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Implications of the *National Energy and Climate Plans* for the Single Electricity Market of the island of Ireland[1]

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Abstract

Member States have published *National Energy and Climate Plans* with challenging variable renewable electricity (VRE) targets. As VRE has a high peak to average output, the Single Electricity Market of the island of Ireland (SEM), will need to consider how best to balance the lost value of curtailment against the extra costs of higher Simultaneous Non-Synchronous Penetration (SNSP), more interconnector capacity and/or more storage. The paper develops a simple spreadsheet model to explore these options for the 2026 VRE targets in the SEM and her neighbours. Raising SNSP from 75% to 85% reduces curtailment from 13.3% to 8.1%, saving 1,338 GWh/yr of spilled wind. Adding the Celtic Link of 700 MW at SNSP of 75% reduces curtailment to 12.4% and saves 235 GWh/yr. Adding 100 MW of batteries saves 18 GWh/yr. The marginal spilled wind can be four times the average.

Keywords Variable renewable electricity**,** curtailment, interconnection, storage

JEL Classification C63, Q42, Q54

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[1] The author is an independent member of the Single Electricity Market Committee of the island of Ireland but this paper is written as an independent academic and only draws on published sources. It does not reflect the views of the SEM Committee.