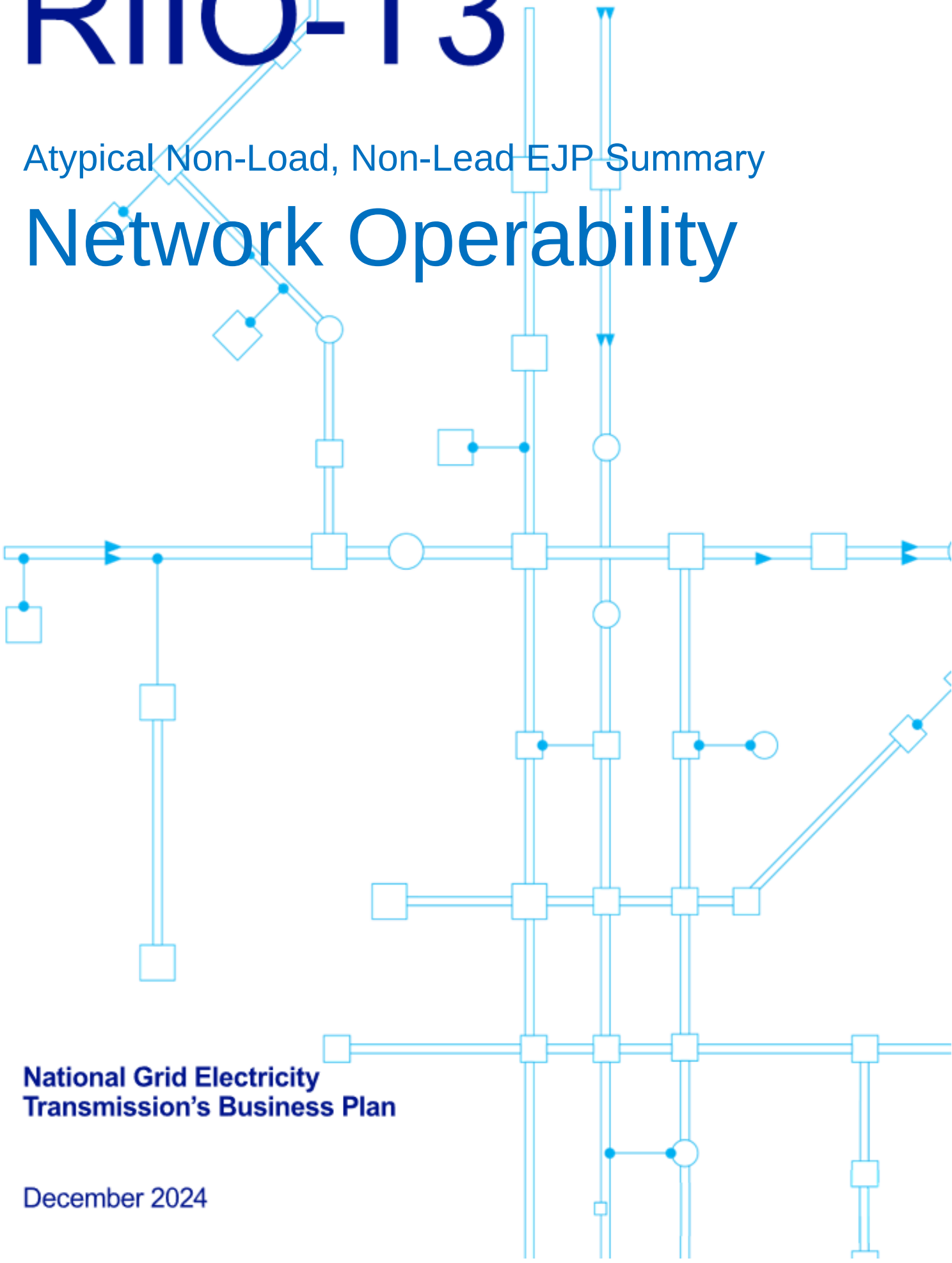
nationalgrid

RIIO-T3

Atypical Non-Load, Non-Lead EJP Summary

Network Operability



National Grid Electricity Transmission's Business Plan

December 2024

Network Operability - Executive Summary

Background

National Grid Electricity Transmission (NGET) is addressing evolving network operability issues through a comprehensive strategy. The initiatives proposed in this EJP aim to maintain compliance with the Security and Quality of Supply Standard (SQSS) and Grid Code standards, ensuring the reliable operation of the future electricity network. The paper will not be reviewed by National Energy System Operator (NESO) prior to the business plan submission in December 2024, but NESO engagement will commence referencing their Clean Power 2030 publication.

Investment Drivers

The primary driver for this investment is to ensure the long-term operability of the future electricity network, meeting SQSS and Grid Code standards. This involves an ongoing ability to manage high voltage issues, enhance dynamic performance, and increase harmonic headroom, all critical for maintaining network reliability, facilitating the energy transition, and supporting economic growth. Changes in the energy landscape, such as the decommissioning of large synchronous generating plants and the increase in renewable energy sources, have introduced new challenges that necessitate strategic investments in network operability.

Options

The options considered for ensuring network operability include asset-based interventions and market solutions. The key outputs and benefits considered in developing these options encompass:

- Operational High Voltage Management: Ensuring network actions are available to regulate voltage without sole reliance on generation dispatch.
- Dynamic Reactive Power Compensation: Providing sufficient equipment to address stability challenges, enhancing system strength, and preventing voltage collapse.
- Harmonic Headroom Management: Enabling connections without harmonic headroom becoming a limiting factor, supporting the integration of renewable energy resources.

The preferred solutions are designed to provide a robust and resilient network capable of handling the demands of a modern electricity grid.

Preferred Solution

The preferred solution involves several strategic investments across different regions to address key operability issues:

- Voltage Control Circuits (VCCs) investments: Installation of surge arresters and point-on-wave (POW) controllers to support high voltage issues management in England and Wales.
- Static Synchronous Compensators (STATCOMs): Deployment of STATCOMs to enhance dynamic reactive power compensation.
- Active Harmonic Filters: Installation of active harmonic filters to manage harmonic distortion and maintain Grid Code compliance.

These investments align with NGET’s broader operability strategy, complementing reactive power compensation measures.

Timeline

The proposed delivery programme spans from 2026 to 2034, and includes Voltage Control Circuits investments, STATCOMs and Active Harmonic Filters. The delivery schedule accounts for supply chain constraints and the need for detailed studies to refine requirements based on evolving network conditions.