Welcome from the Chairman

Simon Gray, Chief Executive, East of England Energy Group and Independent Chairman of SPN Panels

Welcome from the Chairman
Safety and housekeeping

- No planned fire alarms
- Emergency exits
- Fire assembly points
- Toilets
- Mobile phones

- Data Protection - we record our findings and publish a report of the proceedings and our follow-up actions
Today’s Agenda

09:30 – 09:40  INTRODUCTIONS AND OVERVIEW OF PROCESS

9:40 – 10:10  KEY ELEMENTS OF UK POWER NETWORKS EMERGENCY RESPONSE
  • Our network
  • How we respond to emergencies
  • Our role under the Civil Contingencies Act

10:10 – 10:40  THE COMMUNITY RISK REGISTER AND OUR KEY RISKS
  • Black start and Rota Disconnection
  • Pandemic flu

10:40 – 11:00  COFFEE

11:00 – 11:30  WORKING IN COLLABORATION WITH ORGANISATIONS

11:30 – 12:00  LESSONS LEARNT FROM RECENT EMERGENCY RESPONSES

12:00 – 12:10  FLOOD MITIGATION PROGRAMME

12:10 – 13:00  Q&A SESSION

13:00 – 14:00  LUNCH
UK Power Networks team here today

Matt Rudling
Director of Customer Services

Pat Brooks
Head Network Operations - East of England

John Gibbs
Contingency Planning Manager

Steve White
Head of Network Operations & Control

Bill D’Albertanson
Emergency Planning Manager

Eva Cahill
CSR Manager
Key elements of UK Power Networks emergency response
Transmission Networks

Act like the motorway system and enable the bulk transfer of high voltage electricity around the country.
Distribution Networks

Regional grids that branch from the national grids to deliver power to industrial, commercial and domestic users.

East of England Network (EPN)

- 3.5 million end customers
- 20,300 sq. km service area
- 57,400 km u/ground network
- 34,700 km overhead network
- Transformer Capacity 39,000 MVA
- 6,800 MW peak demand
Distribution Networks

Generation

Grid Entry Point

NGT 400kV & 275 kV transmission

Grid Supply Point

Distribution - 132kV & lower

Distribution Networks
Our Network

- National Grid 400/275kV
- 25kV Traction supplies
- 132kV
- 66/33/22kV
- 11kV

132kV for Industrial & large commercial
400/230V for Domestic & Small commercial
400/230V for 11kV
132kV for 11kV
132kV for 66/33/22kV
132kV for National Grid 400/275kV
132kV for 25kV Traction supplies
How we manage incidents

Structure

Command and Control

Gold Liaison Officers

Three Top Electricity Risks

- H38 – Rota Disconnections
- H41 – Total Shutdown
- H45 – Regional Shutdown
Civil Contingencies Act

• Delivers a single framework for civil protection in the UK

Category One

• Core of response to most emergencies
• Emergency services, local authorities, NHS bodies

Category Two

• Lesser set of duties – cooperating and sharing with Category One organisations
• Health and Safety Executive, transport and utility companies
Any questions?
Bill D’Albertanson—Emergency Planning Manager

The community risk register and our key risks
Community Risk Register

The National Risk Register

- First step in providing advice on how people and businesses can better prepare for civil emergencies.

Community Risk Register

- Emergency responders in England and Wales required to co-operate in maintaining a public Community Risk Register
- Approved and published by Local Resilience Forums
<table>
<thead>
<tr>
<th></th>
<th>Catastrophic terrorist attacks</th>
<th>Cyber attacks: Infrastructure</th>
<th>Attacks on infrastructure, Smaller-scale CBR attacks</th>
<th>Attacks on crowded places</th>
<th>Attacks on transport system</th>
<th>Cyber attacks: Data confidentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Cyber attacks: Infrastructure</td>
<td>Attacks on infrastructure, Smaller-scale CBR attacks</td>
<td>Attacks on crowded places</td>
<td>Attacks on transport system</td>
<td>Cyber attacks: Data confidentiality</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium Low</th>
<th>Medium</th>
<th>Medium High</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risks of natural hazards and major accidents</td>
<td>Pandemic influenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Coastal flooding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effusive volcanic eruption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other infections diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inland flooding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Severe space weather</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low temps. and heavy snow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heatwaves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Zoonotic animal diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explosive volcanic eruption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storms and gales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Non-zoonotic animal diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disruptive industrial action</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Between 1 in 20,000 and 1 in 2,000 | Between 1 in 2,000 and 1 in 200 | Between 1 in 200 and 1 in 20 | Between 1 in 20 and 1 in 2 | Greater than 1 in 2 |
What can go wrong – the risks
NEP- Gas and Electricity

Lead Government Department: Department for Energy and Climate Change (DECC)
1. **Guard Level**  
   Normal running

2. **Cyber Threat – Guard Level**  
   Applicable in the event of imminent threats. Access restricted to locations with defined operational roles and processes that rely on control systems, including essential 3rd parties.

3. **Significant Cyber Threat – Guard Level**  
   Serious cyber threat or incident that appears to come from outside the company or unexplained switching occurs on the power network. Access restricted to core control system users.

4. **Major Cyber Incident – Guard Level**  
   Applicable in the event of a major cyber attack such as a virus outbreak spreading across the UK Power Networks network. Access restricted to Control Rooms.
Any questions?
Working in collaboration with organisations to respond to emergencies

Bill D’Albertanson—
Emergency Planning Manager
Collaboration to monitor possible causes of emergencies

- Hazard Manager
- National Severe Weather Warning Service
- Met Office Advisers (Civil Contingencies)
- Daily Risk Assessment, alerts and warnings, guidance

- Flood Warnings Direct
- Targeted Flood Warnings Service
- Flood Guidance Statements
Collaboration to restore power supplies quickly

- NEWSAC
- Contractors
- Suppliers
- Other utilities
- Use of helicopters
Lessons learnt and collaboration in Customer Services

Matt Rudling –
Director of Customer Services
Keeping customers informed

- **Key Initiatives**
- Customer Information Officers
- Improved Fault Interactive voice response system
Call centre response time

Key Initiatives

- Live power cut map on our website launched
- Online self-service fault reporting application on our website also launched
- Social media
Business Transformation

Online customer portal
- Better flexibility and choice through a range of self-service features
- These include booking appointments, making payments and tracking progress

Customer Relationship Management System
- Better customer data
- Full customer history
- Improved response time to all customer requests

Mobile Solutions
- An enhanced service for our customers through our shift from paper to technology
- Field staff will have mobile devices allowing them access to email, documents and images
Collaboration to support vulnerable customers

- Priority Services Register
- British Red Cross
- Local Authorities
- Catering companies and hotels
Collaboration in communications and raising awareness of UK Power Networks

- Media organisations
  - Radio
  - Television
  - Newspapers
- Energy Networks Association
  - Information on the scale of an emergency for press releases
- Stakeholder updates throughout emergency event
Forthcoming collaboration

Power cut information to be sent out in Local Authority literature

A dedicated telephone line for Local Authorities during system emergencies.

Vulnerable customer information to be produced in the seven most spoken languages
Lessons learnt from recent emergency response events

Steve White –
Head of Network Control & Operations
UK Power Networks has three licenced networks – LPN, EPN & SPN

**London Power Networks (LPN)**
- 100% underground apart from a very small amount of 66,000 volt and 132,000 volts overhead line
- Unique in the UK
- High resilience

**Eastern Power Networks (EPN)**
- Significant amount of overhead line network at all voltages
- Significant amount of underground network at all voltages
- Overhead vulnerable to high winds and lightning

**Southern Power Networks (SPN)**
- Unique in the UK
- High resilience
Overhead line networks are vulnerable to severe weather events
Severe weather events – Winter 2013/14

10 weather alerts

10 system emergency prepares

3 full system emergencies

St Jude’s
27 October 2013

Christmas
23 December 2013

Valentines
14 February 2014
Faults during severe weather events

<table>
<thead>
<tr>
<th>Event</th>
<th>Number of affected customers</th>
<th>Restoration Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 27 2013</td>
<td>626,000</td>
<td>5 days</td>
</tr>
<tr>
<td>December 23 2013</td>
<td>322,000</td>
<td>7 days</td>
</tr>
<tr>
<td>February 14 2014</td>
<td>236,000</td>
<td>2 days</td>
</tr>
</tbody>
</table>

Automation and remote control allowed good initial restoration
Storm industry reviews

Two External reviews completed

- DECC
- Ofgem

Areas of improvement identified

- Robust resourcing in place
- Early determination of storm impact
- Providing customers with accurate information
Supply Restoration Strategy

Monitoring and Assessment

Pre Storm Planning and Mobilisation

Post Storm Supply Restoration
1. Monitoring and Assessment
Assessing the weather risk!

Weather Alerts
- System Emergency Watch
- System Emergency Warning (Prepare)

28th October Forecast
Chief Forecaster's Assessment:
The vigorous low pressure area that caused the widespread severe gales across southern Britain earlier today has now moved out into the North Sea taking the strongest of the winds away with it.

Flood Guidance Statement
10:30hrs Monday 28 October 2013
Our assessment of daily flood risk for England and Wales, working with flood forecasting teams in the Environment Agency and Natural Resources Wales is below.
Assessing the potential impact!

<table>
<thead>
<tr>
<th>EPN</th>
<th>60mph</th>
<th>65mph</th>
<th>70mph</th>
<th>75mph</th>
<th>80mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV</td>
<td>49</td>
<td>119</td>
<td>178</td>
<td>332</td>
<td>547</td>
</tr>
<tr>
<td>LV</td>
<td>136</td>
<td>333</td>
<td>485</td>
<td>916</td>
<td>1518</td>
</tr>
<tr>
<td>SP</td>
<td>65</td>
<td>122</td>
<td>166</td>
<td>291</td>
<td>465</td>
</tr>
<tr>
<td>Customers</td>
<td>42837</td>
<td>98502</td>
<td>141468</td>
<td>263203</td>
<td>433396</td>
</tr>
<tr>
<td>Calls</td>
<td>11000</td>
<td>25000</td>
<td>36200</td>
<td>67500</td>
<td>111000</td>
</tr>
<tr>
<td>24hrs</td>
<td>50</td>
<td>125</td>
<td>150</td>
<td>290</td>
<td>500</td>
</tr>
<tr>
<td>48hrs</td>
<td>25</td>
<td>62.5</td>
<td>82.5</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td>72hrs</td>
<td>17</td>
<td>37.5</td>
<td>56</td>
<td>100</td>
<td>175</td>
</tr>
<tr>
<td>96hrs</td>
<td>12.5</td>
<td>30</td>
<td>42.5</td>
<td>75</td>
<td>125</td>
</tr>
</tbody>
</table>
2. Pre Storm Planning and Mobilisation
Systems, facilities and network preparations

Key Initiatives
- Wider call overflow centres

- Returning critical network to service
- Cancellation of planned works

Operations and Call Centre
Tactical Centres
Emergency Resource Centres
Wider Call Taking Overflow Centres
Resourcing and mobilisation

Key Initiatives
- Storm roles for >4,500 staff
- Linesmen resourcing review
- New contract conditions

North, East, West and South Aid Consortium (NEWSAC)
3. Post Storm Supply Restoration
Storm has passed through regions

- Automation & remote control
- Key site switching where safe
- Global Customer Restoration Time

EPN - Percentage Customers Restored
4,427 separate faults and 630,340 customers off supply!
Damage assessment & making safe

Key Initiatives
- LV scouted within 24 hours
- Approx. 1,800 Scouts available
Supply restoration hierarchy

**Key Initiatives**
- Revised Supply Restoration strategy
- Customer estimated time of restoration
- Single premise generators
Bill D’Albertanson—
Emergency Planning Manager

Flood Mitigation Programme
Flood Mitigation Programme

Based on a systematic approach agreed by the Distribution Networks Operators (DNO) through the ENA document ETR-138

Flood risks:
Tidal (sea), Pluvial (watercourse), Fluvial (surface), Infrastructure failure (water main burst and reservoirs failure)

<table>
<thead>
<tr>
<th></th>
<th>Tidal [AEP]</th>
<th>Fluvial [AEP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid substation</td>
<td>1:1000</td>
<td>1:1000</td>
</tr>
<tr>
<td>Primary substation</td>
<td>1:200</td>
<td>1:100</td>
</tr>
</tbody>
</table>

Design considerations
Flood level and freeboard
Ground type
Condition of critical equipment on site
Planning requirements
Number of customers
Critical customers
Asset replacement strategy
Flood Mitigation Programme

Time span: 2010-2023
No. of sites in the programme: 27
Estimated budget: £13,881,882.31

Typical flood mitigation works:
Q&A

- Do UK Power Networks need to support Category 1 emergency responders better? How?
- Do you think that our improvements to date based on lessons learnt are sufficient?
- We are coordinating with Local Authorities in sending out our emergency information to raise awareness. Are there any other ways we can get our information to large numbers of people?
- We can have emergency situations that affect large numbers of people, but are restricted in the support we can ask for as a Category 2 responder. How can we work with you better to ensure the best support is in place for our affected customers?
- What opportunities are there for further collaborative working to support affected vulnerable customers?
Next steps

Join us again:

• In early November, for a session which will focus on Vulnerable Customers.
• In December for Critical Friends 9 to discuss Corporate Social Responsibility and Sustainability

Before we finish

• Complete your feedback form
• Send us additional thoughts
• Invite a colleague to a session

Contact us

ONLINE
www.ukpowernetworks.co.uk/internet/en/contact-us
TWITTER
www.twitter.com/UKPowerNetworks

PHONE
General Enquiries 0845 601 4516
Connection Enquiries 0845 234 0040

If you want to find out more, or attend future events please email us @ stakeholder.engagement@UKpowernetworks.co.uk
Thank you