



**EXPRESSION OF INTEREST (“EOI”) FOR FINANCING AND
INSURANCE SOLUTIONS TO SUPPORT THE ADOPTION OF
ELECTRIC HARBOUR CRAFT (“PROJECT”) IN SINGAPORE**

Issued on 19 October 2023

MARITIME AND PORT AUTHORITY OF SINGAPORE
460 Alexandra Road mTower #19-00
Singapore 119963
www.mpa.gov.sg

Disclaimer:

The information contained in this document is subject to change and shall not be treated as constituting any advice to any person. It does not in any way bind the Maritime and Port Authority of Singapore (“**MPA**”) to grant any approval, award or official permission for any matter. MPA reserves the right to change its policies and/or to amend any information contained in this document without prior notice. Persons who may be in doubt about how the information in this document may affect them or their commercial activities are advised to seek independent legal advice or any other professional advice as they may deem appropriate. MPA shall not be responsible or liable for any consequences (financial or otherwise) or any damage or loss suffered, directly or indirectly, by any person resulting or arising from the use of or reliance on any information contained in this document. Participation in this EOI does not oblige MPA to grant, and should not be construed as amounting to any representation or warranty that MPA will grant, any right, authorisation or permit licence to that participant or its partners.

EXPRESSION OF INTEREST (“EOI”) FOR FINANCING AND INSURANCE SOLUTIONS TO SUPPORT THE ADOPTION OF ELECTRIC HARBOUR CRAFT (“PROJECT”) IN SINGAPORE

1 INTRODUCTION

1.1 Singapore announced its national climate target to achieve “net zero emissions by 2050” as part of the Long-Term Low-Emissions Development Strategy (LEDS). The transition to net zero emissions requires a collective effort from the public and private sectors comprising power generation, industry, transport, buildings, waste and water, and households. The domestic transport sector, which includes domestic maritime transport, actively works towards reducing Singapore’s national levels of greenhouse gas emissions through various initiatives, including digitalisation and decarbonisation efforts.

1.2 In support of Singapore’s 2050 national target, MPA has targeted for the harbour craft sector¹ (which includes harbour craft, pleasure craft and tugboats) to achieve net-zero emissions by 2050. To achieve this target, from 2030, all *new* harbour craft operating in our port waters must either (i) be fully electric, (ii) be capable of using B100 biofuels, or (iii) be compatible with net-zero fuels such as hydrogen, while all *existing* harbour craft are expected to transition to net zero emission types progressively.

1.3 Harbour craft licensed under the SP, SC, and SR prefix², have been identified as frontrunners for full electrification. This group of harbour craft provides a wide range of services, including transporting passengers, cargoes, and other specialised uses such as project work, surveying, mooring, garbage collection and salvage work etc. Within this group of harbour craft, a large proportion³ of harbour craft share common operational parameters suitable for demand aggregation as set out below.

1.3.1 Combined shaft power ranging between 200 and 400 kW;

1.3.2 Overall length ranging between 10 and 20 metres; and

1.3.3 Gross tonnage ranging between 20 and 40 tonnes.

¹ The Participant may wish to refer to *Liu M. et al., A Study on the Future Energy Options of Singapore Harbour Craft, NTU MESD CoE Report, November 2020* for more information on the profile of the Singapore harbour craft sector.

² Under MPA’s categories of harbour craft licenses – SP: Vessel used for the carriage of passengers. SC: Vessel used for the carriage of dry or packaged cargoes. SR: Vessel used for any other purpose.

³ Approximately 25% of 1,600 propelled harbour craft.

1.4 Electrification of craft involves storing electricity in an onboard energy storage system for electric propulsion and loads. It is one of the major technological pathways to reduce the overall greenhouse gas emissions from the harbour craft sector in Singapore. Lower greenhouse gas emissions and pollutants are expected when using electricity (from the grid) to propel these craft, as compared to those propelled by internal combustion engines (ICE) and fossil-based fuels. Such levels of emissions are expected to be further reduced to zero if the electric propulsion and system of these craft are charged using renewable energies such as solar energy, which can be imported from overseas or harnessed in Singapore. Furthermore, there are other beneficial outcomes from the electrification of these craft⁴, and will also introduce opportunities for our maritime workforce to upskill and take on wider roles arising from the electrification of the harbour craft and pleasure craft sector.

1.5 Electrification of harbour craft signifies a shift away from the conventional ICE and fossil-based fuel as the main energy converter and fuel, respectively, in the harbour craft sector. The key industry consideration to enable this shift, beyond meeting the net zero emission goal, is the cost-benefit and ability of electrical systems to meet the operational profiles and demands of their ICE counterparts.

1.6 With electrification, the battery cost is front loaded, resulting in high capital expenditure. However, the operating expenditure is expected to be lower than that of conventional vessels, hence the Total Cost of Ownership (TCO) should be comparable to or lower than conventional vessels operating on ICE propulsion. There are also maintenance benefits compared to their ICE counterparts as the fleet of electric harbour craft can be digitally monitored and preventive maintenance be effected, as well as environmental benefits in reducing pollutants and noise. Nevertheless, the upfront higher capital expenditure could pose a cost barrier and deter some harbour craft owners/ operators from adopting electric harbour craft.

2 PURPOSE OF EOI

2.1 Pursuant to this **non-binding Expression of Interest (“EOI”)**, MPA invites interested parties (each, a **“Participant”**) to submit a proposal (**“Proposal”**) for competitive financing solutions or insurance solutions to support the adoption of electric harbour craft in Singapore (**“Project”**) with a view of potentially adopting similar financing and insurance structures for other aggregated types of electric or net-zero fuelled harbour craft in future. For the avoidance of doubt, each Proposal is to address either the financing or insurance component, and not both. Participants are invited to submit two (2) separate Proposals on financing and insurance respectively, if they so wish.

2.2 This EOI will allow MPA and other relevant agencies (**“Interested Authorities”**) to review, evaluate and assess financing solutions, and marine insurance options to accelerate the adoption of electric harbour craft.

⁴ For example, a higher efficiency of the electric drivetrain and lower energy consumption during low-load operations, high torque at low-speed engine modes, reduced maintenance costs due to fewer maintenance checks and moving components, zero tailpipe emissions, low noise and vibration levels for enhanced comfort (Lam, Sze, Gou, & Yang, 2020).

2.3 MPA and/or other Interested Authorities will review, evaluate and assess the Proposals received and may subsequently launch a Request for Proposal (RFP) to implement the Project. MPA also reserves the right to approach one or more EOI Participant(s) directly after the EOI is closed and commence negotiations to award the Project without going through an RFP.

3 OVERVIEW OF REQUIREMENTS

General Requirements

3.1 For this EOI, Participants are required to submit their Proposals for financing and/or insurance solutions with the aim to support the adoption of electric harbour craft in Singapore.

3.2 Participants may also refer to the EOI on the design and development of best-in-class electric harbour craft reference designs launched on 10 July 2023 for more details on the technical requirements of the electric harbour craft and Q&A responses from the industry briefing held on 31 July 2023 (<https://www.mpa.gov.sg/media-centre/details/call-for-expression-of-interest-to-design-and-promote-adoption-of-electric-harbour-craft-in-singapore>). Participants may prepare their financing and/or insurance Proposals based on these broad parameters:

3.2.1 Participants may consider an aggregated fleet of fifty (50) electric harbour craft as an initial demand planning parameter. Alternatively, Participants may also propose other portfolio sizes as part of their Proposals.

3.2.2 Participants should clearly indicate whether their Proposals pertain to the harbour craft hull and machinery, battery systems, or both.

3.2.3 While upfront capital expenditure of an electric harbour craft is expected to be higher than that of a conventional harbour craft, the Total Cost of Ownership (TCO) calculated over its estimated lifecycle is expected to be comparatively equal or lower⁵.

3.3 Participants may also refer to the Call for Proposal to carry out pilot trials of charging points for electric harbour craft at selected locations launched on 29 August 2023 for details on MPA's plans to test charging technologies and support the development of charging standards and the national charging infrastructure masterplan (<https://www.mpa.gov.sg/media-centre/details/call-for-proposal-to-carry-out-pilot-trials-of-charging-points-for-electric-harbour-craft-at-selected-locations>).

⁵ In 2021, MPA and the Singapore Maritime Institute (SMI) supported two consortiums led by Seatrium New Energy Limited (formerly known as Keppel FELS Pte Ltd) and SeaTech Solutions International (SP) Pte Ltd, to research, design, build and operate a fully electric harbour craft over the next five years. A desired outcome was to attain commercial viability based on capital expenditure. When MPA and SMI released the joint call for proposals for this project in 2020, technology cost was estimated to be 1.6 to 2 times the cost of current diesel-based technologies. To prepare for eventual adoption by the harbour craft sector, the cost factor was ambitioned to strive towards a sustainable level (e.g., no more than 1.2 times) compared to a conventional vessel operating on ICE propulsion.

3.4 Participants acknowledge that use of carbon credits (if any) generated from carbon reductions achieved as a result of the Project, shall be subject to further discussions between the Participant and MPA and/or other Interested Authorities.

Requirements Pertaining to Financing Scope

3.5 Participants are required to submit their Proposals on competitive financing solutions which can lower financial barriers of the adoption of electric harbour craft. Participants shall illustrate the proposed asset financing/ownership model that their respective financing solution seeks to offer to owners/operators of electric harbour craft. Such models may include, but is not limited to, leasing, charter-hire, lease-buyback, debt financing (e.g., asset-backed loans), options of trade-in of existing harbour craft (or combinations of any of these models where appropriate).

3.6 Participants shall provide broad parameters of the financing terms that they are prepared to offer. These should include, but is not limited to, loan-to-value parameters, interest/pricing considerations, loan tenures and repayment profile, minimum financing quantum required to ensure viability of the proposed financing solution/product. Proposed solutions/ products must comply with all relevant laws, regulations, and industry standards.

3.7 Participants shall provide preliminary considerations of risk assessment and propose suitable risk mitigation measures.

3.8 Participants may include any other structuring considerations which may require additional fiscal and/or regulatory support from MPA and/or other Interested Authorities. Participants should note that MPA is currently not considering undertaking any direct equity investments nor owning assets. MPA may however, consider suitable risk-sharing arrangements that Participants may propose.

Requirements Pertaining to Insurance Scope

3.9 Participants are required to submit their Proposals for insurance solutions to manage the financial risks of owning/operating electric harbour craft.

3.10 Participants shall provide broad parameters of the insurance terms that they are prepared to offer in order to support and drive adoption of electric harbour craft in Singapore. These should include the following where applicable, but is not limited to:

3.10.1 information about the insurance products and coverage, including policy terms, limits and exclusions;

3.10.2 a breakdown of premium costs (benchmarked against similar insurance products available globally where appropriate) and any potential discounts, deductible options;

3.10.3 compliance of the proposed solutions/ products with all relevant laws, regulations, and industry standards;

3.10.4 any additional service that is provided such as risk management advice, and loss prevention programme; and

3.10.5 any training or maintenance programme that can be developed with certification bodies or appointed providers for servicing of the insured equipment.

3.11 Participants are encouraged to include in the Proposal the limitations/ exclusions/ exceptions for insuring electric harbour craft as compared to typical insurance coverage of conventional harbour craft, and the relevant pre-requisites.

3.12 The insurance coverage should minimally meet the regulatory requirements for the licensing of harbour craft where applicable⁶.

3.13 Participants may indicate the company's booking structure of premiums and reinsurance.

3.14 Participants shall include relevant track record, customer service support for policy holders and its financial standing to undertake the proposed products/solutions.

3.15 Participants may include any other structuring considerations which may require additional fiscal and/or regulatory support from MPA and/or other Interested Authorities. Participants may include multiple pricing models within a single proposed solution. MPA may consider suitable risk-sharing arrangements that the Participant may propose.

4 FORM OF EOI

4.1 The Participant shall submit the EOI using the format set out in **Appendix A**.

4.2 The Participant should provide supporting reasons if there are deviations to the requirements set out in this EOI or if it is unable to furnish any of the requested details in **Appendix A**.

⁶ The Participant may refer to MPA's website for the said requirements – <https://www.mpa.gov.sg/port-marine-ops/harbourcraft-and-pleasure-craft-regulations/licensing-of-harbour-craft-pleasure-craft>.

5 ASSESSMENT CRITERIA

5.1 Proposals will be assessed based on:

5.1.1 Financing. Quality and strength of Participant's proposals including but not limited to feasibility and viability of business and asset ownership model, risk assessment, attractiveness of financing terms, structuring considerations, and Participant's compliance to the requirements of the EOI summarised in Section 3 and detailed in **Appendix A**.

5.1.2 Insurance. Quality and strength of Participant's proposals including but not limited to extent of marine insurance coverage, pricing, licensing, insurance-linked considerations, and Participant's compliance to the requirements of the EOI summarised in Section 3 and detailed in **Appendix A**.

5.2 Only Proposals submitted before the closing date will be considered.

6 ADMINISTRATIVE DETAILS

6.1 Participants are to submit their Proposal(s) in **Microsoft Word** and/or **PDF** formats⁷ via email to:

IMC@mpa.gov.sg

6.2 A hybrid industry briefing will be arranged as follows. Participants are requested to email IMC@mpa.gov.sg to register their interest to attend the industry briefing. Participants should indicate the names of the attendees and whether they will be attending the briefing in-person or virtually. Please note that attendance at the industry briefing is not a critical evaluation criterion for this EOI.

Date and time:	8 November 2023 (Wednesday) 2.30 pm (SGT)
<u>In-person attendees</u>	
Venue:	mTower, 460 Alexandra Road Singapore 119963 Level 18 Excellence Room
<u>Virtual attendees</u>	
Microsoft Teams Meeting ID:	493 987 100 571
Passcode:	EXJWPu

6.3 The closing date for submissions is 19 December 2023, 2359 hrs Singapore time.

⁷ The Participant shall validate its assumptions and calculations as requested by MPA.

6.4 MPA will acknowledge receipt of each submission via email. If you do not receive an acknowledgement of your submission within two (2) business days, please contact Mr Melvin Lim ([Melvin LIM@mpa.gov.sg](mailto:Melvin_LIM@mpa.gov.sg)) and Ms Choi Yi Fang ([CHOI Yi Fang@mpa.gov.sg](mailto:CHOI_Yi_Fang@mpa.gov.sg)).

6.5 MPA and/or other Interested Authorities reserve the right to share any information submitted by Participants in their Proposals with any party, including other Interested Authorities, for the purposes of assessing the Participant's Proposal(s). Any part of the submission that is considered by Participants to be confidential should be clearly marked, failing which, each Participant shall be deemed to have consented to MPA sharing and/or disclosing the Proposal(s) (and any or all information therein) in accordance with this Section. MPA reserves the right to aggregate/anonymise the information before sharing on a need-to basis. For the avoidance of doubt, this is a **non-binding EOI** and MPA shall not be bound or under any obligation to accept any Proposals submitted.

* * *

FORM OF EOI

Instructions: Please use this form to submit your EOI and include any supporting documents, justifications, or key assumptions where applicable.

1. Participant's name, registered business address, contact person's name, designation, email and contact number. Participant may be requested by MPA to provide additional information pertaining to their business.
2. Profile of Participant and its partners, if any, in the Project 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. The Participant shall provide a detailed Proposal as set out in Section 3 of this EOI.
 - 3.1 For Participant submitting a Proposal on the financing component, the Proposal shall provide the following details (where applicable):

Financing	
Illustration of financing solution	
Risk assessment of proposed financing solution	
Financing terms and facility type	
Sponsors/fund guarantors and liquidity providers	
Structuring considerations	
Charter contract requirements	
Recourse mechanisms	

- 3.2 For Participant submitting a Proposal on the insurance component, the Proposal shall provide the following details (where applicable):

Insurance	
Scope of marine insurance coverage (including policy terms, limits, and exclusions)	
Underwriting capacity	
Indicative policy premium pricing (or broad pricing policy)	
Booking structure of premiums and reinsurance business structure	
Minimal financial rating/standing required	
Training programme or maintenance programme for adopters of electric harbour craft	
Other insurance-linked considerations	

* * *