



Scottish & Southern
Electricity Networks

TRANSMISSION

Cigre UK A3/B3 Liaison meeting

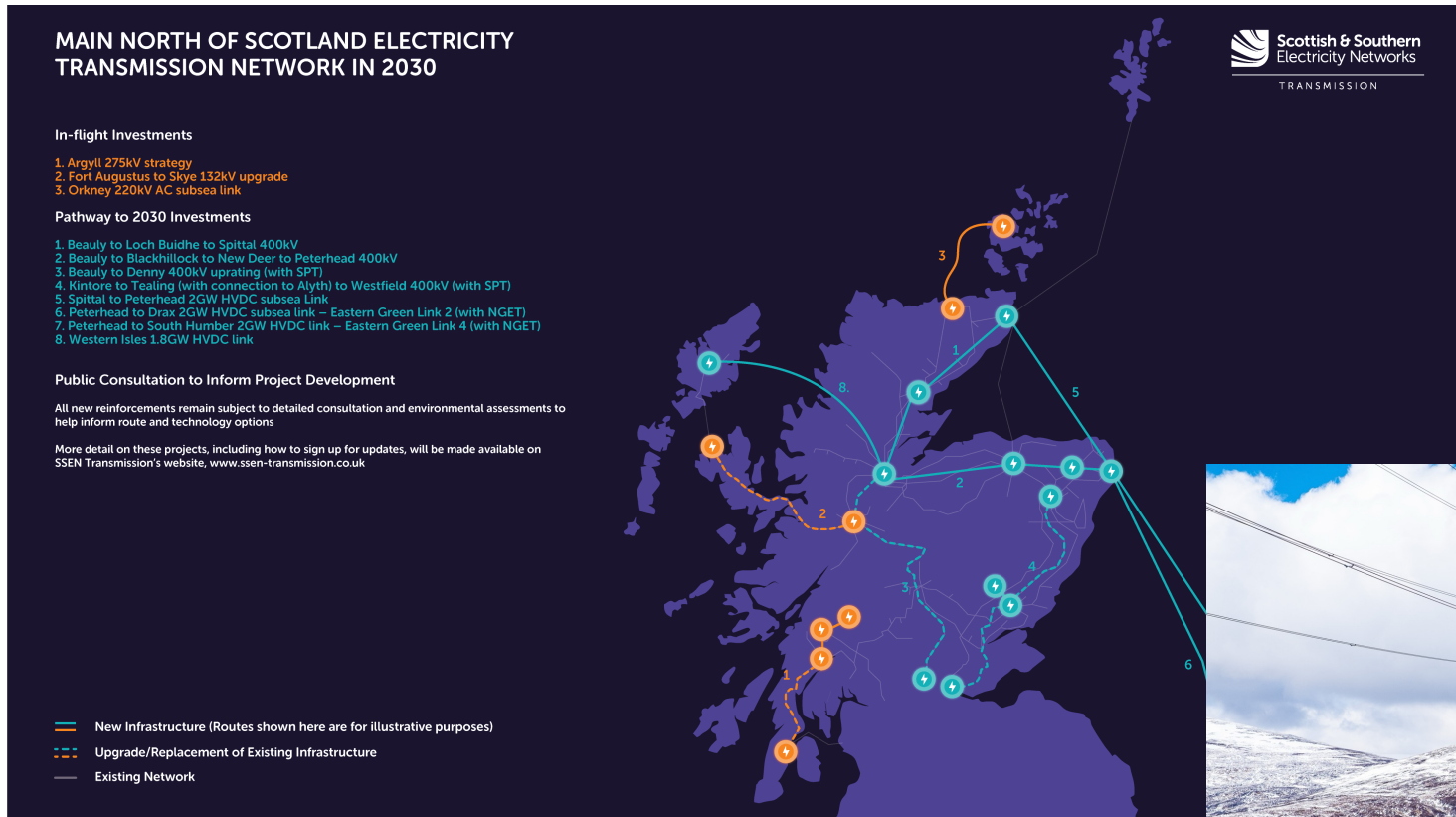
SSEN Transmission – SF6 Management &
Future Challenges



SF₆ management

- Context
 - Existing network is (relatively) small and young, but growing rapidly
 - Low leakage rates ~ 0.12 %
 - How to maintain? Or improve!?
- Doing
 - Excessive SF₆ leaks – “immediately” switch out and de-gas, repair. Almost never “just top it up”.
 - Network & operational resources (usually) allow this
 - (Some) proactive interventions – eg bursting disk changes
 - Online GDMS
 - Excess leakage considered as part of asset replacement
 - Avoiding new SF₆ where viable (GWP < 1000)
- Working on
 - Development of models / leakage predictions
 - More online GDMS + better use of data
 - More proactive interventions – timing is key
 - Process errors
 - Corrosion prevention
- Future
 - Proactive removal: by 2050 subject to CBA
 - How to compare different SF₆ alternatives

SSEN Transmission



Future Challenges

1 Year

Projects:

- Energising remaining T2 projects
- Constructing Orkney, Skye, Argyll
- Securing planning consent & equipment orders for ASTI/2030 projects

Technical:

- Ensuring quality as contractors & other staff spread thin across projects
- High quality construction of our first synchronous compensators

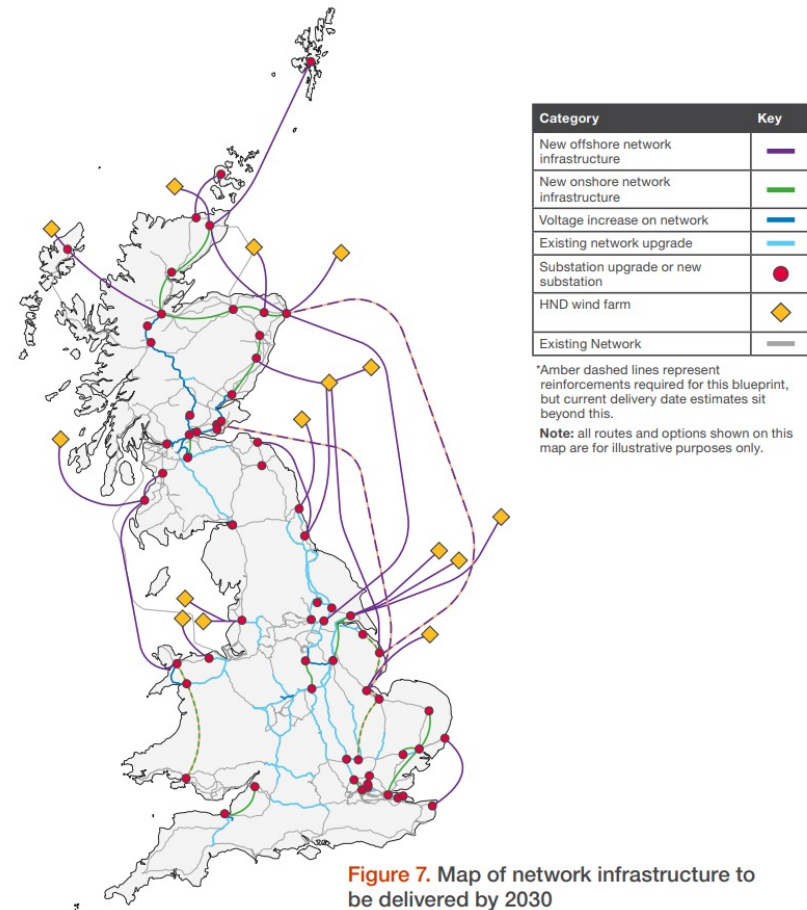
5 years

Projects:

- Commissioning Orkney, Skye, Argyll
- Constructing & commissioning ASTI projects on time
- Delivering T3 project portfolio

Technical:

- 400kV SF6-free circuit breaker deployment
- Gold-plate standardisation of substation designs
- Scope creep on T3 projects with detailed design
- Digital Substations
- Regulatory uncertainty (competition, SQSS fit for purpose) & connections reform/contestable works



Future Challenges

10+ years

- Projects:
 - Commissioning HVDC schemes
- Reinforcement of eastern network to accommodate vast amounts of offshore wind farms
- Shetland 2 HVDC connection
- Potential offshore substations

Technical:

- Network outages associated with energisation of multiple offshore generators & HVDC schemes
- O&M/Asset Management/Network Management of new generation of assets and ensuring high reliability
- Community impact/resistance to expanding assets further
- Challenge with finding consentable/practical (gas pipelines, OHLs) space for onshore HVDC or AC even
- 220kV voltage introduction?
- **Uncertainty – Political, geo-political, climate change, etc**

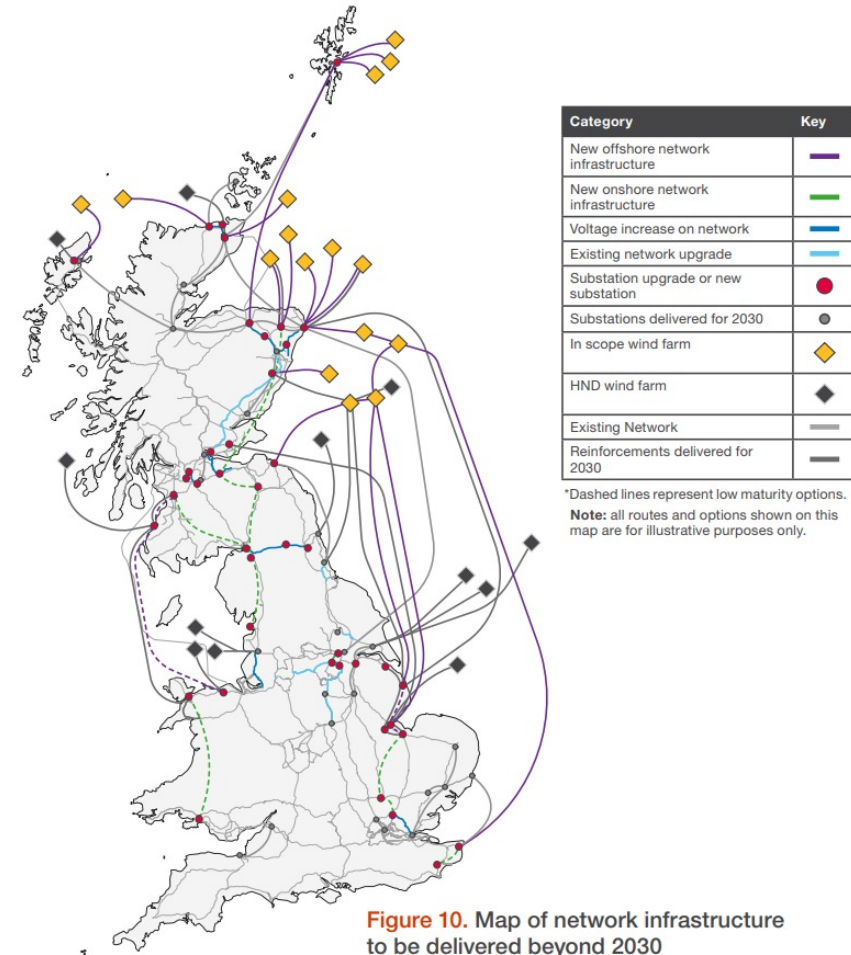


Figure 10. Map of network infrastructure to be delivered beyond 2030

Questions?