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What are the possible cost sharing mechanisms for the proposed cross-border interconnections, which extend to Europe, North Africa and South Asia?

SONI and EirGrid: the two TSOs on the Island of Ireland have unique experience of cost-sharing

Background

The island of Ireland is made up of two jurisdictions: Northern Ireland and Ireland. Consequently, there are two grids operating in one synchronous system. Two system operators (SONI and EirGrid) operate the grids. The island has one main ~275kV AC interconnector between the grids in addition to two 110kV secondary lines that cross the frontier. There are two DC Interconnectors currently operating out of the island, one between Northern Ireland and Scotland and the other between Ireland and Wales. A new HVDC interconnector is currently being planned between Ireland and France which has costs shared between the Ireland and French TSO. The two systems on the island of Ireland currently support a high level of penetration of non-synchronous generation (mainly wind). The instantaneous penetration is up to 75% and in 2021 approx. 40% of demand was met by renewable sources.

Cooperation

There has been a history of 16+ years of successful cooperation and cost-sharing between the two system operators on the island. Both system operators have licence obligations to confer and cooperate with each other in order to plan their respect grids on an economic and efficient basis. The two system operators are registered separately as part of the Inter TSO Compensational scheme although cost of losses tend to be similar.

In general, the regulatory model is based around RPI-X for OPEX with CAPEX having WACC and KPI incentivization. The regulators work independently with some variations between the two jurisdictions however there is a high degree of co-operation especially in areas such as markets. Neither TSOs are asset owners for the onshore Grids and as a result the price control mechanisms are coordinated with the Transmission Asset Owners.

Notable Developments

The TSOs have worked together on a number of noteworthy developments in the past including the world's first multi-jurisdictional dual-currency market (Single Electricity Market) and the world's first multi-jurisdictional dual-currency Generator Use of System (GTUoS) tariffing mechanism. The Ireland TSO has is currently working with the French TSO (RTE) on planning for a future interconnector between Ireland and France.

Challenges

Although the island itself is small the regulatory and cost sharing environment is complex. There are two jurisdictions which are part of larger political energy blocks UK and EU. This means that there can be considerable range and change in priorities. There are two sets of regulators which multiple interested stakeholders such as TAOs. There are at least four different price controls covering at time interacting capital projects. Grid is becoming increasingly IT based rather than previously physical assets. As a result, there is a trend in projects that interact between market and system operations which make cost sharing complex. The challenges have not only been sharing between TSOs but also between markets and operations.

Experience

The experience so far has been that large scale cross border projects can be delivered by the TSOs where the projects have strong and definite governance to agree cost sharing principles and consequently cost sharing keys. In the case of the three major market transformations since 2005 a cost sharing key has been agreed and used to agree costs between System Operators and



Regulators. So far, there has been no case made for large scale complex settlement type cost-sharing between the two jurisdictions similar to the ITC mechanism.