Stakeholder Engagement Workshop

24th September 2018
Welcome

James Garland, Managing Director, EQ Communications
Welcome

• Housekeeping
• Objectives for the day
• Electronic voting
Electronic voting
If you could have dinner with one of the following, who would you choose?

1. David Attenborough
2. Graham Norton
3. Sandi Toksvig
4. Serena Williams
5. Madonna
6. Jacob Rees-Mogg
7. Megan Markle
8. The Pope
9. Angela Merkel
10. Ozzy Osborne
# Electronic Voting

**What type of stakeholder are you?**

1. Domestic customer / consumer interest body
2. Business customer (or representative)
3. Local authority officer / elected representative
4. Developer / connections representative
5. Environmental representative
6. Energy / utility company
7. Charity / non-profit organisation
8. Parish / town / community councillor
9. Housing / development
10. Other
# Agenda

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration, tea and coffee</td>
<td>09.30 – 10.00</td>
</tr>
<tr>
<td>Welcome and overview</td>
<td>10.00 – 10.05</td>
</tr>
<tr>
<td>Introduction, background and context</td>
<td>10.05 – 10.30</td>
</tr>
<tr>
<td>Safety</td>
<td>10.30 – 11.15</td>
</tr>
<tr>
<td>Coffee break</td>
<td>11:15 – 11:30</td>
</tr>
<tr>
<td>Transition to Distribution System Operator (DSO)</td>
<td>11.30 – 12.15</td>
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<tr>
<td>Network investment</td>
<td>12.15 – 13.00</td>
</tr>
<tr>
<td>Wrap up and next steps</td>
<td>13.00 – 13.05</td>
</tr>
<tr>
<td>Lunch break</td>
<td>13.05 – 14.00</td>
</tr>
</tbody>
</table>
Introduction
Ian Crawley, Operational Safety Manager
About Scottish and Southern Electricity Networks

Video
To bring it to life...

We own:
- 132kV
- 275kV
- 400kV
- 106,000 substations
- 100 Subsea cables

We manage:
- 130,000 km of overhead lines and underground cables

We deliver electricity to:
- 3.7 million Homes & Businesses
Feedback from previous workshops

**PSR1+**
- 65% of stakeholders said that we should create an additional category on our Priority Services Register for high risk customers without electricity

**Resilient Communities Fund**
- 66% of stakeholders were of the view that communities in remote and isolated areas should be prioritised for Community Resilience Funding
- 71% supported prioritising projects from areas which have been identified as having especially low resilience which had not applied for funding before
- 83% believed projects which support areas where it can be difficult for emergency services to respond to should be prioritised for community funding

**Business Plan Commitments**
- Stakeholders told us that their most important priorities are Reliability and Availability, followed by Safety
Actions taken

PSR1+
- Building category into current process
- Stage of implementation: updating the customer system to allow for additional category

Resilient Communities Fund
- 12 projects were funded in remote and isolated areas
- Used vulnerability mapping tool to identify communities of low resilience

Business Plan Commitments
- Ensured Reliability & Availability, and Safety are prominent in our Stakeholder Engagement Strategy
- Both areas will be a focus of today’s workshops
Discussion session
Your experience of working with SSEN
Safety

Ian Crawley, Operational Safety Manager
Safety in our business

Our vision
To continuously deliver safe outcomes for our people, our customers and our environment

Our licence
Every person who works on behalf of SSEN is empowered to stop if they believe something isn’t safe, or if they are not sure how to progress safely

Nothing is more important than the safety of our people, our customers and the environment – delivery against this is our primary objective
Our approach

Vision

Processes

Leadership

Behaviours
Our safety performance

SSEN Rolling TRIR* - 24 months

*Total Recordable Injury Rate

Scottish & Southern Electricity Networks
The SSEN and SHE team

• Relatively new team

• Dedicated resources

• Operating as the SHE conscience

• Positioned to have influence

• Providing professional SHE support to help facilitate safe and effective work delivery and a high standard of customer service
What do the statistics tell us?

SSE Non-Injury Reports by Cause

- Vandalism / Theft*
- Tippers / HiAbs / excavators / machinery
- Cable Damages

SSE Non-Injury Reports by Location

- Domestic premises including garden
- Public highway including footpaths
- Farms including fields

*Also: interference / unauthorised trespass / climbing of structures
How has this shaped our strategy?

Our strategy has been influenced by data, our experience and the collective information obtained through the Public Safety Committee.

SSEN are members of the Energy Networks Association UK (ENA)
• We are represented on the National Public Safety Committee
• Supported by the Health and Safety Executive

We have identified a number of key areas to focus on:
• Accidental contact with overhead power lines (OHPLs)
• Wilful interference with SSEN assets such as vandalism and metal theft
• Damage to underground cables, including services to domestic properties
• Communication and education on the dangers from electricity networks, both overhead and underground, to raise awareness in certain risk groups
Our campaigns and more

• **105**: A simple number to call in the event of an emergency situation concerning the electricity supply. Calling this number anywhere in the country will put the caller in touch with the relevant Network Operator in that area. This helps get the right information to the right people quickly.

• **SSEN Power Track**: An app that allows easy identification of areas affected by power interruptions and the simple reporting of faults, issues and concerns regarding the SSEN Network.
Look Out, Look Up!

Safety tips: Farmers risk lives due to dangerous overhead power lines

Farmers describe horrifying moment 11,000 volts shot through his body
26 Jan 2018

The UK’s electricity network operators have joined forces to ensure those working in the agricultural industry understand the dangers of working near power lines.

To ensure those working in the agricultural industry understand the dangers of working near power lines, a bid to reduce the number of incidents that take place each year.

Stay safe near power lines

Awareness is key! Know where overhead power lines are and mark them on a map. Find out the height and mesh of your equipment and how this compares to the maximum working height under overhead power lines. Share this information with workers and contractors.

Control measures: Do not work under an overhead power line if you don’t know to. Speak to your electricity network operator or adviser. Select suitable machinery and equipment and use it safely.

Avoid danger: Certain work should be avoided under or near overhead power lines, such as drilling holes and probe holes, operating machinery and moving vegetation around.

Know what to do: If contact is made when you’re in a vehicle, stay in the cab and try to drive clear. If it is not safe to stay in the vehicle, jump clear of the machinery, move away and don’t touch it once on the ground.

Stay away: Even if a farmer, farmworker or contractors understand that when overhead power lines are damaged or fall to the ground, they should stay well away and contact their local electricity network operator by telephoning 336.

Call 105: If there is an incident, contact your network operator by calling the national 24-hour emergency number 105. According to the Energy Networks Association (ENA), more than 1,063 people do not know the number to call in case of an abnormality to electricity supply in their home or workplace.

(Source: EWA)

Share This

Safety tips: Farmers risk lives due to dangerous overhead power lines
AfarmSafety

1,140 near-miss incidents with overhead power lines in last five years

85% unaware

Scottish & Southern Electricity Networks
Our focus: historic challenges and the supply chain

1. Working with DIY supply chains
2. Generating the data to help GPS systems avoid coming into contact with our equipment
3. Engaging with farm and construction machinery manufacturers to encourage them to supply safety literature
4. Working with machinery suppliers to put information packs in used machines
Discussion session

Our approach to keeping people safe
Voting Question 1

Had you heard of the 105 phone number before?

1. Yes
2. Not sure
3. No
Voting Question 2

Did you know that the Power Track app was available for you to download for free?

1. Yes, but I haven’t downloaded it
2. Yes, I have downloaded it but not used it
3. Yes, I have downloaded it and used it
4. No
Voting Question 3

Now that you know about the app, how likely is it that you would download it and use it?

1. Very unlikely
2. Unlikely
3. Maybe
4. Likely
5. Very likely
Voting Question 4

Please place the following campaigns in order according to which you think we should prioritise:

1. Look out, Look up
2. Working with DIY supply chains
3. Generating the data to help GPS systems
4. Engaging with farm and construction machinery manufacturers
5. Working with machinery suppliers
Voting Question 5

How do you feel about the following statement: ‘I would be prepared to pay more on my bill to see more investment in safety campaigns.’

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree
The Transition to DSO
Frank Clifton, Bids and Losses Manager
SSEN (ENA) Video

• [https://www.youtube.com/watch?v=5Rzc4hsKA2s&feature=youtu.be](https://www.youtube.com/watch?v=5Rzc4hsKA2s&feature=youtu.be)
The Transition to DSO

What does it mean for our network and our customers?

• National Grid Future Energy Scenarios
  ◦ Electricity demand is expected to grow significantly by 2050
  ◦ Up to 65% of generation capacity could be local by 2050
  ◦ Could be 36m electric vehicles on the road by 2040
  ◦ Up to 60% of homes could be using heat pumps by 2050
  ◦ Hydrogen could heat 1/3 of homes by 2050

• Customer Insights
  We asked our domestic customers what low carbon technology they are considering buying
  ◦ 12% of our customers are thinking of buying an electric vehicle in the next 5 years
  ◦ 1% have already purchased an electric vehicle
Impact on the network...

Growth in low carbon technologies

Our VISION is to make the best use of our electricity networks and emerging technology to facilitate the electrification of transport and heat at maximum pace, and minimal cost, to UK plc
Low carbon technology as a flexibility resource
Our projects
Investing and preparing for DSO

- Asset management systems (£90m)
- Operational technology review (£35m)
- ANM centralization (£10m)
- Open Networks, DSO trials, studies and investments (£15m)
- EV readiness (£12m)
Thames Valley Vision (TVV) was a £30 million project established to ensure a high quality and affordable electricity network in the future.

Northern Isles New Energy Solutions (NINES) introducing new methods to manage the electricity distribution network more effectively, through AMR and smart grid.

ACCESS was a joint trial supplying electricity from renewable sources to local consumers in rural areas.

MY Electric Avenue to discover the impact that charging clusters of electric vehicles (EVs) might have on local electricity networks at peak times.

SAVE to establish to what extent energy efficiency measures can be considered as a cost effective, predictable and sustainable tool for managing peak demand.

Capital investments to ensure we are prepared for the future world of DSO

Constrained Managed Zone (CMZ) where security of supply is met using the existing network, enabled by flexible connections.

Social CMZ utilising CMZ philosophy to the benefit of local communities.

Flexible connections allowing new connections without reinforcing the network.

Transition to help progress DSO change by developing and demonstrating a Neutral Market Facilitator (NMF) Platform to test the operation of the market models being produced by the ENA Open Networks Project.

LV Monitoring implementing monitoring devices to obtain directional energy usage data.

Whole system planning to effectively facilitate a whole system view of the network planning and operations.

Open Networks, a major energy industry initiative that will transform the way our energy networks work, underpinning the delivery of the smart grid.
Constraint Managed Zones: overview

- Open Tender
- Service provision model
- Technology neutral
- Currently excludes domestic solutions
- Testing in an undistorted market
- Totex Solution
CMZ: recent zones

**DRAYTON-MILTON-FULSCOT**
33/11kV Reinforcement
Investment cost £2,480k
CMZ Value/Cost £256,760

**COXMOOR WOOD**
132/33kV Reinforcement
Investment cost £3,300k
CMZ Value/Cost £348,790

**BRAMLEY-ANDOVER-THATCHAM**
132kV Reinforcement
Investment cost £1,750k
CMZ Value/Cost £171,970

ZONES REVIEWED

In 2018 SSEN has reviewed a further 14 schemes for potential CMZ application:

- 11 SHEPD schemes, value £14.5m
- 3 SEPD connection driven schemes, value £8.2m

However within the current parameters none resulted in commercial values sufficient to progress to tender.
Evolution of the Social CMZ

The challenges
• Lack of awareness
• Lake of technical know-how
• Lack of community leadership
• Lack of interest

The benefits
• Promoting energy efficiency
• Reducing energy costs
• Opportunity to benefit vulnerable customers
Discussion session

The transition to DSO and the role of social CMZs
Voting Question 1

Had you heard of Distribution System Operator (DSO)?

1. No
2. Not sure
3. Yes
Voting Question 2

Had you heard of Social Constraint Managed Zones (S-CMZs)?

1. No
2. Not sure
3. Yes
Voting Question 3

How do you feel about the following statement: ‘Investing beyond the meter (in communities) is the right thing to do to help us manage the network more efficiently.’

1. Strongly disagree

10. Strongly agree
Voting Question 4

How do you feel about the following statement: ‘My community would be interested to participate in a social CMZ.’

1. Strongly disagree

10. Strongly agree
Voting Question 5

What do you consider to be the biggest challenge for us in rolling out social CMZs?

1. Lack of awareness
2. Lack of technical know-how
3. Lack of community leadership
4. Lack of interest
5. Other
Network Investment
Melanie Bryce, Lead Investment Engineer
What is investment in the electricity network?

Reliability and availability: providing long-term reliability of supply, minimising the number and duration of interruptions and ensuring adaptation to climate change.

This includes:

• Replacement/refurb/maintenance
• Reinforcement of the network
• Preserving Areas of Outstanding Natural Beauty (AONB)
• Reducing faults – Customer Interruptions (CI) and Customer Minutes Lost (CML)
Breakdown of an electricity bill

Domestic customer insights

Duration and acceptability of power cuts

Q1 - How long does your power need to be off for you to consider this a power cut?

<table>
<thead>
<tr>
<th>Duration</th>
<th>Percentage</th>
<th>Duration</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less 1 min</td>
<td>6</td>
<td>3 – 5 min</td>
<td>16</td>
</tr>
<tr>
<td>1 – 3 min</td>
<td>10</td>
<td>5 min or longer</td>
<td>50</td>
</tr>
<tr>
<td>3 min</td>
<td>11</td>
<td>Other</td>
<td>7</td>
</tr>
</tbody>
</table>

Q2 - If your power went off for 3 minutes or less, how many times in three months would this be acceptable?

<table>
<thead>
<tr>
<th>Events</th>
<th>Percentage</th>
<th>Events</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>11</td>
<td>Three</td>
<td>20</td>
</tr>
<tr>
<td>Once</td>
<td>20</td>
<td>More*</td>
<td>17</td>
</tr>
<tr>
<td>Twice</td>
<td>22</td>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>

*Four, five or six times
Different types of network

• **EHV** – Extra High Voltage (similar to an A road)
• **HV** - High Voltage (similar to a B road)
• **LV** – Low Voltage (supplies to your house, similar to a country lane)
Themes for discussion

1. Reliability and availability
   a. HV automation
   b. EHV transformer replacement

2. Areas of Outstanding Natural Beauty

3. Resilience
Reliability and availability

A. HV automation

• We are focussing on the installation of automation systems on our high voltage (HV) networks

• The automation systems rapidly identify fault locations and operate switches on the network to restore as many customers as possible without the need for human intervention

• In 2016/17, our automation schemes operated 306 times and successfully avoided interruptions for 208,800 customers

| All faults | 132 | 4 |
| EHV (33kV) | 13 |  |
| HV 11kV | 60 |  |
| LV | 17 |  |

Pre arranged

| Outages all voltages | 6 |  |
Reliability and availability
B. EHV transformer replacement

• **Reliability:** replacing transformers before they reach end of life is likely to reduce the number of interruptions

• **Safety issues:** Substation layout is based around safety

• **Cost:** Cost of proactively planning and replacing a transformer is likely to be far less than the cost incurred for customer interruptions
Reliability and availability

Things to consider

**Proactive versus reactive investment**

- Waiting until an asset fails is likely to get the most out of the asset, but would lead to significant safety issues and potentially long power outages.

- Replacing an asset just before failure would be the lowest cost option, but may increase the probability and frequency of power cuts.

- Investing proactively ahead of time would significantly reduce the number of outages on our network, but would come at a cost.
Areas of Outstanding Natural Beauty (AONB)

- We have committed to reduce the visual impact of overhead lines within AONB, National Parks and National Scenic Areas (NSA) during our current regulatory period (RIIO-ED1).
- Undergrounding of overhead lines in these areas not only improves public image and relationships, but also provides better network reliability.
- Several circuits eligible for undergrounding are currently performing poorly with high Customer Interruptions (CI) and Customer Minutes Lost (CML).
- Undergrounding these circuits is likely to help reduce CIs and CMLs and will deliver network reliability improvements for our customers.
## Areas of Outstanding Natural Beauty (AONB)

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of Schemes</th>
<th>Length (km) of undergrounding</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivered</td>
<td>1</td>
<td>2.2</td>
<td>£233,500</td>
</tr>
<tr>
<td>Started in 2017/18</td>
<td>3</td>
<td>17.2</td>
<td>£1,552,236</td>
</tr>
<tr>
<td>Forecast to start 2018 onwards</td>
<td>2</td>
<td>2.7</td>
<td>£210,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
<td><strong>22.1</strong></td>
<td><strong>£1,995,736</strong></td>
</tr>
</tbody>
</table>
Resilience
Improving supplies to our most remote areas

- **Double security standard**: most of the UK operates to a double security standard, whereas in the North of Scotland, due to the network being constructed around ‘Power from the Glens’, the more remote areas only have single security.

- **Radial feeds**: when a customer is at the end of a long single circuit, with no alternative supply, they are at higher risk of interruptions to power supply. This is more prevalent in the North of Scotland than in other areas.

- **More investment to improve quality of supply**: we have power stations on the islands to use as alternative supplies, when there are subsea cable faults. There is a balance between investing in the network and alternative solutions involving third parties.
Resilience
Islay strategy

• **Need case analysis:** Islay was identified as having a high number of Customer Interruptions (CI) and Customer Minutes Lost (CML).
Resilience
Islay strategy

Three key options:

Traditional reinforcement:
1. Second circuit (as proposed within the business plan)
2. Increase the generation capacity at Bowmore Power Station and install a dual circuit on Islay

Innovative solutions:
3. Provide an innovative solution by contracting out supply restoration support
# Resilience

Traditional reinforcement: second circuit

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides capacity in both directions for generation and supply</td>
<td>Most expensive option</td>
</tr>
<tr>
<td>Enables generators to connect</td>
<td>Visual impact</td>
</tr>
<tr>
<td>Double security standard</td>
<td>SSSI archaeological issues</td>
</tr>
<tr>
<td></td>
<td>Potential impact on birds</td>
</tr>
<tr>
<td></td>
<td>Landowner consents</td>
</tr>
<tr>
<td></td>
<td>Route selection – subsea, overland</td>
</tr>
</tbody>
</table>

Scottish & Southern
Electricity Networks
## Resilience

Traditional reinforcement: increase in generation capacity

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing infrastructure</td>
<td>Expensive</td>
</tr>
<tr>
<td></td>
<td>Visual impact</td>
</tr>
<tr>
<td></td>
<td>CO2 emissions</td>
</tr>
</tbody>
</table>
# Resilience

## Innovative solutions

<table>
<thead>
<tr>
<th>Advantages</th>
<th></th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>No upfront cost</td>
<td>This may not allow further generation to connect</td>
<td></td>
</tr>
<tr>
<td>Availability and usage charges</td>
<td>Contracted to a third party</td>
<td></td>
</tr>
<tr>
<td>Provides greater security of supply</td>
<td>Third party may not fulfil obligations</td>
<td></td>
</tr>
<tr>
<td>Could be generator (e.g. battery) or demand side (e.g. large user)</td>
<td>Requires new build</td>
<td></td>
</tr>
<tr>
<td>Low carbon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Distribution network investment

- **Reliability**: the distribution network has to be reliable, with investment aimed at restoring supplies quickly in the event of a fault.

- **Availability**: the distribution network needs to be reliable, with a proactive approach to asset management.

- **Capability**: the distribution network needs to be capable, with capacity to meet demand and generation requirements.
Discussion session

How we maintain a reliable supply of electricity at an acceptable cost
Voting Question 1

When it comes to power supply interruptions, what would your preference be?

1. Lots of short interruptions
2. One long interruption
3. Not sure
Voting Question 2

Please rate on a scale of 1 to 10 what you think our approach to network investment should be:

1. The minimum cost option: replacing an asset just before failure

10. The maximum cost option: proactive investment in our assets ahead of time
Voting Question 3

If all criteria between two AONB applications are considered equal, should we prioritise the scheme that would also positively impact the network?

On the scale of 1 to 10, how do you feel about this approach?

1. Strongly disagree

10. Strongly agree
Voting Question 4

Were we to go use our AONB funding to also positively impact reliability on the network, which applications should we prioritise?

1. Those that benefit worst served customers
2. Those that benefit vulnerable customers
3. Those that benefit the largest number of customers
4. Not sure
Voting Question 5

How do you feel about the following statement: ‘SSEN should deliver a resilient network by prioritising innovative solutions at the expense of more traditional reinforcement’.

1. Strongly disagree

10. Strongly agree
Wrap up and next steps

Lyndsey Stainton, Head of Stakeholder Engagement
Priority Services Register

We all rely on electricity day to day for various things, but for some, a power cut can be particularly distressing and difficult. That’s why we offer extra help and support during a power cut. Customers can join our PSR if they:

• Are dependent on electricity for home medical care
• Have a chronic illness or short term condition
• Have communication requirements e.g. blind, deaf or hard of hearing
• Have children under 5 years old
• Are over 60 years old
• Are disabled
Power Track

Report a power cut in a flash!

- Report it: Report new power cuts as and when they happen
- Search it: Search for power cuts in your area
- Updates: Receive power cut updates
- Capture it: Take photos to report any damage near you

Available now for download on Apple & Android

Your free mobile app

Available now for download on Apple & Android

More information: www.ssen.co.uk/powertrack
Keep in touch

Email us – stakeholder.engagement@sse.com

Look out for future events – visit ssen.co.uk/stakeholderevent

Tweet us @ssencommunity

Follow us on Facebook ‘Scottish and Southern Electricity Networks’

Join our Online Community – visit ssen.explainonline.co.uk