

Why national grid went to the USA in the first place

Renewable energy sources like solar and wind face significant transmission challenges, primarily due to the need for new transmission lines, the inconsistent nature of their output, and the limitations of existing grid infrastructure. These challenges can hinder the integration of renewable energy into the power grid and can be seen to be slowing down the transition to a cleaner energy system. National Grid thought – we can be the helping hand to do this.

Issues and way forward

1. Infrastructure and Grid Capacity:

New Transmission Lines:

Connecting renewable energy sources, especially large-scale solar and wind farms, often requires building new transmission lines, a process that can be lengthy, (Wayleaves) costly, and face local opposition (time consuming process to respond to).

Grid Congestion:

Existing transmission lines may not have the capacity to handle the influx of power from new renewable energy sources, leading to congestion and potential bottlenecks.

Intermittency:

The variability of solar and wind power generation requires sophisticated grid management to maintain stability and ensure a reliable power supply. This is because the output of these sources can fluctuate rapidly based on weather conditions.

2. Why did the US gladly sell to National Grid? For Grid Stability and Reliability:

Coal and gas start from total Inertia: - that is what grids are designed to handle

The grid is not designed to take **sudden** changes in demand or supply. The fluctuating nature of renewable energy can cause voltage and frequency variations in the grid, potentially affecting the performance of electrical equipment. This is an inertia problem – waves and wind are continuous.

Complex Permitting and Regulatory Processes:

Securing permits and rights-of-way for new transmission lines can be a lengthy and complex process, further delaying project development. National Grid had done this for ever.

4. Addressing the Challenges:

Investing in Grid Modernization:

Upgrading and expanding transmission infrastructure is crucial for integrating more renewable energy. National Grid had great plans for doing that.

Smart Grids and Advanced Technologies:

Developing smart grids with advanced sensors, controls, and energy storage would help manage the variability of renewable energy and improve grid stability – but need appropriate investment. The place to raise that investment would be the USA.