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**Title: Energy Storage for In-Stream Tidal Power: Interconnecting a World-Class Energy Resource to a Weak Distribution Grid**

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**Category: Marine Renewable Energy**

Renewable energy developers are proposing to install in-stream tidal generators in the Bay of Fundy, which will supply power to mainland Nova Scotia's electrical grid. The proximal distribution grids that line the coasts of Nova Scotia are relatively weak. The periods of peak loading on existing electrical infrastructure will limit the amount of deployable tidal power capacity.

The nature of tidal power is that it follows a quarterly-diurnal generation profile; generation varies sinusoidally from zero to 100% four times daily. Rather than upgrade the electrical infrastructure, energy could be stored during peak generation and released into the grid during slack tide. In this scenario, energy storage acts as a buffer by decoupling the generation from the distribution. Using energy storage with intermittent renewable energy generation not only extends the capacity of existing grid infrastructure, but also effectively turns the generator into a base-load supply.

The objective of this research is to model and analyse distributed energy storage suitable to interconnect a tidal generator with a weak distribution electricity grid. The comprehensive model will include the output of the tidal generator, the electricity grid demand and export capabilities, and the interaction of the energy storage at interconnection points.