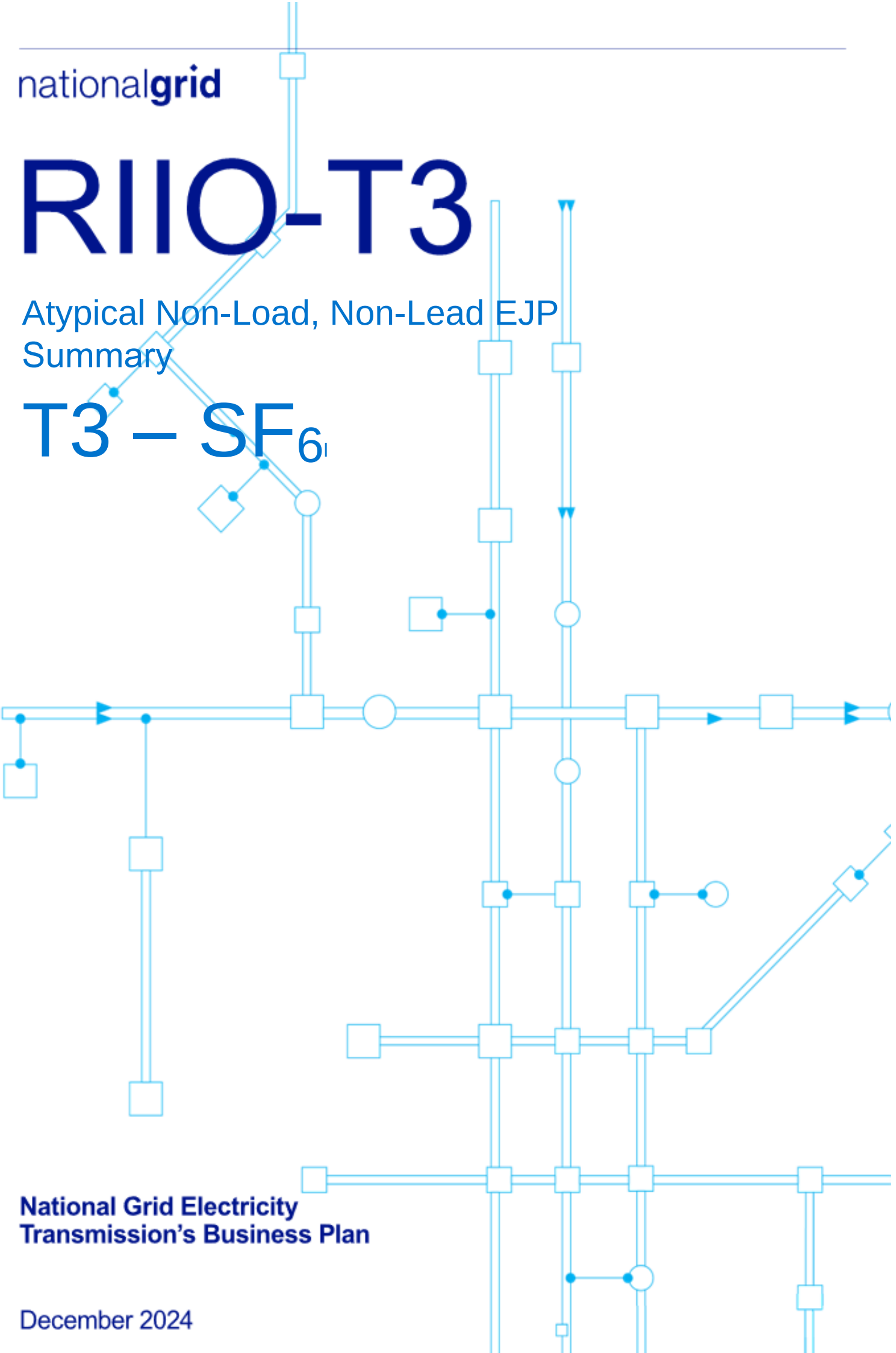
nationalgrid

RIIO-T3

Atypical Non-Load, Non-Lead EJP Summary

T3 – SF_6



National Grid Electricity Transmission's Business Plan

December 2024

T3 - SF6 Emission Abatement Portfolio

Executive Summary

Background

Sulphur Hexafluoride (SF6) is a synthetic, odourless gas extensively used in the electricity industry for insulation and arc suppression. It is a highly potent greenhouse gas with a global warming potential 23,500 times greater than CO2 and an atmospheric lifetime of 3,200 years. The reduction of SF6 emissions from the transmission network is a high priority for National Grid Electricity Transmission (NGET) to meet its environmental commitments.

Investment Drivers

The primary drivers for the SF6 Emission Abatement Portfolio are reducing absolute Scope 1 and 2 Greenhouse Gas (GHG) emissions in line with Science-Based Target initiative (SBTi) to limit global average temperature rise to 1.5°C above pre-industrial levels and ensuring future regulatory compliance with foreseeable changes to EU F-Gas regulations, which may impact the supply chain and increase the cost of SF6 procurement.

Options

Several investment options were considered to meet short and long-term SF6 emission reduction targets. These include strategic substation interventions aimed to directly reduce SF6 emissions by replacing or refurbishing assets with high SF6 leakage risks, as well as palliative coating assets to better protect them from long term deterioration, and retro-filling assets to remove large quantities of SF6, replacing it with an alternative insulating and interrupting gas. Improving asset data and emissions forecasting through implementing gas density monitoring and developing emission modelling and forecasting to improve decision-making and enable proactive interventions. Adapting and managing SF6-free Insulating and Interrupting Gases (IIGs) to facilitate the transition away from SF6.

Preferred Solution

The preferred solution comprises a combination of the above options, structured to deliver both short-term and long-term benefits:

- Strategic Substation Interventions: Gas zone refurbishment at multiple substations, with options for asset replacement using SF6-free alternatives at select sites.
- Palliative Coating: Applying coatings to gas zones to delay asset deterioration and reduce the likelihood of future SF6 leaks.
- Retro-filling: Conducting retro-filling at various substations to replace SF6 with lower global warming potential gases.
- Gas Density Monitoring: Installing monitoring systems at selected substations to provide real-time data and enhance SF6 emission forecasting.
- Development of Emission Modelling and Forecasting: Using data from gas density monitoring to improve emission predictions and inform proactive maintenance decisions.
- SF6-free IIG Adaptation and Management: Implementing a centralized approach to manage alternative gases and develop expertise in handling SF6-free solutions.

Timeline

The SF6 emission abatement portfolio will be delivered throughout the T3 period, with a focus on achieving the 50% emission reduction target by 2030 and Net Zero SF6 emissions by 2050.