



**EXPRESSION OF INTEREST (EOI) FOR
SEA-BASED RELOADING
AND
SUPPLY OF E-/BIO-METHANE AS A MARINE FUEL
IN PORT OF SINGAPORE**

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EXPRESSION OF INTEREST FOR SEA-BASED RELOADING AND SUPPLY OF E-/BIO-METHANE AS A MARINE FUEL IN THE PORT OF SINGAPORE

1 INTRODUCTION

- 1.1 Singapore is the world's major bunkering port. As part of the multi-fuel bunkering transition, the Maritime and Port Authority of Singapore (“MPA”) has been working closely with the industry to ensure that the LNG bunkering landscape in Singapore is able to support both current and future needs of the shipping industry. At present, the Port of Singapore is well served by three licenced LNG bunker suppliers. This year, LNG demand in the Port of Singapore has increased and as of October 2024, more than 385,000 tonnes of LNG have been bunkered in the Port of Singapore, surpassing the total volume of the past 3 years.
- 1.2 With a growing global fleet of LNG dual-fuelled vessels and competitive LNG bunker prices, demand for LNG bunkering is expected to grow further. MPA is therefore reviewing the current LNG bunker licensing regime and supply requirements to better serve the industry's growing bunkering needs – including capacity and product offerings in the short-to-medium term, as well as new supply model(s) in the longer term.
- 1.3 To complement existing efforts to facilitate the development of onshore LNG storage and jetty capacities, MPA is exploring other possible avenues to augment the onshore segment. While ship-to-ship reloading of an LNG bunker vessel (LBV) via an LNG carrier transiting through the Port of Singapore is an established practice today, MPA seeks to further explore the expansion of sea-based reloading of LNG such as ship-to-ship reloading or other viable modes of operation. MPA is also keen to explore the development of new concepts and use of floating platforms to further enhance safety and efficiency of multi-fuel bunkering operations and simultaneous operations (SIMOPS) in the Port of Singapore.
- 1.4 While the use of LNG emits less carbon dioxide (CO₂) than conventional marine fuels when providing similar propulsion power, from an overall GHG emission perspective, there is still a need to address methane slip from a well-to-wake perspective. Methane slip refers to the release of methane in gaseous form, which is a GHG with much higher global warming potential (GWP) compared to CO₂. It can come from either the burning of fuel as well as the release of unburnt methane into the atmosphere from main and auxiliary engines, or from sources not related to the engines (such as operational, fugitive, and emergency releases). The extent of methane slip varies depending on the engine type, engine design, engine load and the abatement technologies used. To better address the variability of factors above as well as to validate designs and technologies, various measures can help to reduce these slips, with optimisation of engine design and technologies onboard the LBV(s).
- 1.5 In addition to addressing methane slip, it is also crucial to further develop the use of methane-based alternatives (e.g. liquefied bio-methane) as marine fuel in the Port of Singapore to support future shipping demands for methane-based alternatives with lower lifecycle GHGs. This will aid the industry to comply with carbon emission requirements from the IMO – with the single or blended use of more methane-based alternatives.

2 PURPOSE OF EXPRESSION OF INTEREST

- 2.1 MPA is launching this Expression of Interest (EOI) to invite interested parties (each, a “Participant”) to submit a proposal(s) (“Proposal”) that would allow MPA to better understand:
- (a) the potential for scaling up of sea-based reloading of LNG for use as a marine fuel in the Port of Singapore;
 - (b) the industry’s interest to supply e-/bio-methane in the Port of Singapore; and
 - (c) new concepts and use of floating platforms to increase bunkering safety and efficiency as well as incident response in the Port of Singapore.
- 2.2 Participants of the EOI do not need to be an existing LNG bunkering licensee. MPA may take into account the Proposals received in response to this EOI to review the licensing framework for LNG bunkering in the Port of Singapore. MPA may approach one or more Participant(s) directly after the close of this EOI to seek clarifications on the Proposals submitted.
- 2.3 Please note the following:
- a) This EOI is **not** a tender for the supply or sale of LNG to MPA, or for a licence to supply or sell LNG to any other users in Singapore, and should not be construed as such.
 - b) MPA’s receipt of information or Proposal(s) submitted further to this EOI shall not be construed as amounting to any representation or warranty that MPA will grant any licence or authorisation to supply or sell LNG to any Participant.

3 EOI REQUIREMENTS

- 3.1 This EOI is split into three (3) sections as follows:
- a) Section 1: Sea-based reloading of LNG for bunkering
 - (i) Part 1: Model for sea-based reloading of LNG for bunkering
 - (ii) Part 2: Trial(s) for sea-based reloading of LNG for bunkering
 - b) Section 2: Supply of LNG alternatives (such as bio-methane and/or e-methane) as marine fuel in the Port of Singapore; and
 - c) Section 3: New concepts and uses of floating platform to increase bunkering safety and efficiency, as well as incident response in the Port of Singapore.
- 3.2 The Participant may choose to submit its Proposal for any or all section(s) of this EOI.
- 3.3 Section 1, Part 1: Model for sea-based reloading of LNG for bunkering
- 3.3.1 This Section invites proposals for a comprehensive and cost-competitive model for sea-based reloading of LNG for the purpose of supplying LNG as a marine fuel in the Port of Singapore, specifying including, but not limited to the following:
- a) Detailed description of the proposed model for sea-based reloading of LNG (“model”), which can be based on ship-to-ship reloading or any other viable modes of operation;

- b) Source(s) of product (it will be useful to include any secured offtake agreements and associated volumes, carbon equivalent intensity of product including well-to-tank and well-to-wake if available), and timeline for product availability in Singapore;
- c) Specification of the product (including quality conformance of the LNG bunker to ISO 23306:2020);
- d) Proposed model to include plans on the operationalisation of sea-based reloading of LNG in Singapore waters from 2025 (including any plans for transportation of product to Singapore, frequency of reloading operations that can be supported, modes of storage (if any), delivery of molecules, and partners involved);
- e) Plans to address methane slip from well-to-wake perspective (including any plans to operate the eventual actual bunker vessel(s) with engines and/or technologies capable of abatement of methane slip to 1% or less);
- f) Projected annual volumes from 2025 to 2030 to be achieved through-sea-based reloading of LNG;
- g) Associated price of product in Singapore dollars (including cost breakdown and any plans to maintain cost competitiveness and/or lower price);
- h) Plans to maintain oversight of the entire model (including details on Participant and any partner(s)' involvement in key aspects of the model – such as the coordination with the party operating or chartering of vessel, e.g. LNG carrier, LNG storage vessel – during the sea-based reloading); and
- i) LNG spill contingency and recovery plan (including details of insurance coverage and sharing of real-time data with the MPA).

3.3.2 The Participant, along with the relevant partners (terminal operator(s), LBV operator(s) etc), shall commit their full support, if requested by MPA, for potential testbeds for the following:

- a) Digital connectivity of assets onboard which includes (1) digital bunkering, (2) early detection of incidents, (3) Just-in-time (JIT) platform, and (4) cybersecurity monitoring/response.
- b) Methane slip measurement technologies onboard the LBVs to track long term data on methane slip and effectiveness of abatement technologies deployed.

3.4 Section 1, Part 2: Trial(s) for sea-based reloading of LNG for bunkering

3.4.1 After the Closing Date, MPA may select one or more Participant(s) to carry out at least one physical trial to demonstrate the proposed model for ship-to-ship reloading of LNG in Singapore. The trial(s) shall involve the actual deployment of vessels in Singapore waters – e.g. reload of LNG from an LNG carrier to an LBV or other concepts of sea-based reloading.

- 3.4.2 MPA will inform Participant(s) if it has been selected to conduct the trial(s) in writing. If selected, the selected Participant(s) shall, in consultation with MPA, develop a trial plan to implement its proposed model. The trial plan shall be subject to MPA's written approval. Participants shall not carry out any trials without the prior written approval of MPA.
- 3.4.3 Subject to MPA's approval in writing (which approval may be subject to conditions), selected Participant(s) may, for the purpose of the trial(s) only, be authorised to supply to customers involved in the trial(s), the LNG transferred for the sea-based reloading trial. The selected Participant(s) may also choose not to supply the LNG to customers as part of the trial. In the event of the latter, the selected Participant(s) shall develop a debunkering plan, in consultation with MPA.
- 3.4.4 The selected Participant(s) shall complete the trial within 9 months from the date MPA informs that it has been so selected pursuant to paragraph 3.4.2.
- 3.4.5 The selected Participant(s) shall bear all costs and expenses incurred for the trial.

3.5 Section 2: Supply of LNG alternatives (such as liquefied bio-methane and e-methane) as marine fuel

- 3.5.1 This section invites proposals for a comprehensive (i.e. end-to-end model – sourcing, procurement, storage, supply and delivery) and cost-competitive plan to supply alternatives such as liquefied bio-methane or e-methane, as marine fuel in the Port of Singapore. This proposal shall specify details including, but not limited to the following:
- a) Carbon equivalent intensity of product(s)
 - b) Composition/blend of product(s) to be sold and sourced (to be elaborated in 3.5.3)
 - c) Associated price of product(s) in Singapore dollars
 - d) Grade and purity
 - e) Secured offtake agreements and associated volumes (if applicable)
 - f) Proposed process for certification

The Participant shall provide projected total annual production volumes of proposed product(s) to be made available for sale in Singapore, from 2025 to 2030.

- 3.5.2 The Participant, along with its partners (terminal operators, shipowners etc), shall commit their full support, if requested by the MPA, to trial a registry system for liquefied bio-methane/e-methane.
- 3.5.3 The Participant shall provide details of the sources for product(s) listed in paragraph 3.5.1, including but not limited to:
- a) Location of production plant and export terminal, and plans for transportation of product to Singapore (if applicable);
 - b) Project status (i.e. feasibility study, FEED, FID) and commencement date of production;

- c) Carbon equivalent intensity and production pathway(s);
- d) Annual production volumes (Tonnes per annum) up to 2030 and volumes available for export to Singapore; and
- e) Other stakeholders involved (if applicable).

3.6 Section 3: New concepts and use of floating platforms to increase bunkering safety and efficiency in Port of Singapore

3.6.1 This section invites proposals for new concept(s) and use(s) of floating platforms to increase bunkering safety and efficiency as well as incident response in the Port of Singapore. The Participant shall explore the concept of multi-fuel compatibility for the floating platform. The proposal shall specify details including, but not limited to the following:

- a) Detailed description of the proposed innovation(s), including benefits to bunkering operations in the Port of Singapore;
- b) Status of development (i.e. feasibility study, FEED, FID) and proposed timeline; and
- c) Proposed financing and commercialisation plan.

3.7 Participants should note that MPA reserves the right, at any time after the publication of this EOI, to remove, revise or add to any of the requirements set out under this EOI through the publication of a clarification notice on the MPA website.

3.8 Participants should consider the following in its Proposals for each of the three (3) sections referred to in this paragraph 3:

- a) Section 1: Readiness and cost-competitiveness of model, as set out in paragraph 3.3.1.
- b) Section 2: Readiness and cost-competitiveness of product, as set out in paragraph 3.5.1.
- c) Section 3: Potential of innovation to improve safety and efficiency of bunkering operations along with the availability of prototype(s) for testing the innovation, as set out in paragraph 3.6.1.

4 ADMINISTRATIVE DETAILS

4.1 Participants are to submit their Proposals, together with the completed **Annex A** of this EOI, in softcopy via email to:

greenport@mpa.gov.sg

4.2 The Proposals shall be submitted in both Microsoft WORD and PDF format. Each email shall be below 20MB and multiple emails are permitted given this limit. The Participant must clearly quote the references to its Proposals if multiple emails are submitted.

4.3 All Proposals must reach MPA via email no later than 1.00pm (Singapore Time) on 28 February 2025 ("**Closing Date**"). Any submissions sent after the Closing Date will not be considered by MPA. Any extension of the Closing Date is at the sole discretion of MPA.

4.4 MPA will acknowledge receipt of all Proposals submitted electronically by 5.00pm Singapore time on 3 March 2025. Please promptly contact the MPA via greenport@mpa.gov.sg if you do not receive an acknowledgement of your Proposal by then.

4.5 Should a Participant wish to make any changes to its Proposal after submitting via email but *before* the Closing Date, the Participant should submit a fresh Proposal. The fresh Proposal must clearly state that the fresh Proposal supersedes the earlier Proposal, failing which MPA reserves the right to reject both Proposals.

4.6 For the avoidance of doubt, this is a non-binding EOI.

4.7 Together with the submission of its Proposal, each Participant must also appoint and authorise an official point-of-contact, who shall be responsible for and authorised to liaise with, receive instructions from and give information to MPA on all matters in connection with this EOI. Documentary proof of such authorisation must be provided.

4.8 An industry briefing will be arranged for interested Participants of the EOI. Please note that attendance at the industry briefing is **not mandatory**. Due to limited space constraints, please register your attendance with MPA via email to greenport@mpa.gov.sg by 9 Jan 2025. The details of the briefing are as follow:

Date of Registration:	9 Jan 2025
Date of Briefing:	16 Jan 2025
Time:	9.30am – 11.00am (SGT)
Venue	460 Alexandra Road, mTower, #18-00 L18 Excellence Room Singapore 119963

4.9 MPA reserves the right at any time to withdraw this EOI at its absolute discretion and shall not be liable to any person in respect of the same whatsoever.

5 CLARIFICATIONS

5.1 All enquiries/clarifications relating to the EOI should be submitted via email at least seven (7) working days before the Closing Date to greenport@mpa.gov.sg.

- 5.2 After the Closing Date, MPA may invite Participants to make presentations to MPA with regard to their Proposals. Details of such presentations, if necessary, will be arranged by MPA. In the event MPA requests for written clarification with regard to any aspect of the Participant's proposal, the Participant shall endeavour to provide full and comprehensive responses within seven (7) working days of such a request. MPA may decline to assess the Proposal(s) of any Participant(s) that fails to respond to any such invitation for a presentation or to provide written clarification.

6 CONFIDENTIALITY

- 6.1 MPA reserves the right to share any information submitted by Participant(s) with its employees, officers, directors, consultants, and/or advisors for the purposes of assessing the Participant's Proposal(s).
- 6.2 MPA reserves the right to share aggregated or anonymised information publicly on a need-to basis, for the purposes of benefitting Maritime Singapore's multi-fuel transition.
- 6.3 Nothing in this EOI shall prohibit MPA from disclosing any information submitted to MPA for the purpose of this EOI to any Ministry, Department, Agency, administrative or statutory body or corporation under the control of the Government of Singapore in compliance with MPA's internal reporting and approval requirements.

FORM OF PROPOSAL

Instructions: Annex A shall be completed and submitted with the Proposal, together with any supporting documents, justifications or key assumptions where applicable.

An editable version of Annex A can be found at this [link](#).

S/N	Items	Please complete with the necessary details, or indicate the reference in the Proposal.
Background information		
1	Participant's name and registered business address.	
2	Profile of Participant and its partners, if any, in the consortium, and details of relevant experience. If the Participant consists of a consortium of companies, the Participant shall also list the key personnel from each company.	
3	An up-to-date original or certified true copy of your Company Profile/Business Information printout from the Accounting and Corporate Regulatory Authority (ACRA) of the Participant and its partners, if any, in the consortium.	
4	Operational experience (if any): Proven track record in the area of LNG or bio-methane/synthetic methane handling (which could include production, delivery, distribution, and usage or storage of LNG and is not limited to the supply of LNG as a marine fuel). Provide details on prior and/or current experience in LNG bunkering activities, and/or any other related activities.	

REQUIREMENTS SPECIFICATIONS MET

EOI Requirements (refer to Paragraph 3 for details)

You may submit the Proposal for any or all three sections, as applicable. Do indicate the applicable sections in the table below.

EOI Requirements	Please indicate with a “X” the section(s) that the scope of your proposal covers.
Section 1	
Section 2	
Section 3	

For each requirement in each section, please indicate if the specific requirement clause is met and reference it to the page number of the Proposal.

Section 1: Sea-based reloading of LNG for bunkering

<u>Requirements Clause</u>	<u>Met (Y/N)</u>	<u>Reference in Proposal</u>
3.3.1		
3.3.2		
3.3.3		
3.4.1		
3.4.2		
3.4.3		
3.4.4		
3.4.5		

Section 2: Supply of e-/bio-methane as marine fuel in Singapore

<u>Requirements Clause</u>	<u>Met (Y/N)</u>	<u>Reference in Proposal</u>
3.5.1		
3.5.2		
3.5.3		

Section 3: New concepts and uses of floating platform to increase bunkering safety and efficiency, as well as incident response in Port of Singapore

<u>Requirements Clause</u>	<u>Met (Y/N)</u>	<u>Reference in Proposal</u>
3.6.1		

PARTICIPANT'S OFFICIAL POINT-OF-CONTACT

Participant Name	
Name of Contact Person	
Designation	
Telephone Number	
Fax Number	
Email Address	

Any representations made by the Participant's contact person shall be taken by MPA to be made at the express instruction of the Participant and shall bind the Participant.

STRUCTURE AND ORGANISATION OF PARTICIPANT(S)

Full Name of Participant / Members of Consortium ¹	
Legal Ownership of Participant / Members of Consortium ²	
Registered Address	
Corporate Entity ³	
For consortiums ⁴	
For Participants or in the case of consortiums, members, that are part of a group of companies, corporate shareholding charts showing the shareholdings up to the ultimate parent company or shareholder	

¹ In the case of a consortium, names of all members MUST be included.

² Participants and all members of a consortium shall provide full information on their ownership, including: (i) the name and address of any person, company or corporation which owns, whether directly or indirectly, at least 50% of the total number of shares in the Participant (and in the case of an Participant comprising of a consortium, of each member of the consortium); (ii) the number, percentage and class of shares held by such person, company or corporation. This requirement applies not only to the direct shareholders of the Participant or the consortium members, but to all of their upstream shareholders as well.

³ For example, company limited by shares, limited liability partnership, partnership, consortium or joint venture, etc. Please provide certified true copies of documents evidencing the legal status of the Participant e.g. the ACRA business profile search or like documents.

⁴ Information must be submitted with respect to (i) the legal relationship among the members of the consortium (ii) the role and responsibility of each member of the consortium; and (iii) the address of the consortium to which the Authority may send any notice, request, clarification or correspondence. Please also provide certified true copies of documents evidencing (i) and (ii) (e.g. shareholders agreement, consortium agreement etc.).