ENERGY MARKET AUTHORITY

Our Clean Energy Future

MEDIA RELEASE

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New Initiatives to Future-Proof Singapore's Power Grid

The Energy Market Authority (EMA) will be strengthening capabilities in managing the future needs of Singapore's electricity grid through the Virtual Power Plant (VPP) Regulatory Sandbox and Energy Grid Grant Call. These initiatives are part of the Future Grid Capabilities Roadmap, which outlines Singapore's strategy to ensure the reliability of the power grid through research and development, pilot projects and deployment of solutions.

Virtual Power Plant Regulatory Sandbox

2 As Singapore reduces carbon emissions from power generation, the nation's energy sources will become more diverse. This is due to a greater share of renewable sources in our energy mix. More distributed energy resources (DERs) are also expected to be deployed. DERs are small power generation units installed by consumers to produce, store, or use electricity. These include rooftop solar photovoltaics, battery energy storage systems and electric vehicle chargers.

3 There is potential for DERs to play a greater and broader range of roles to support the needs of the grid. However, it may not be commercially viable for each DER to individually provide services to the grid, because of its smaller generational scale. Instead, a VPP can be deployed to aggregate and improve the commercial viability for DERs to provide grid services.

4 A VPP is a digital platform capable of controlling, optimising, and aggregating a network of DERs across various locations, to operate collectively as a single power generator to provide services to the grid. VPPs have the potential to respond to grid signals and optimise the utilisation of existing DERs by enabling these assets to generate revenue streams beyond their primary functions. This can also encourage investments into new DER assets if enough revenue can be generated as a VPP.

5 As part of efforts to harness DERs, EMA will pilot a VPP Regulatory Sandbox with the following participants - Blue Whale Energy, Nanyang Technological University, and SP Group. The Sandbox, which will run for two years, will test the technical and operational capabilities of VPPs in providing energy and ancillary services to the grid.

6 The Sandbox will allow EMA to evaluate the benefits of VPPs to the power system and inform future market design. More details of the Regulatory Sandbox can be found at https://go.gov.sg/vpp-regulatory-sandbox.

Energy Grid 3.0 Grant Call

7 To further bolster the reliability of Singapore's future grid, EMA has launched the Energy Grid 3.0 Grant Call for proposals to enhance grid planning and operations capabilities, to manage an increasingly complex grid with more renewable penetration and distributed energy resources, as well as solutions to manage new needs of the power system, such as inertia.

8 Inertia refers to the resistance of the electrical grid to sudden changes in frequency, akin to a steady force that keeps electricity smooth and stable. Inertia is traditionally provided by the kinetic energy of rotating thermal generators such as combined cycle gas turbines and open cycle gas turbines. The power system needs inertia to buy time for the system to respond to contingencies such as when a power plant trips or demand spikes. With an expected increase in solar and low-carbon electricity imports – both of which do not provide inertia – measures are required to manage the future needs of an evolving grid.

9 The Grant Call is open to research consortia comprising Institutes of Higher Learning, research institutions, and/or private companies. More details of the grant call, including the proposal submission deadline, can be found at https://go.gov.sg/energy-grid-3-grant-call.

10 Mr Puah Kok Keong, Chief Executive of EMA, said: "The VPP Regulatory Sandbox and Energy Grid 3.0 Grant Call are important steps in building the grid of tomorrow. Through innovation and strong partnerships, we aim to shape a future grid that is smarter, more resilient and ready to support Singapore's energy transition."

SP Technology Laboratory

11 EMA and SP Group are exploring the establishment of the SP Technology Laboratory. This is to develop solutions to address the focus areas identified under the Roadmap, including enhancing grid planning and operations capabilities to manage an increasingly complex grid.

12 EMA and SP Group will continue to strengthen capabilities to bolster Singapore's power grid, advance shared goals of enhancing grid resilience and innovations in energy technologies.

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About the Energy Market Authority

The Energy Market Authority (EMA) is a statutory board under the Singapore Ministry of Trade and Industry. Through our work, we seek to build a clean energy future that is resilient, sustainable, and competitive. We aim to ensure a reliable and secure energy supply, promote effective competition in the energy market and develop a dynamic energy sector in Singapore. Visit www.ema.gov.sg for more information.