National Grid
Electricity Transmission Owner Stakeholder Consultation

Reliability of the Transmission Network

July/August 2017

Purpose and content of this consultation

- As the England and Wales Electricity Transmission Owner, we recently held a series of workshops to continue discussions with our stakeholders around some of the key topics that are important to both them and us
- These workshops were the first of their kind for our Electricity Transmission Owner business, with the intended aim that we listen to our stakeholders, establish their priorities, shape the topics of our future engagement, and start the process of incorporating stakeholder views into our business plans. Topics covered were:
  - Reliability of the Transmission network
  - Future role of Transmission
  - Connections to our network
  - The environment and our work with communities
- We are not consulting on the topic of Safety because we consider this to be non-negotiable

Purpose and content (continued)

- The following slides focus on the topic of Reliability of the Transmission network
- Specifically, we would like to hear your views on what you need from our network, how this might change over time, and what your preferred options would be to deliver this
- This consultation pack is structured as follows:
  - Slides 4-6: general background information on National Grid
  - Slides 7-12: some context around reliability
  - Slide 13: potential questions to consider
  - Slides 14-15: link to consultation survey and next steps

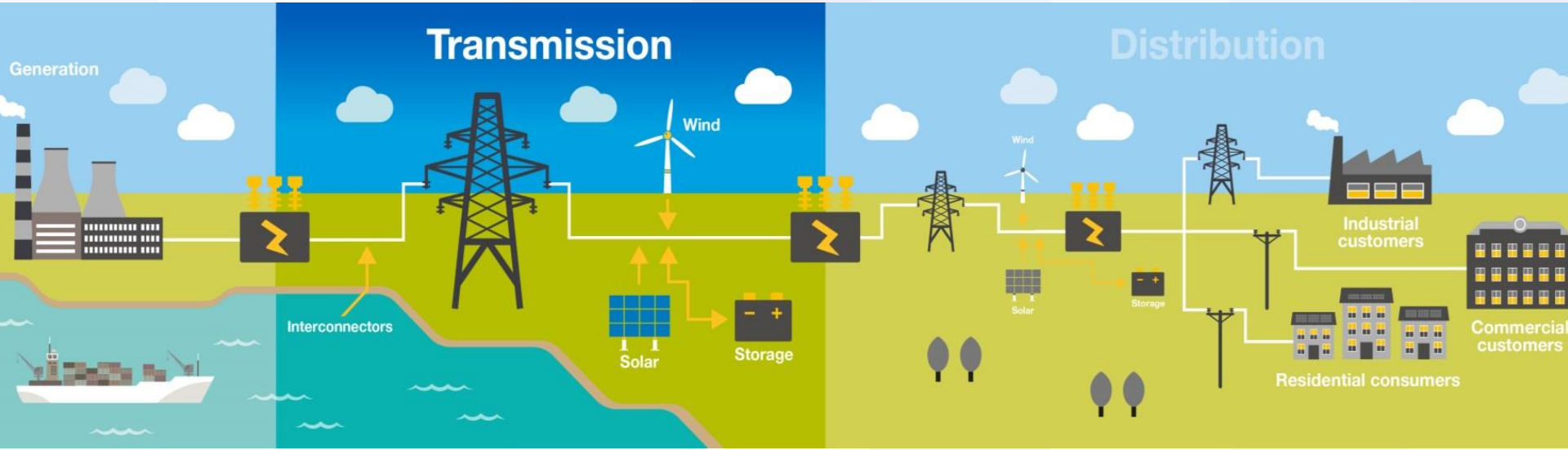
Introduction to National Grid

National Grid: what we do

- We are the England & Wales Electricity Transmission Owner (TO)
  - We own, build and maintain the network
- We are also the GB Electricity System Operator (SO)
  - We balance the system and ensure that voltage and frequency are kept within acceptable limits
- We are currently working with Ofgem to make our Electricity System Operator independent from the rest of our business (to take effect from 2019)
- For Gas, we are the GB TO & SO
- We also have US interests in New York, Massachusetts, Rhode Island, New Hampshire and Vermont
- We hold a minority stake in four UK Gas Distribution networks (now known as Cadent)
- We own other non-regulated businesses

- This consultation is about the Electricity TO…

National Grid
Electricity Transmission Owner



- Our network operates at 400,000, 275,000 and 132,000 volts
- 45 power stations, 12 Distribution networks and 3 interconnectors are connected to our network, along with a few, large directly connected customers

- What we don't do:
  - Generate electricity in the UK
  - Own or operate UK electricity Distribution networks
  - Sell electricity to end consumers in the UK

Reliability of the Transmission network

Transmission reliability of supply

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Reliability of Supply

The Overall Reliability of Supply for the SP Transmission System during 2015-16 was:

99.999920%

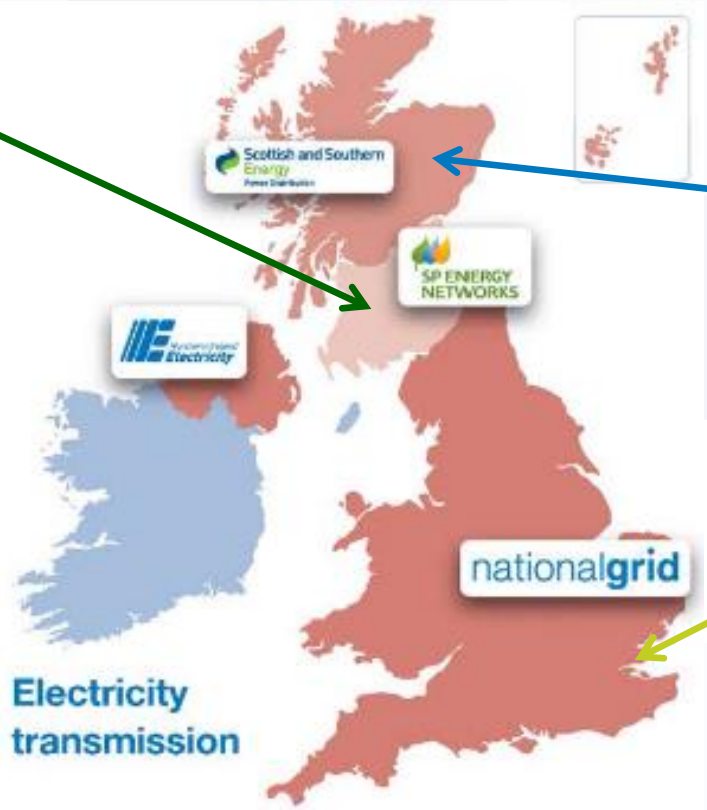
compared with 99.99998% in 2014-15 and 99.99979% in 2013-14

Reliability of Supply

The Overall Reliability of Supply for the SHE Transmission System during 2015-16 was:

99.999987%

compared with 99.99452% in 2014-15 and 99.99885% in 2013-14.



Reliability of Supply

The Overall Reliability of Supply for the NGET Transmission System during 2015-16 was:

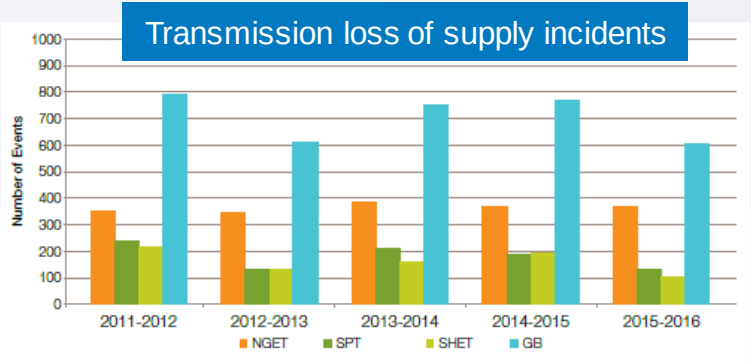
99.999998%

compared with 99.999996% in 2014-15 and 99.99995% in 2013-14.

- Transmission in Great Britain is very reliable
- Our network has delivered better than 99.9999% reliability of supply for the last 3 years
- If you've experienced a recent power cut, it's more likely to have been caused by an issue on a Distribution network
- But if there *is* a Transmission loss of supply, it can affect a lot more people

Loss of supply incidents

- During 2015/16, there were 604 events in Great Britain where electricity Transmission circuits were disconnected automatically or by urgent switching
- The vast majority of these events had no impact on electricity users
- Only 36 resulted in loss of supplies to customers



374 events were on the National Grid system, only 5 resulted in losses of supply to customers

One event lasted 10 hours 21 minutes, the other four each lasted less than four minutes

Total Estimated Unsupplied Energy

The total Estimated Unsupplied Energy from the NGET Transmission System during 2015-16 was:

4.45 MWh

4.45MWh is roughly the amount of power that 1.5 homes use in a year

National Electricity Transmission System Performance Report 2015/16
http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Report-explorer/Performance-Reports/

How do we achieve this reliability?

The 400kV network was built in the late 1960s, so the majority is around 50 years old

- Some of our equipment dates from the 1950s
- To keep it reliable for that long needs constant management
- We also design and operate our network so that it can withstand individual failures

What are the options around reliability?

- Currently, the National Grid Electricity Transmission element of the average annual household electricity bill is less than £30
- Around half of our average annual spend is on asset management, so it costs approximately £15 per year per household to provide a reliable Transmission network in England & Wales
- When considering options, every £10million we spend of allowed revenue adds around 2p per year to the average household bill
- If we want to reduce the cost to customers and consumers, potential options (if favoured by our stakeholders) could include:

- Designing and building our network to provide lower levels of resilience across all of England and Wales

- Designing and building our network to provide different levels of resilience (either higher or lower) across areas of England and Wales

- Making commercial arrangements with homes or businesses to disconnect them at less critical times of day (more of a System Operator option)

What about the future?

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1997

£76,000 average house price

£16,500 average salary

16% ownership of mobile phones

58 million UK population

2017

£220,000 average house price

£28,000 average salary

95% ownership of mobile phones

65 million UK population

2037

Much has changed over the past 20 years. What can we expect in the next 20 years, and what will be the impact on our electricity consumption needs and our expectations of reliability?

Questions for consideration

That's the end of the consultation material, now we'd love to hear your views. Some potential questions to consider are below, and you can provide your thoughts via the link on the next slide.

1. What are your views on the current levels of reliability and the associated costs?
2. Given recent changes in the world, is a reliable electricity transmission system more or less important than it was ten years ago?
3. Is the same level of reliability required everywhere in England and Wales?
4. Is the same level of reliability required at all times of day?
5. What are your views on future required levels of reliability?
6. Do you think the current level of reliability is taken for granted?

Consultation survey

- Our consultation on the Reliability of the Transmission network is now open and we invite you to provide your views via the link below:
  - Please click here to provide your feedback
- The consultation will be open until Friday 25th August 2017
- You'll also find consultations on the Future role of Transmission, the Connections process, and the Environment and Communities using the same link

Next steps

- Our commitment
  - After the consultation closes, we'll collate what you've told us and combine it with feedback from our stakeholder workshops
  - We'll share this with you and explain how we propose to take it forward (planned for early September)
  - We'll work with you in more detail on your priorities
  - We'll change our plans as a result
  - We'll make this our business-as-usual

Thank you

Any questions? Please email:
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