National Grid's Perspectives on the Regional Transmission Initiative RFI

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Offshore Wind Ambitions Require a Robust Grid

- New England states have a history of cooperation in meeting our energy challenges for the benefit of all New England residents and businesses.
- Our transmission network has faced challenges before, and New England Transmission Owners, policymakers, and stakeholders can meet our current challenges.
- Our energy challenge – clean and affordable – requires stakeholders to work together and push forward transmission that will enable a renewable future and promote economic growth for our region.
  - In the past, the grid was built to deliver electricity onshore
  - Tomorrow, we need to integrate renewable supply resources located offshore and across NE states to load demand centers across New England
  - We must invest in both onshore and offshore transmission to deliver an affordable energy future

Lessons Learned from “across the pond”…

Challenge:

- Congestion of prime routes and connections and public acceptance
- Single purpose projects with single generator lead line

Solution: Coordination will be key going forward

A recent study* found an integrated approach could lower procurements costs and ready grids for OSW developers by:

- reducing capital costs through 2050 by 18%
- reducing the number of undersea cables by almost 50%

FROM

Fragmented, single-purpose infrastructure

- Congested permitting processes
- Congested land use (onshore and marine)
- Grid connection congestion
- Cumulative environmental impact challenges
- Growing public objection to coastal development

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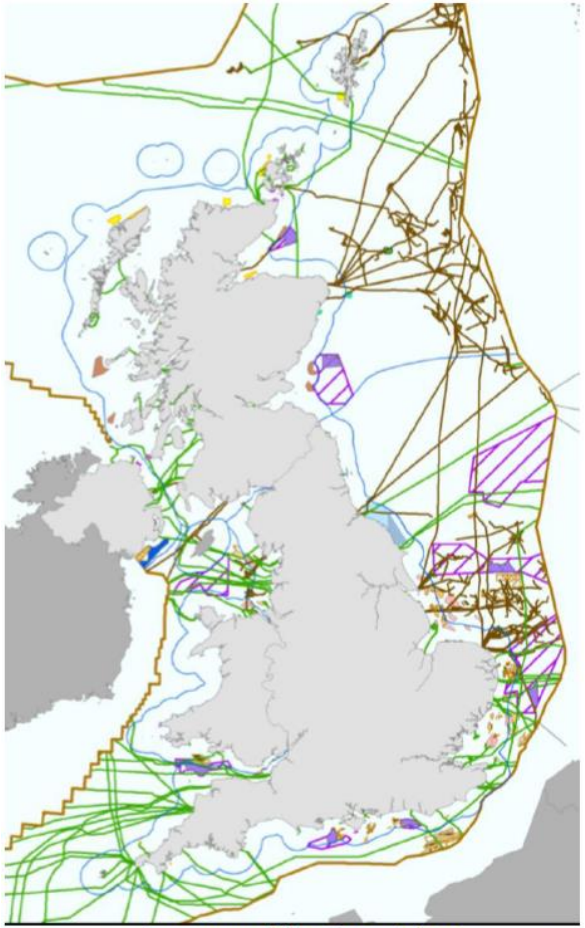
Coordinated, multi-purpose infrastructure

- Switch to hub & spoke approach, sizing radial land ties appropriately
- Boosting OSW sector scale of development
- Coordinated permitting & land use burden
- Coordinated grid “onshore” reinforcements
- Improved community and public buy-in



Courtesy of The Crown Estate

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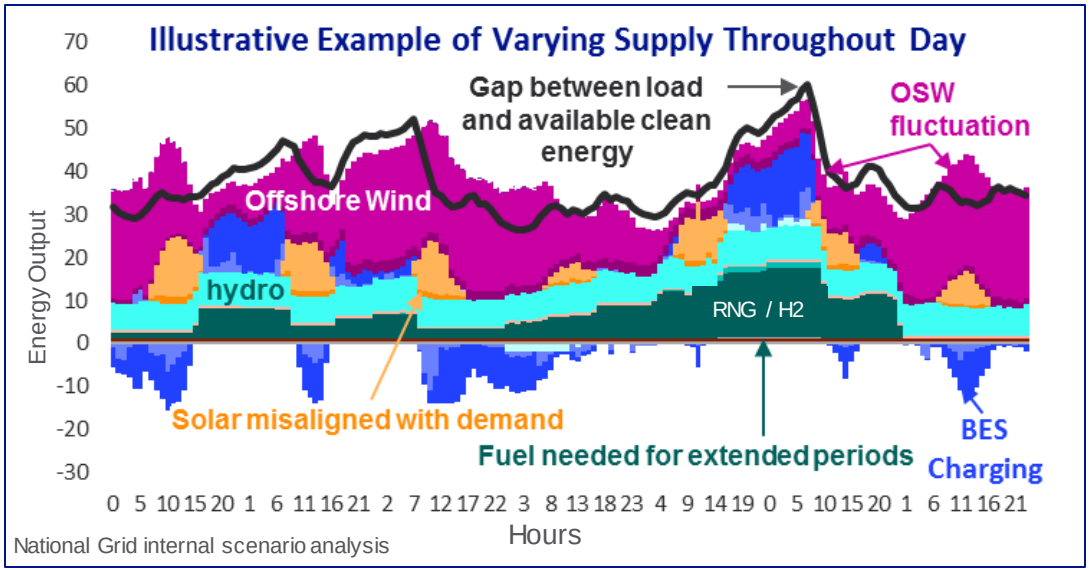
All offshore activity map

National Grid

*National Grid ESO analysis conducted for the UK Dept of Business, Energy and Industrial Strategy
https://www.nationalgrideso.com/future-energy/projects/offshore-coordination-project

A Robust Onshore Grid is Critical



*Illustrative example of one possible future. Note, states have put in place programs to help mitigate variability of solar/DG, including standards, residential storage, and other distribution grid modernization programs.

- Supply and demand are changing - New England's electric supply mix is changing rapidly, and new electric demands, (e.g., electric vehicles, heat pumps, and other focused electrification efforts) will require onshore transmission investments.
- Start with "low hanging fruit" - Coupling "policy" projects with reliability and asset condition presents win-win opportunities ***whereby utilities can size and anticipate future needs within current transmission planning and existing transmission rights of ways***.
- Right-size the on-shore grid - Building ***sufficient capacity within the onshore transmission network*** helps with the variabilities of wind, and "***future-proof" the existing transmission network*** for future electrification needs.
- Increase regional inter-ties - Increased ***inter-ties with our neighbors will be critical*** to not "waste" renewable resources and harness the diversity of clean energy resources across regions.

We recommend prioritizing the IIJA Opportunity with "win-win" solutions

- Existing offshore wind projects have already procured transmission connections. However, onshore reinforcements will be needed to fully integrate and deliver those resources across New England and mitigate transmission congestion.
- National Grid sees a unique opportunity to focus New England's proposals to DOE on *onshore* projects that will satisfy multiple needs
  - Cost effectively harmonizing asset condition / resiliency projects
  - Sizing and effectively scoping projects for future load growth (electrification)
  - Full deliverability of offshore wind across New England
  - Optimization of POI import capacity & expediting onshore readiness
  - Resolution of congestion

IIJA Transmission projects that are onshore can help integrate offshore wind to bring resources to load, and will benefit all New England while addressing other needs