRIVATE SECTOR TO BUILD, OWN AND OPERATE NEW GENERATION CAPACITY

Having examined the Request for Proposal (“RFP”) issued by the Energy Market Authority (“EMA”) for the above, we attach our proposal submission (“Proposal”) comprising the following items for EMA’s consideration:

- i. Form of Submission.
- ii. *[Participant to list down items attached]*

Whereas it is understood that the EMA reserves the right to accept or reject this Proposal without divulging any reason, we: (a) warrant that the information provided in this Proposal is valid and correct; and (b) acknowledge and agree to all the terms and conditions set out in the RFP and the application thereof to our Proposal.

Dated this _____ day of _____ 2023.

Authorised Signature of Participant _____ Authorised Signature of Witness _____

Name _____ Name _____

Designation _____ Designation _____

Company Address _____ Company Address _____

Company Stamp _____ Company Stamp _____

NOTICE	This form duly completed MUST accompany every Proposal. Any change to its wordings may render the submission liable to DISQUALIFICATION.
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FORM A

STRUCTURE AND ORGANISATION OF PARTICIPANT

No	Item	Details
1	Full Name of Participant (Note 1)	
2	Registered Address	
3	Contact Person's name Telephone Email Facsimile	
4	Legal Form (Note 2)	
5	Memorandum and Articles of Association and Joint Venture Agreement Attached (Note 3)	
6	Structure / Organisational Charts Attached	
Notes: (1) In case of a consortium, names of all Consortium Members MUST be included. (2) E.g. company, partnership, cooperative, consortium, joint venture, etc. (3) Or similar agreement (e.g. shareholders agreement, consortium agreement, etc.)		

FORM B

PARTICIPANT MEMBERS

No	Item	Lead Member	Member 1	Member 2	Member 3
1	Name				
2	Country of Registration				
3	Registered Address				
4	Name, Position and Designation of Contact Person				
5	Value of Contribution (Share of Total Equity)				
6	Description of Company				
7	Ultimate beneficial owners (if not listed) or listed parent company/ies				

Note: The Participant shall produce additional forms for additional members, as necessary.

FORM C

PERSONS EMPOWERED TO ACT

The following persons are empowered to sign contract documents and act on the Participant's behalf for this project:

Name	NRIC No.	Position Held

FORM D

OTHER INFORMATION

Participant and all Consortium member(s) must indicate if the following statements apply to the entity or persons empowered to act in Form C anywhere in the world within the summary table below:

Full name(s) of Participant, Consortium member and/or key personnel		
S/N	Statement	Response
1	Convicted of any offence or misconduct (e.g. fraud, corruption, tax evasion)	Yes / No
2	Breach of legal, environmental or social obligation	Yes / No
3	[For entity only] Subject of insolvency or winding-up proceedings	Yes / No
4	[For person only] Bankrupt or has made any composition or arrangement for the benefit of his creditors	Yes / No
<p>If the response to any of the statements above is “yes”, please provide further details including year of incident. The answer must also name the organisation or member being referred to.</p>		
<p>If the response to any of the statements above is “yes”, please provide evidence of the measures taken, following the relevant conviction or breach of obligations, that are sufficient to demonstrate its reliability as a potential electricity importer. The answer must also name the organisation or member being referred to.</p>		

Participant should submit a separate completed table for each Consortium member(s) and key personnel unless the answers to all statements are ‘no’. Where all responses from the Participant are ‘no’ to the statements above, the Participant needs to submit one response only.

FORM E

UNDERTAKING TO SAFEGUARD OFFICIAL INFORMATION

1 My attention has been drawn to the Official Secrets Act 1935 and in particular to Section 5 thereof which relates to the safeguarding of official information.

2 I understand and agree that all official information acquired by me in the course of my work and consultancy with any government department, statutory board or government-owned company is strictly confidential in nature, and is not to be published or communicated by me to any unauthorised person in any form at any time, without the official sanction of the relevant Permanent Secretary or the Chief Executive Officer of the statutory board or government-owned company.

3 I further understand and agree that any breach or neglect of this undertaking may render me liable to prosecution under the Official Secrets Act.

..... (Signature of Company Representative) (Full name in BLOCKS and NRIC)
..... (Designation) (Name of Company)
..... (Date)	
..... (Signature of WITNESS) (Full name in BLOCKS and NRIC)
..... (Date)	

ANNEX A: PERFORMANCE BOND UNDERTAKING

PERFORMANCE BOND UNDERTAKING

THIS PERFORMANCE BOND UNDERTAKING (“Undertaking”)

is issued by:

[NAME OF PARTICIPANT], a company incorporated and registered in Singapore with company registration number [•] and having its registered office at [•] (“**Participant**”)

in favour of:

ENERGY MARKET AUTHORITY, a body corporate established under and by virtue of the Energy Market Authority of Singapore Act 2001 and having its principal office at 991G Alexandra Road #01-29 Singapore 119975 (“**Authority**”).

WHEREAS:

- (A) The Authority has issued a Request for Proposal To Build, Own And Operate New Generation Capacity on [date] (“**RFP**”).
- (B) Pursuant to the terms of the RFP, the Authority requires all participants to provide, together with the submission of their proposal, this Performance Bond Undertaking.
- (C) The Participant is responding to the RFP with a proposal (reference [•] dated [date]) (“**Proposal**”) and is furnishing this Undertaking in compliance with the RFP.

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. Performance Bond

- 1.1 If the Participant is shortlisted for the award of the RFP, the Participant undertakes and agrees to furnish a bond to EMA (“**Performance Bond**”) which:
 - (a) shall be in the form of an irrevocable on-demand performance bond for a sum of S\$100 million issued by a local bank, wholesale bank, qualifying

full bank or full bank or insurance company approved by Monetary Authority of Singapore;

- (b) shall be in the format set out in Annex B of the RFP;
- (c) shall be furnished to EMA within 14 days of EMA's notification of being shortlisted for the award of the RFP; and
- (d) shall serve to secure the Participant's due and faithful performance and fulfilment of all the Performance Conditions (as defined in the RFP).

2. Termination

- 2.1 This Undertaking shall automatically terminate on (a) the date on which the Performance Bond is furnished if the Participant is shortlisted for the award of the RFP or (b) the date a person or party other than the Participant is awarded the RFP.

3. General

- 3.1 **Interpretation.** Capitalised terms in this Undertaking shall bear the same meaning as those defined in the RFP, save where otherwise expressly defined herein.
- 3.2 **No Assignment and other dealings.** The Participant shall not assign, transfer, mortgage, charge, subcontract, declare a trust over or deal in any other manner with any of its rights and obligations under this Undertaking.
- 3.3 **No Variation.** No variation of this Undertaking shall be effective unless it is approved in writing by the Authority.
- 3.4 **Waiver.** No failure or delay by the Authority to exercise any right or remedy provided under this Undertaking or by law shall constitute a waiver of that or any other right or remedy, nor shall it prevent or restrict the further exercise of that or any other right or remedy. No single or partial exercise of such right or remedy shall prevent or restrict the further exercise of that or any other right or remedy.
- 3.5 **Governing law.** This Undertaking and any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with it or its subject matter or formation shall be governed by and construed in accordance with the laws of the Republic of Singapore.

3.6 Jurisdiction. This Undertaking is issued subject to the jurisdiction of the Singapore courts.

Dated this _____ day of _____ 2023.

Authorised Signature of Participant	_____	Authorised Signature of Witness	_____
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Name	_____	Name	_____
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Designation	_____	Designation	_____
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Company Address	_____	Company Address	_____
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Company Stamp	_____	Company Stamp	_____
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ANNEX B: SPECIMEN OF PERFORMANCE BOND

PERFORMANCE BOND

THIS PERFORMANCE BOND (“Bond”)

is issued by:

[NAME OF BOND ISSUER]¹⁴, a company incorporated and registered in Singapore with company registration number [•] and having its registered office at [•] (“**Bond Issuer**” or “**We**”)

in favour of:

ENERGY MARKET AUTHORITY, a body corporate established under and by virtue of the Energy Market Authority of Singapore Act 2001 and having its principal office at 991G Alexandra Road #01-29 Singapore 119975 (“**Authority**”).

WHEREAS:

- (A) On [date], a Performance Bond Undertaking (“**Undertaking**”) was issued by **[NAME OF PARTICIPANT]**, a company incorporated and registered in Singapore with company registration number [•] and having its registered office at [•] (“**Participant**”) in favour of the Authority in compliance with the Request for Proposal to Build, Own And Operate New Generation Capacity dated [date] (“**RFP**”).
- (B) On [date], the Participant received EMA’s notification of being shortlisted for the award of the RFP. In accordance with the Undertaking, the Participant is therefore required to furnish an irrevocable on-demand performance bond in favour of the Authority for the sum equivalent to the total of S\$100 million as security for its due and faithful performance and fulfilment of all the Performance Conditions (as defined in the RFP).
- (C) The Participant will be / has been issued with a generation licence (“**Generating Licence**”) and will be required to commission its new generating unit no later than 31 December 2027.

¹⁴ The Bond Issuer has to be a local bank, wholesale bank, qualifying full bank or full bank or insurance company approved by Monetary Authority of Singapore.

- (D) We, at the request of the Participant, have agreed to furnish an irrevocable on-demand performance bond to the Authority on the terms of this Bond.

WE HEREBY AGREE as follows:

1. We shall unconditionally pay to the Authority any sum or sums up to a maximum aggregate of Singapore Dollars One Hundred Million (S\$100,000,000) ("**Performance Bond Sum**") upon receiving the Authority's first written demand for payment made pursuant to Clause 4 of this Performance Bond without any proof of actual default on the part of the Participant and without need to satisfy any other condition.
2. We understand that the Authority will reduce the Performance Bond sum progressively upon completion of each project milestone, as stipulated in the Performance Conditions and/or EMA's Notice of Award (as defined in the RFP) issued to the Participant and such reduction will be communicate to us in writing. We further understand that the remainder sum of the Performance Bond shall be returned to the Participant after the registration of the new generating unit as Generation Registered Facility with Energy Market Company or a date mutually agreed between the Authority and the Participant, whichever is later, provided the Participant has fulfilled all the Performance Conditions.
3. We shall not be discharged or released from this Performance Bond by any arrangement between the Authority and the Participant with or without our consent, or by any other or further arrangement between the Participant and us with or without the Authority's consent, or by any alteration in the obligations undertaken or to be undertaken by the Participant or by any forbearance on the Authority's part whether as to payment, time, performance or otherwise.
4. Our liability under this Performance Bond shall continue and this Performance Bond shall remain in full force and effect from the date of this Performance Bond until the date this Performance Bond is returned by EMA to the Participant.
5. The Authority may make a claim at any time on this Performance Bond by way of a notice in writing addressed to us and the same being received by us at _____[insert address of Bond Issuer].
6. The Authority may make more than one claim on this Performance Bond so long as the aggregate amount specified in all such claims does not exceed the Performance Bond Sum.

7. We shall be obliged to effect the payment required under each claim within seven (7) business days of our receipt of the written notice from the Authority. We shall be under no duty to inquire into the reasons, circumstances or authenticity of the grounds for such claim and shall be entitled to rely upon the Authority's written notice received by us as final and conclusive. For the purposes of this Performance Bond, "business day" means a day other than a Saturday, Sunday, or public holiday in Singapore.

8. This Performance Bond is issued subject to the laws of the Republic of Singapore and the jurisdiction of the Singapore courts.

Bond No: _____

Date: _____

Authorised
Signature of
Bond Issuer _____

Authorised
Signature of
Witness _____

Name _____

Name _____

Designation _____

Designation _____

Company
Address _____

Company
Address _____

Company
Stamp _____

Company
Stamp _____

ANNEX C: POTENTIAL AVAILABLE GREENFIELD SITE



Figure 1: Location of EMA's Identified Greenfield Site

1. RFP Winner taking up the greenfield site shown in Figure 1 shall take note of the following:
 - a. There are two existing Very Large Crude Carrier (“VLCC”) pipelines (demarcated in red line) buried approximately 6m below the ground within the service corridor along the northbound of Meranti Road. The VLCC pipeline owners are to be consulted if the RFP Winner is laying services above/below the VLCC pipelines or is constructing entrance(s) to the plot above the VLCC pipelines.
 - b. Seawater intake can be routed through the service corridor (demarcated in yellow line).
 - c. Explore discharging into the drain along Meranti Crescent, leading to Meranti Lane and then to the sea (dotted blue line and the discharge location into the sea is marked with the symbol ‘X’). Thermal discharge and Hydrodynamic study at ‘X’, and Navigation, mooring and structural impact studies will need to be carried out for the Singapore Refining Company VLCC jetty. The findings shall be submitted to relevant agencies for approval. On the study, you shall take into consideration the second new

generating unit and the future development of the vacant plots within the Meranti region in consultation with EMA. Further details on the discharge parameters and drain capacity to cater for will be made known at a later stage.

- d. The first generating unit shall be sited at the southern part of the site (as seen in Figure 1) to avoid sterilising land for future development. Only land required for the first generating unit will be leased. However, the Participant is to indicate and illustrate the additional land required for the subsequent second new generating unit, which may be accorded upon winning future RFPs for new generation capacity.
- e. Any other requirements imposed by agencies from-time-to-time.
- f. All utility services (such as electricity cables, water pipelines, sewer, telco, gas pipeline etc) shall be routed underneath the site entrance(s) only. The Participant shall consult JTC before the design of the new generating unit plant is finalised.
- g. Energisation of 1st generation connection circuit can be expected by early May 2027 provided the RFP Winner submit the application for its electricity connection to SP PowerGrid by early January 2024, sign the Generation Connection Agreement by end April 2024, and provide Security Deposit and Bankers' Guarantee to SP PowerGrid by end June 2024. Energisation of subsequent circuits can be expected by early June 2027. This is also subject to the fault current contributions from the new generating unit does not exceed the limit given by SP PowerGrid during consultation.
- h. Gas admittance can be expected by early May 2027 provided the RFP Winner submits the application for its gas connection to PowerGas by early January 2024 and make payment to PowerGas for confirmation on the project by end April 2024. This is also subject to the location of gas entry point follow as proposed by PowerGas during consultation. For more details on the gas connection, please refer to below Table 8:

Table 8: Gas Connection for EMA's Identified Greenfield Site

S/N	Description	Requirements / Remarks
1	Tie-in point	To be advised by PowerGas during consultation.
2	Delivery pressure	Minimum Required Offtake Pressure ("MROP") of 22.76 barg at GSIV

3	Gas Supply Isolation Valve ("GSIV")	<p>To provide an approx. 7m by 17m piece of land ("GSIV Land") within Genco premises at no cost to PowerGas for the installation of a GSIV.</p> <p>The GSIV Land shall be:</p> <ul style="list-style-type: none"> a. Near to the boundary of the premises assessable by PowerGas and its contractor (personnel and vehicle) independently and directly from the public road b. Free of encumbrance including underground services c. Fully comply with statutory requirements including those of Fire Safety and Shelter Department ("FSSD") etc d. Provided with electricity supply and communication lines if required e. Handed over to PowerGas; and provide unrestricted access, for construction and installation of the GSIV, to PowerGas and its contractors at least 15 months prior to the target gas-in date
4	Connection lead time	36 months upon confirmation of project by way of payment of applicable connection charges.
5	Connection charge	To be advised by PowerGas during consultation.
6	Action required by customer	<p>Appoint a Shipper to submit application for connection in accordance with the Natural Gas Connection Policy and Procedures.</p> <p>Design and construct the Internal Pipe:</p> <ul style="list-style-type: none"> a. From GSIV to Gas Metering Station inlet and then Gas Metering Station outlet to appliances b. With maximum allowable operating pressure ("MAOP") of 42barg, or otherwise as advised by PowerGas c. Sized to deliver, from the GSIV, the required gas flow and pressure to the

		appliances, incorporating gas regulator / gas compressor where necessary
7	Gas Metering Station ("GMS")	<p><u>Option 1: Customer request PowerGas to build and own the GMS, the customer shall:</u></p> <ul style="list-style-type: none"> a. Provide a piece of land of approx. 20m x 60m ("GMS Land"), within Genco premises, at no cost to PowerGas b. The GMS Land shall be free of incumbrance including underground services and fully comply with statutory requirements including those of FSSD etc. c. The GMS Land shall be provided with electricity supply and communication lines if required d. Hand over the GMS Land to PowerGas; and provide unrestricted access, for construction and installation of the GMS, to PowerGas and its contractors at least 20 months prior to the target gas-in date e. Configure Internal Pipe and make provision for connection to the inlet and outlet of the GMS f. Provide easy access to the GMS by PowerGas and its contractors for inspection, operation and maintenance of the GMS g. Completion lead time of the GMS is approx. 36 months upon confirmation of the project by way of payment of applicable connection charge <p><u>Option 2: Shipper to build and own the GMS with appropriate design capacity. The customer / Shipper shall:</u></p> <ul style="list-style-type: none"> a. Provide a space within the GMS and install a RTU provided by PowerGas. b. Transmit all required data (32 bits) from field equipment to the RTU for forward transmission to PowerGas' control room via PowerGas' SCADA system

		<p>c. Provide communication lines for transmission of data from the RTU to PowerGas' SCADA system if required</p> <p>d. Include a non-return valve at the outlet of the GMS to prevent back flow into the gas transmission network in the event of a pressure surge</p>
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