



Serving the Midlands, South West and Wales

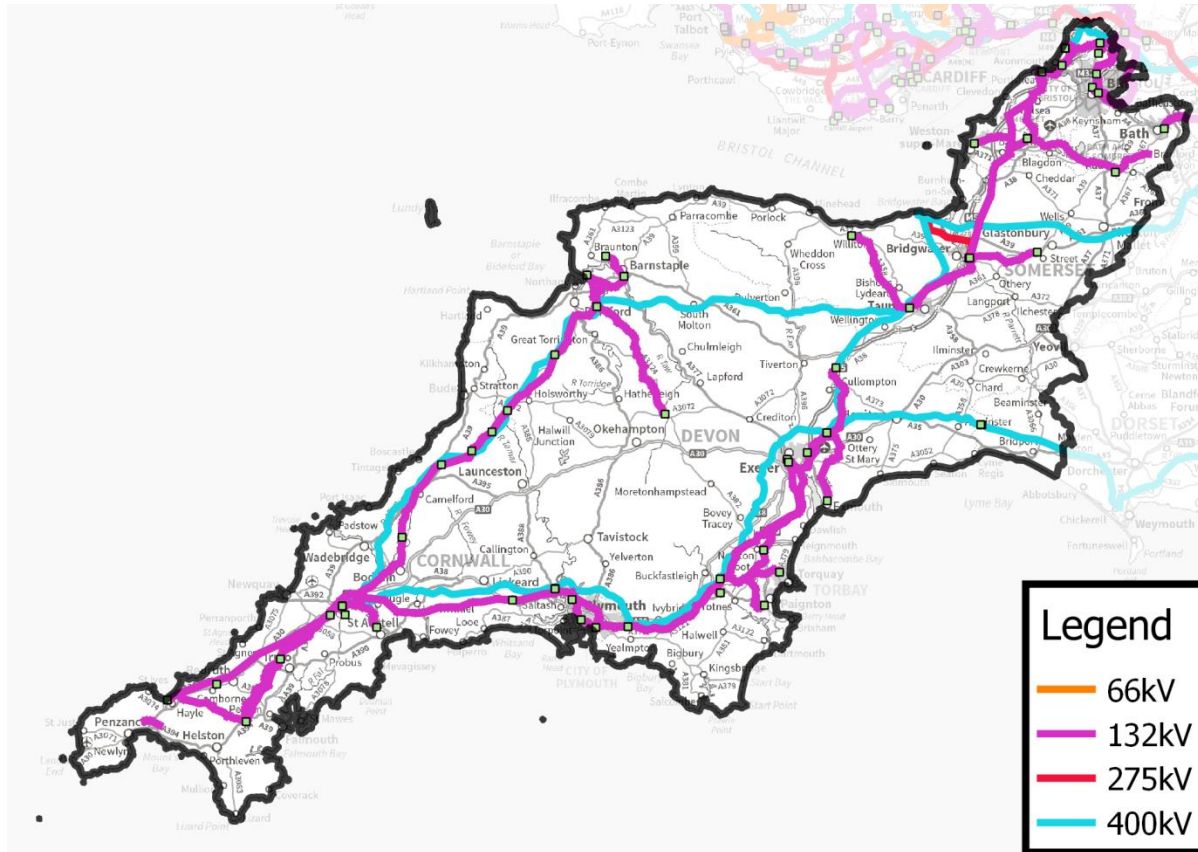
Overview of the South West Peninsula Regional Development Programme

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Background

- Significant increase in the connection of Distributed Energy Resources (DER) in the South West has made long term forecasting more complex
- Regional Development Plans (RDPs) aim to analyse areas of large DER and network issues in accommodating DER
- The idea of the RDPs is to use analysis to innovate and push the boundaries of current thinking (new asset build) towards Distribution System Operator (DSO) type solutions
- The RDP used a 'whole system' approach by approaching technical issues as a single entity (System Operator, Transmission Owner and Distribution System Operator/ Distribution System Owner)
- The objective is to find the most economical and efficient solution for the energy customer.

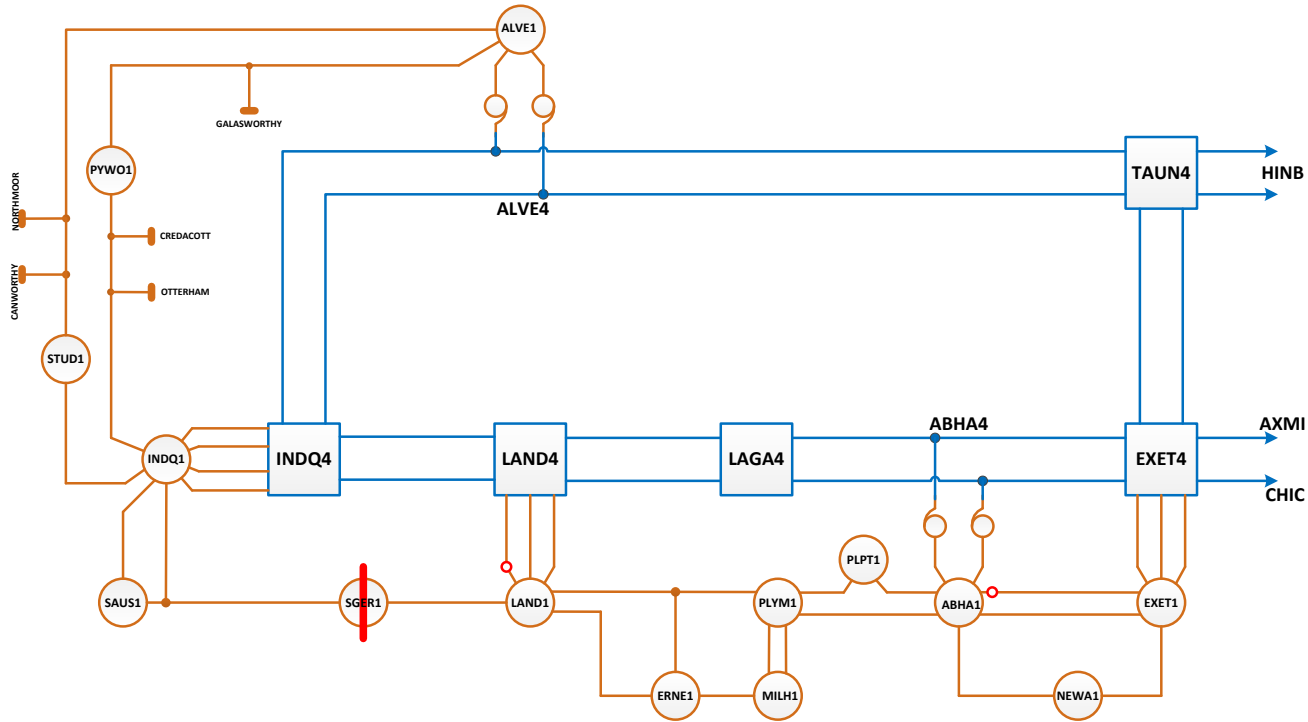
South West Peninsula Map



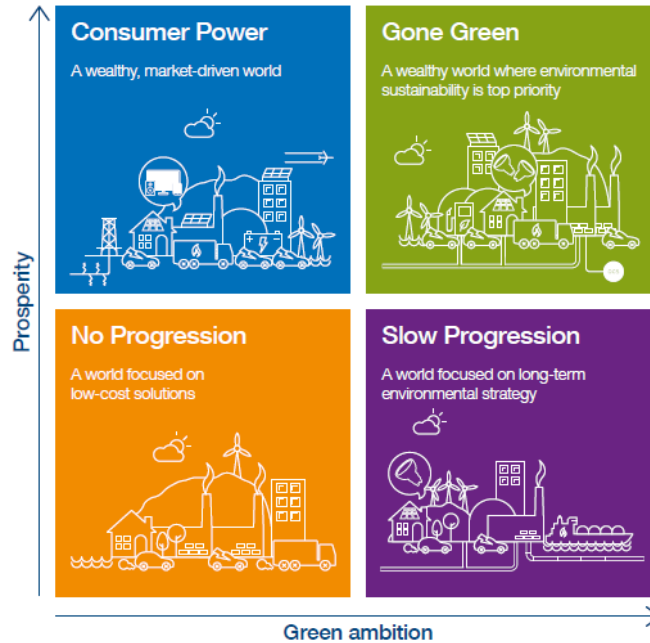
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DISTRIBUTION**
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South West Network Model

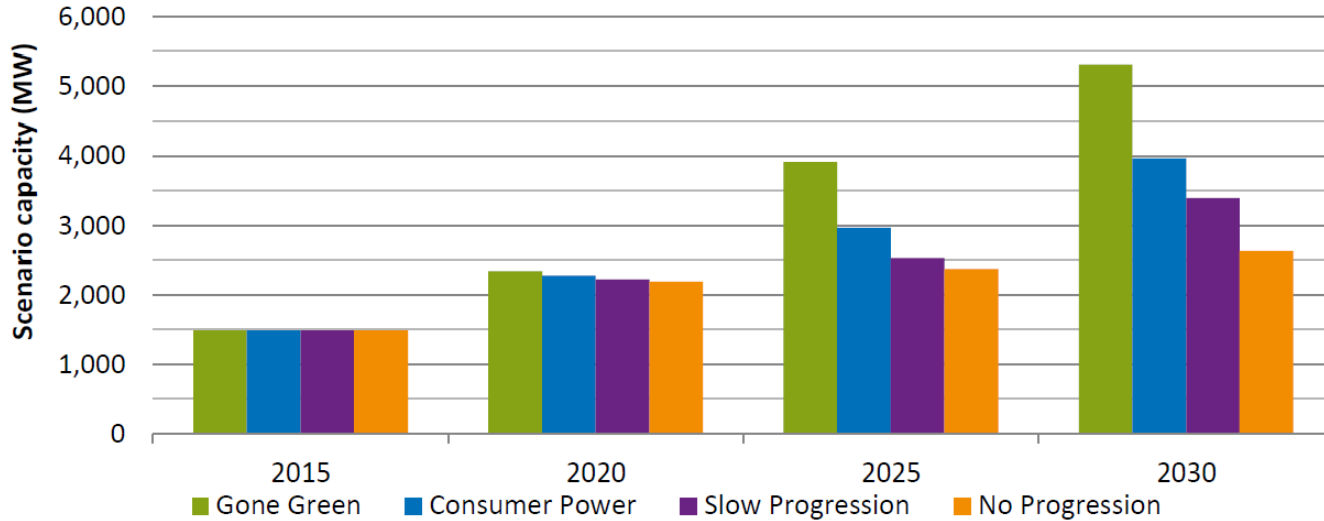


Future Energy Scenarios (July 2016)



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South West Renewable DER Growth



Results

- Studies undertaken for intact network and credible maintenance outage and fault conditions for 2020, 2025 & 2030
- Potential network issues have been identified beyond 2020 if the growth in DER progresses under the most extreme 'gone green' scenario.
- Many generation dispatch conditions cause ratings to be exceeded on both the Distribution & Transmission networks. Therefore any investment decisions must be linked to achieve the most economic whole system outcomes.
- Credible non-build/build solutions have been identified and National Grid have undertaken a cost benefit analysis to investigate the most economic whole system recommendation to future network challenges

Summary

- Cumulative impact of new connections indicates a risk of insufficient transmission capacity to cope with peak intermittent generation
- Costs and timescales to reinforce the transmission system prior to connection are not necessarily the most appropriate solution
- WPD and National Grid are working collaboratively to find alternative solutions to 'conventional' reinforcement

Future Connections

A Connect and Manage approach has been adopted on the principle to:

- Maintain system integrity & security
- Operate an efficient, economic and coordinated system
- Manage constraints at least cost to customers
- Support customer investment decisions
- Provide customers access to new and existing markets to allow them to build a viable business case