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MPA and Shell Sign MoU to Accelerate Maritime Decarbonisations Efforts in Singapore

The Maritime and Port Authority of Singapore (MPA) and Shell Eastern Trading Pte Ltd (Shell) signed a memorandum of understanding (MoU) to expand collaboration on the maritime decarbonisation efforts in Singapore. The MoU was signed by Mr Teo Eng Dih, Chief Executive of MPA and Mr Nick Potter, General Manager of Shell Shipping and Maritime for Asia Pacific and the Middle East. The signing was witnessed by Mr S Iswaran, Minister for Transport and Minister-in-Charge of Trade Relations and Chairman of Shell Companies in Singapore, Ms Aw Kah Peng.

2. As part of the five-year MoU, MPA and Shell will work together to advance the adoption of electric harbour craft and the development of low-and-zero-carbon fuels in Singapore.

3. To support the adoption of electric harbour craft, MPA and Shell will identify energy-related development opportunities. This includes collaboration on charging infrastructure for electric harbour craft. Both parties will also work together on the research and development of low-and-zero-carbon fuels. This includes the training of crew in the handling, operations and maintenance of vessels operating on such fuels.

4. "MPA is committed to working with industry partners, like Shell, to drive decarbonisation efforts in the maritime sector. Our partnership with Shell will tap into both MPA's and Shell's expertise in maritime decarbonisation, renewable energy and innovation. The MoU is an important step towards achieving our 2030 goal for all new harbour craft to be fully electric, be capable of using 100% biofuels or be compatible with net zero fuels, and achieving net zero emissions in our harbour craft, pleasure craft and tugboat sectors by 2050," said Mr Teo Eng Dih.

5. "We are delighted to sign this MoU with MPA which paves the way for continued collaboration on a variety of decarbonisation solutions, including electrification and low-and-zero-carbon fuels. Shell is working closely with industry stakeholders from across the value chain to explore the fuel and technology pathways to shipping decarbonisation, and later this year, we plan to kick off a hydrogen fuel cell trial on a Shell-chartered vessel," said Mr Nick Potter.

6. The MoU signing took place at an event held by Shell to unveil the first of a series of electric ferries in Singapore, and the first for Shell globally, held at the Shell Energy and Chemicals Park Singapore on Pulau Bukom. Shell worked with a Singaporean homegrown shipbuilder and shipowner, Penguin International, on the first fully-electric ferry service in Singapore. Penguin is the turnkey designer, builder, owner and operator of the electric ferries and their rapid shore chargers.

7. Dubbed by Penguin as the Electric Dream project, the first electric ferry, Penguin Refresh, is scheduled to commence operations in May, ferrying Shell personnel, contractors, and visitors between Pasir Panjang Ferry Terminal and Pulau Bukom. Two additional electric ferries will be operational in August 2023.

8. MPA will work with Shell to make its charging facilities at Shell Energy and Chemicals Park Singapore available for other electric harbour craft users. Shell is also exploring the feasibility of expanding the shore charging infrastructure on the island. Please refer to the Annex for the Electric Dream Project factsheet.

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About the Maritime and Port Authority of Singapore (MPA)

MPA was established on 2 February 1996 with the mission to develop Singapore as a premier global hub port and international maritime centre, and to advance and safeguard Singapore's strategic maritime interests. MPA is the driving force behind Singapore's port and maritime development, taking on the roles of port authority, maritime and port regulator and planner, international maritime centre champion, national maritime representative and a champion of digitalisation and decarbonisation efforts at regional and international fora such as at the International Maritime Organization. MPA partners industry, research community and other agencies to enhance safety, security and environmental protection in our waters, facilitate maritime and port operations and growth, expand the cluster of maritime ancillary services, and develops maritime digitalisation and decarbonisation policies and plans, R&D and manpower development. MPA is responsible for the overall development and growth of the maritime domain and Port of Singapore. In 2022, Singapore remained one of the world's busiest transshipment hubs with a container throughput of 37.3 million 20-foot equivalent units (TEUs).

For more information, please visit https://www.mpa.gov.sg

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Annex: Electric Dream Project Factsheet

Overview of the Electric Dream Project

Shell is working with Penguin International Limited (Penguin) on the first fully-electric ferry service in Singapore. Penguin is the owner, builder and operator of the ferries and the on-shore charging infrastructure.

Termed as the Electric Dream project, all three ferries are expected to be deployed by August 2023 at the Shell Energy and Chemicals Park Singapore on Bukom. The first ferry to be deployed by May 2023 is named 'Penguin Refresh'.

Specifications of the ferries:

- Ferry dimensions: 28.7m (length) x 9.0m (breadth) x 2.3m (depth)
- Capacity: 200 passengers and 6 crew members
- Battery: Lithium-ion battery system with a capacity of 1.2 megawatt-hour (MWh)
- Flag state: Singapore

Highlights of the Electric Dream Project

- The ferries will sail at 21 knots in the day and at 18 knots in the night. Most electric ferries cruise at 10-12 knots
- Transit time from mainland Singapore to the Shell Energy and Chemicals Park Singapore on Bukom (5.5 kilometres away) is approximately 12 minutes
- The 200-seater commuter ferries will transport around 3,000 passengers daily or an estimated 1.8 million passenger trips annually on the route between mainland Singapore and the Shell Energy and Chemicals Park Singapore
- In the day, a ferry is charged each time it goes to Bukom, for approximately 6 minutes (via fast charging at the jetty on Bukom). Most electric ferries take an hour or more to charge up
- During off-peak hours and overnight, charging will be via slow charging at the small craft basin on Bukom
- Battery capacity of 1.2 MWh is large for a 200-seater commuter ferry as most electric ferries of this size carry half the battery capacity or less
- 7 megawatts (MW) of charging capacity is available on Bukom (Includes both rapid DC and slow AC charging) for the electric ferries as well as other electric harbour craft

Benefits of the Electric Dream Project

- Zero-emission passenger ferry transportation
- CO_2 emissions saved: estimated to be 6,258 tonnes in total for three ferries per year. This is equivalent to greenhouse gas emissions from more than 18,000 one-way road trips from Singapore to Bangkok.[1]

[1] Based on a mid-sized petrol car. The analogy is an approximation and is for illustrative purposes only. Shell does not make any representation or warranty, whether express or implied, regarding the accuracy, completeness, reliability or relevance of the analogies, and is not liable in any way for any loss, damages or expenses arising out of, or in connection with the calculation of the analogies, or with the use of or claims made regarding such analogies.

- Fuel consumption saved: estimated to be 1,952 tonnes in total for three ferries per year.
- Apart from CO_2 emissions reduction, the ferries do not emit nitrogen oxides (NO_X), sulphur oxides (SO_X) or particulates.
- Through the use of batteries and motors, noise onboard for passengers is greatly improved, together with less vibration experienced.
- MPA will work with Shell to make its charging facilities at Shell Energy and Chemicals Park Singapore available for other electric harbour craft users. Shell is also exploring the feasibility of expanding the shore charging infrastructure on the island.

Driving: Actual emissions from driving are sensitive to parameters that vary in each individual application, for which assumptions are required here: size or type of car; number of passengers; and city vs. highway driving, among others. As such, these numbers should not be taken as representative of any specific case or activity. Driving analogies are based on direct CO2, CH4 and N2O emissions from the vehicles and do not include emissions from fuel production and distribution (life cycle emissions). Fuel emissions factors are from UK DEFRA (2021) and driving distances are from Google Maps (2023). Annual emissions from cars are calculated based on average distance travelled by US light duty vehicles or EU cars as referenced from US DOT (2019) and EU ODYSSEE-MURE (2018).