



25th July 2022

Ms Anna Collyer
Chair
Australian Energy Market Commission
GPO Box 2603
SYDNEY 2001
Lodged via Email to: info@esb.org.au

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Dear Ms Collyer

Re: Energy Security Board Capacity mechanism High-level Design Paper

Toshiba International Corporation (TIC) – Australia appreciates the opportunity to respond to the Energy Security Board (ESB) high-level design of a capacity mechanism for the national electricity market (NEM) June 2022 paper.

Toshiba International Corporation is a wholly owned subsidiary of Japan based Toshiba Corporation. With origins in 1875, Toshiba is a leading energy company, focusing on manufacturing & supplying new equipment, maintenance & technical support for energy customers globally. Toshiba has multiple state of the art manufacturing & servicing facilities that use the latest innovative technologies to bring Toshiba's industry-leading research & development activities to life. A core Toshiba commitment is to provide valuable & relevant support to customers & government institutions over the long term and make full use of our cutting-edge research results and digital technologies to advance value creation in the energy and infrastructure sectors.

The Toshiba energy system and solution business embraces a portfolio of energy systems, including, nuclear, thermal, hydro, new technology, renewable wind / solar generation, energy aggregation including energy storage systems and hydrogen. Toshiba also provides leading solutions in electricity transmission & distribution that deliver electricity directly to end users, along with digital, communication & automation technologies that support the operation of our energy markets.

Toshiba has operated in Australia for over 40 years, as an essential part of the development of Australia's power generation & transmission system. As energy markets transition to a clean energy future, Toshiba is developing new technologies in the emerging energy sector such as carbon neutral power systems, electrification technologies, Hydrogen & P2X technologies and

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carbon recycling. This technology strategy includes collaboration with government and innovative local partners to deploy these technologies into the Australian market.

TIC Australia consider that the current energy policies under consideration by the Energy Security Board and the Australian Energy Market Commission for the re-design of the electricity system is based too much on a one dimensional approach to each issue to transform and resolve issues such as:

- Five minute settlement and wholesale demand response in the NEM to provide better price signals for fast response and flexible technologies.
- A capacity mechanism to create a clear, long term signal for investment in both new and existing dispatchable capacity.
- Essential System services to progress and deliver a number of initiatives to maintain the systems secure operation and unlock value including system strength, frequency, operating reserve and inertia.
- Transmission Reform and congestion management mechanism to consider the case for a congestion management mechanism to improve signals for generator connection

The Australian (and global) energy markets all realise this transformation is a once in a generation and complex transformation of the electricity system. Therefore the policies developed should place a priority and/or preference on integrated technology solutions that enable an effective multi-dimensional solution to resolve multiple market re-design issues.

Therefore it is recommended that a priority / preference mechanism be incorporated within future policies to promote solutions that resolve multiple market design and strategy development issues. At a minimum, the option of technology solutions that enables an efficient use of capital assets and therefore avoids gold plating of a future variable renewable energy system.

For you reference, TIC have also attached a confidential Positioning Paper on a technology integration roadmap for Australia to become a Global Green Hydrogen Super Power and simultaneously contribute to the electricity market re-design and transition. TIC Australia propose that a multi-dimensional technology approach is required to ensure Australia achieves global green hydrogen super power status and optimised electricity market designs and systems. An optimal solution is a technology integration approach where synergies and benefits are realised when the combination of different technologies provides steps changes in both the

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capacity factor to the electrolysers and the electrical energy required to produce hydrogen but also when there is an efficient and effective use of capital assets in achieving the transformation of the grid to 100% renewables.

That is, a multi-dimensional approach for various system that need to be integrated such as:

- the transformation of the electricity system from the traditional large fossil fuel based power plants connected to the grid, to one that is geographically diverse and dominated by variable renewable energy (VRE)
- The development of renewable energy zones and the mix of variable renewable energy and storage under consideration and the transmission system connection augmentation need to achieve an integrated system
- Mix of hydrogen electrolysers and their operational requirements within renewable energy zones and hydrogen/ammonia production export hubs of the future.

I would like to thank you for the opportunity to provide feedback on the ESB Capacity mechanism High-level Design Paper. Should you have any queries about the information provided in this submission please contact myself as per below details or Andrew Lees, Technical Leader (New Energy) – BESS / H2 / HV - Mob: +61 (0) 417 631 415

Best Regards,

Gary Byak
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