

# Sustainability in detail

HSBC SRI / Conference  
February 2016



# Understanding our footprint

## Decarbonising society's energy



## Reducing our own impacts



# Helping to decarbonise energy

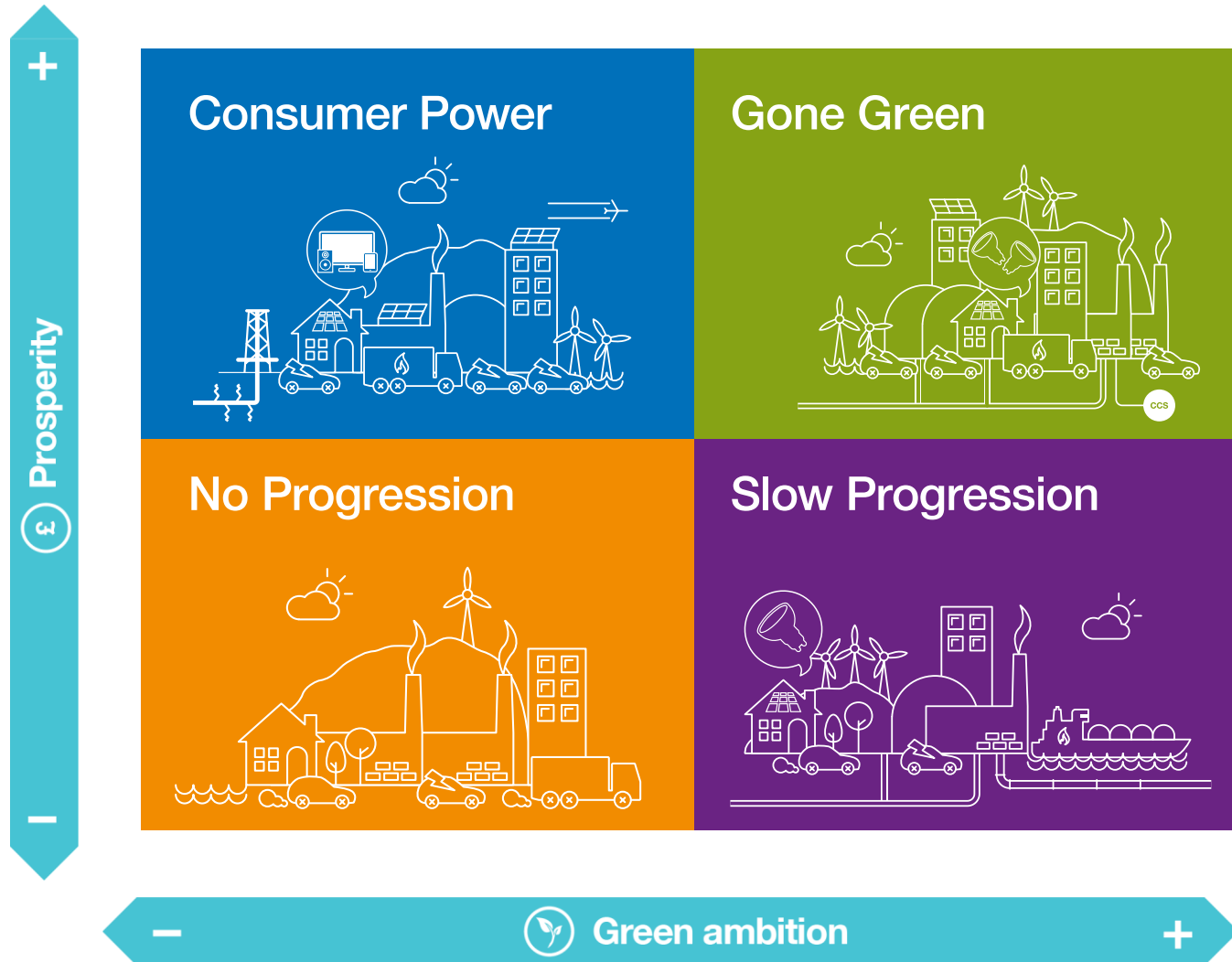
## Decarbonising society's energy



## Reducing our own impacts



# The 2015 scenarios – evolution not revolution



## FES 2015 conclusions (UK)



**Gone Green is the only scenario**  
to achieve all renewable  
and carbon targets on time



**GB remains a net importer of electricity**  
in three out of our four scenarios

**Sufficient gas supplies are available**

in all scenarios with significant uncertainty on the source



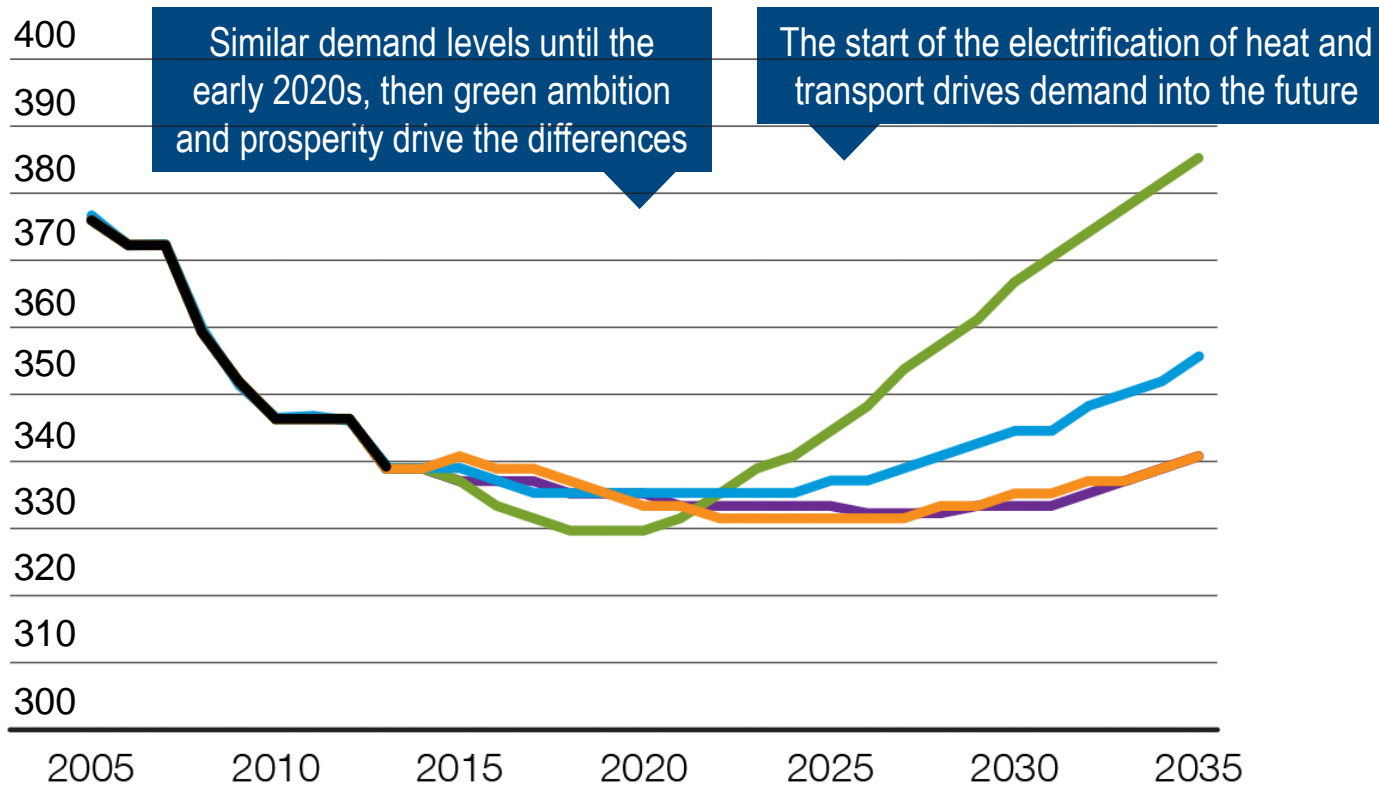
The scenarios highlight the **increasing operability challenges**



the electricity industry faces

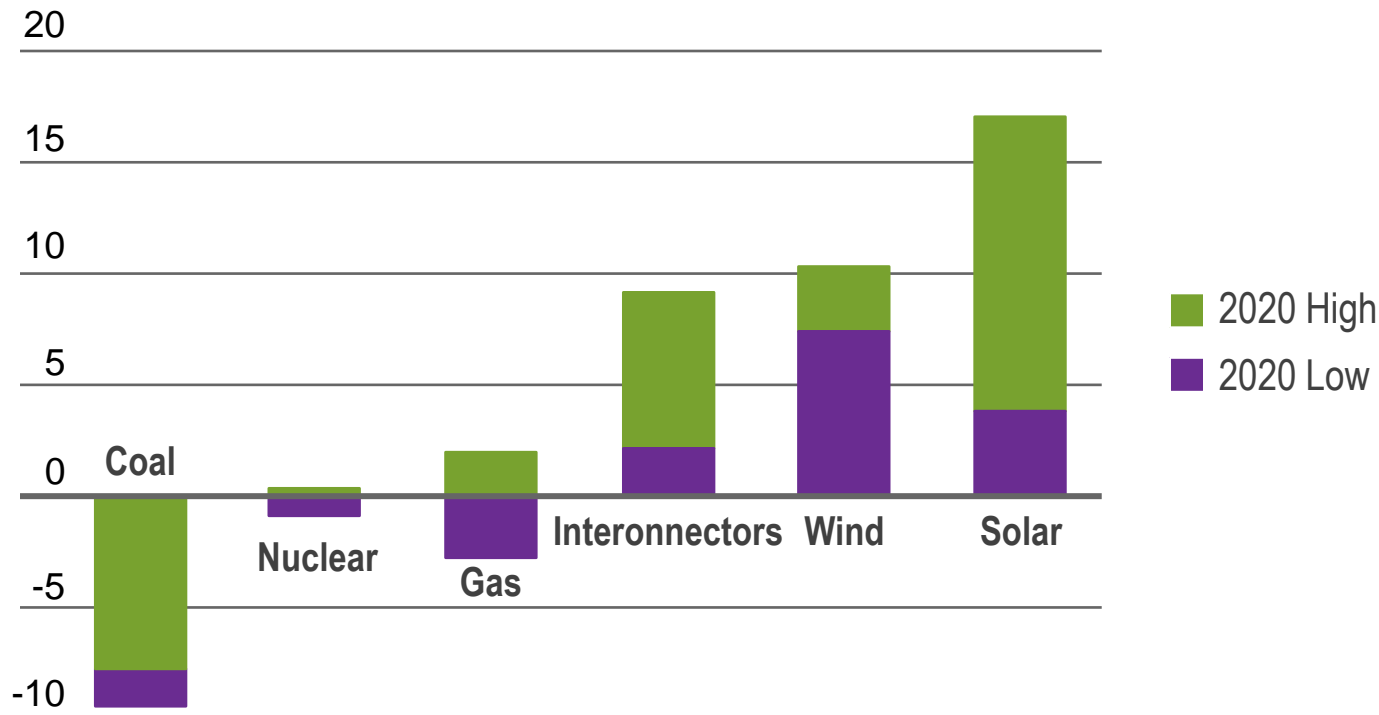
# Electricity consumption

Annual electricity consumption at the meter (TWh/yr)

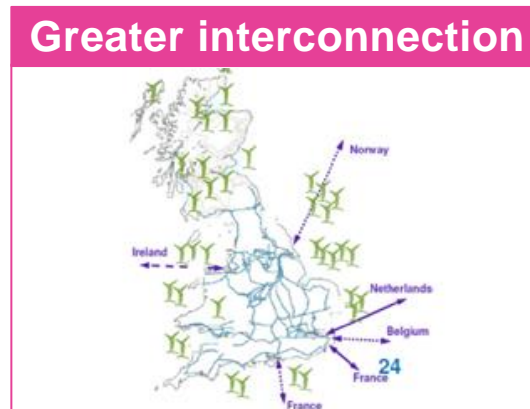
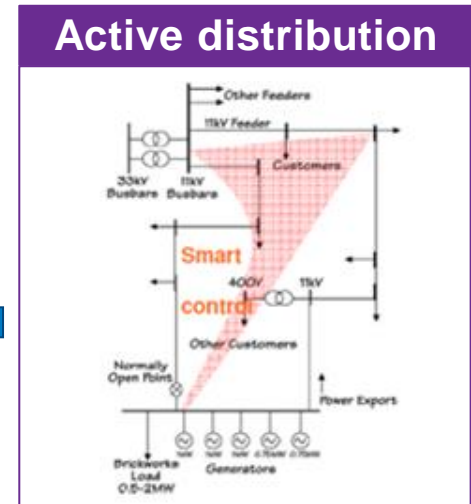
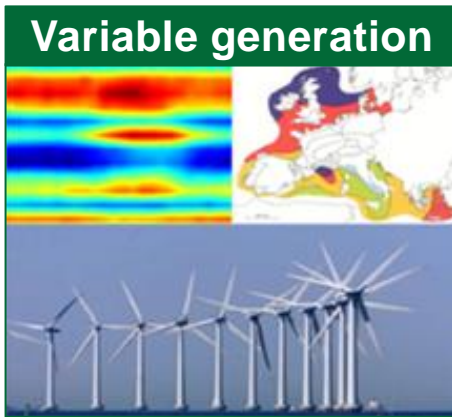


# The type and nature of generation is set to change

Change in generation capacity (GW)



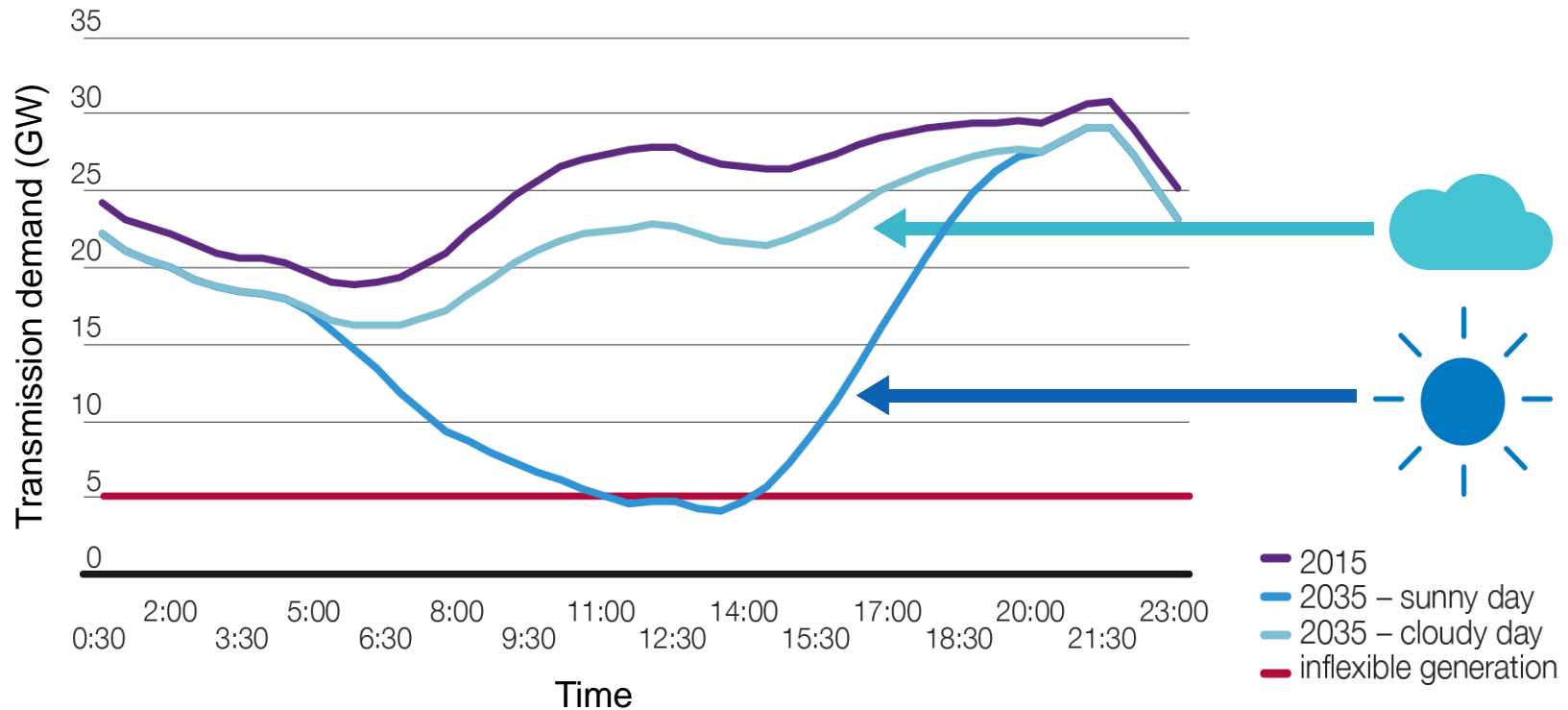
# Operating in 2020 and beyond . . .





# Changes to the generation mix has implications for operability

## Consumer power - summer minimum demand



# Understanding our own footprint

## Decarbonising society's energy




## Reducing our own impacts



# What are we doing ? – Sustainability



# We have made additional external commitments



**Climate positive targets**

Greenhouse gas emissions:

**45%** reduction to 2020

**80%** reduction to 2050

80 per cent of top 250 suppliers to report greenhouse gas emissions by 2020



**Positive about resources target**

**100%**

Reuse or recycle 100% of recovered assets by 2020



**Enhancing ecosystems target**

Deliver sustainability action plans at **50** sites by 2020

## In the UK: Infrastructure Carbon Review (ICR)

Initiative from HM Treasury aiming to drive infrastructure companies to embed carbon reduction across activities and supply chains



THE PRINCE'S ACCOUNTING  
FOR SUSTAINABILITY PROJECT

A network of CFOs focusing on integrating environmental and social issues into financial decision making

Embedding sustainability in decision making

# Our contribution

A framework for environmental sustainability in National Grid

Climate positive

Positive about resources

Enhancing ecosystems



# Climate positive – performance

- Committed to reduce greenhouse gas emissions by 45% by 2020 and 80% by 2050, for Scope 1 and 2 emissions
- Primary sources of our own direct emissions are fugitive and vented natural gas from US & UK distribution systems, SF6 emissions from US & UK electricity transmission plant fuel consumed by gas compressors and US Electricity Generation

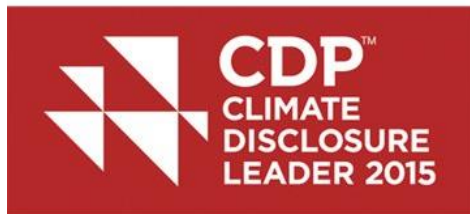
Climate positive targets

Greenhouse gas emissions:

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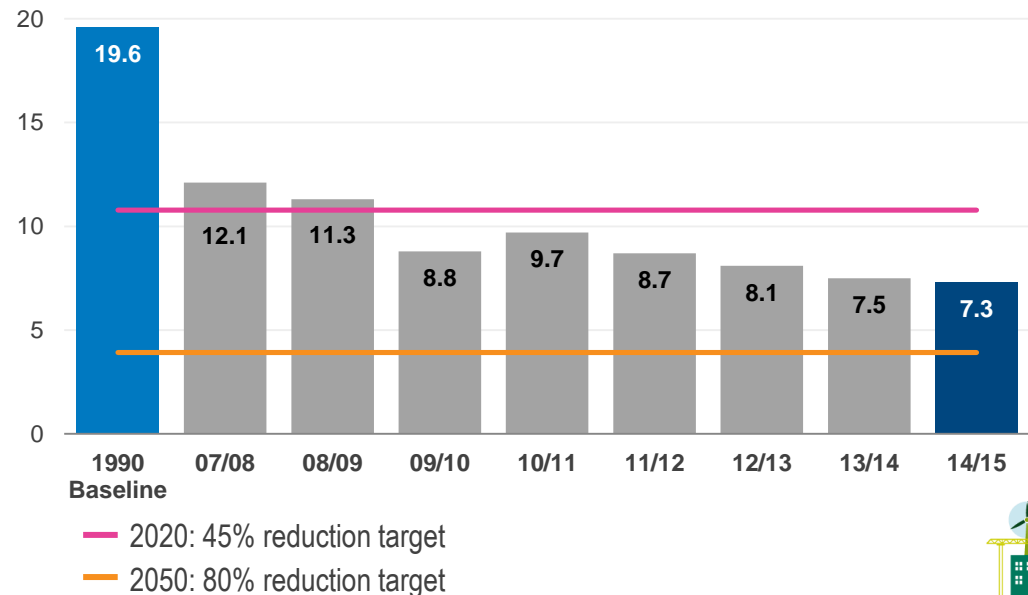
**80%** reduction to 2050

80 per cent of top 250 suppliers to report greenhouse gas emissions by 2020



This year we achieved 99 B in our CDP investor response retaining our position in the Carbon Disclosure Leadership Index

## Annual performance





# Climate positive – what have we been doing?



Gas mains replacement



Grain heat pipe



Brown fields to solar farms in Massachusetts



g<sup>3</sup> Trademark application owned by Alstom Grid SAS

SF6 alternatives

# Engaging customers in energy efficiency in the US

## Championing energy efficiency

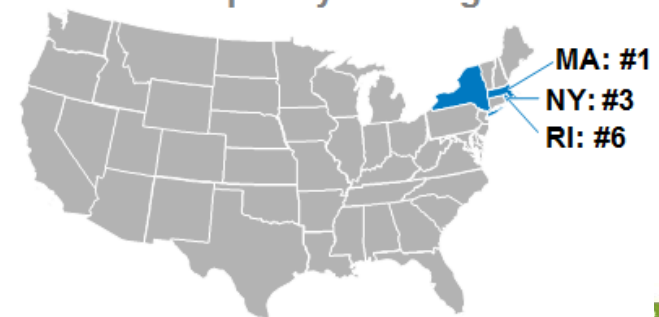
- 2.8 million customers participated in 2013
  - 700,000 gas (up 50%)
  - 2.1 million electric (up 52%)
- Savings of 24 million therms of gas and 800,000 MWHrs electricity each year
- 696,000 tons CO<sub>2</sub>e/yr avoided



## Encouraging smart energy choices

- Smart grid for 15,000 customers in Worcester
- Customer and grid-facing technology
- Efficiency gains to result in reduced customer consumption

Our states lead  
ACEEE policy rankings





# Methane emissions reduction in the US

## Downstream initiative

- Collaboration with gas distribution networks
- Promotes operational excellence to reduce methane emissions
- Communicate challenges of balancing safety, reliability, affordability and methane emissions reduction

## One Future

- Achieve a leak rate of no more than 1% across the supply chain
- Recognised by the Natural Gas STAR Methane Challenge Program



# Electric vehicles

- \$10m investment in low carbon vehicles and associated infrastructure
  - 150 public access charging stations in US
  - Employee engagement and exposure to Evs
- 
- Electric vehicle charging points to be installed in UK
    - Warwick Site
    - Hinckley Site



# Procurement Sustainable Sourcing

## Launched in August 2015

- Supply chain management decisions to consider
  - Biodiversity
  - Energy efficiency
  - GHG emissions
  - Water
  - Waste
  - Transport & Logistics
  - Packaging
  - Timber
  - Material Usage

nationalgrid
Global Procurement:  
Our Sustainability Policy
Version 2.0 – August 2015

**Biodiversity**

Suppliers should:-

- Identify, measure and manage the impact of their activities in order to mitigate the risk of any damage to ecosystems and habitats in order to protect biodiversity.
- Propose innovative or creative approaches to enhance habitats, biodiversity and the community benefit this brings through the goods and services provided to National Grid.

**Energy Efficiency**

Suppliers should:-

- Track energy usage and sources in relation to the operations of their manufacturing, facilities and operations.
- Provide energy efficiency strategies upon request.

**Greenhouse Gas Emissions (GHG)**

Suppliers should be proactive in:-





- Monitoring, reporting and publicly disclosing their GHG emissions through a globally recognised programme.
- Taking steps to reduce their GHG emissions across the lifecycle of projects and services.

**Logistics, Travel and Transportation**

Transportation, travel distances, fuel consumption and environmental impact for all products and services supplied to National Grid will be minimised by techniques such as route optimisation, shared vehicles, use of energy efficient transportation methods and alternative fuel technologies. We encourage meetings to be held via video conferencing or other electronic solutions where possible.

**Material usage**

From the design phase onwards suppliers should aim to minimise usage of finite materials and consider recoverability of materials from products at end of life where possible.

August 2015
Version 2.0

nationalgrid
Global Procurement:  
Our Sustainability Policy
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**Packaging**

Suppliers should:-

- Minimise the packaging of all goods supplied to National Grid, while still providing the required level of protection.
- Use re-usable packaging rather than disposable packaging.
- Ensure the wood for wood packaging comes from a certified sustainable source.

**Timber/ Wood Products**

Where products containing wood are provided to National Grid, suppliers should provide certification proving the wood has been obtained from a certified sustainable source.

**Waste Management**

- Waste shall be kept to a minimum and designed out where possible.
- Suppliers should implement a suitable waste management process and aim for zero waste to landfill.


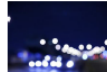


**Water**

Suppliers should manage water related risks (including current and future water stress), particularly the impact of their operations and activities on water availability and quality wherever they occur and put in place plans to minimise any impacts.

*National Grid suppliers shall ensure they comply with this Policy along with our Supplier Code of Conduct and National Grid may, at any point, request information or evidence from suppliers to ensure compliance. If a supplier is found to be in breach of either document National Grid will take additional action to ensure its supply chain acts in a sustainable manner. This may where appropriate result in joint development plans or action plans being issued, contractual penalties or, in extreme cases, early termination of contracts.*

**Timing**

Effective Date: 19 August 2015

August 2015
Version 2.0

## Positive about resources – asset recovery



### Closed loop upcycling - conductor

- Pilot 18t of high specification aluminium sent back to supplier to be turned back into overhead line conductor completed
- Next batch of 200t to be sent shortly (finalising waste carrier licence)
- Financial value and reduced exposure to commodities price fluctuation



### Asset recovery - cables

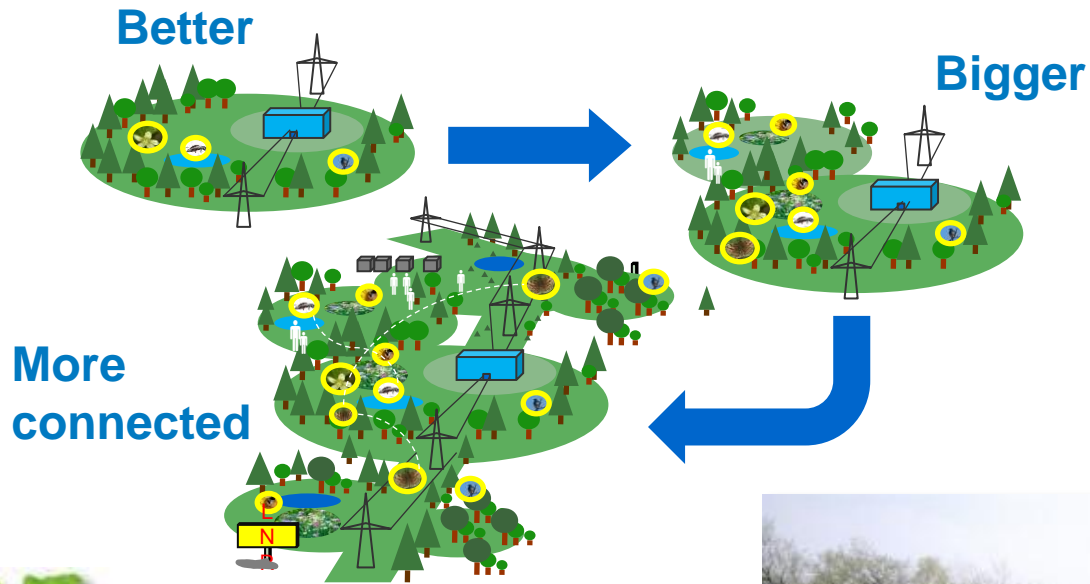
- Piloted innovative directional drilling technique to remove buried copper conductor
- Recover value of material
- Mitigation of residual environmental risk of asset left in ground



### Material recovery - Syracuse

- Recycles transformers, cable, insulators, plastic pipe
- Almost 19m lbs recovered in 13/14
- New galvanizing plant to refurbish connectors

# Enhancing ecosystems



**Enhancing ecosystems target**

Deliver sustainability action plans at **50** sites by 2020



naturalgrid





# The Natural Grid

Enhancing rural biodiversity



Mill Hill  
substation



Barking substation



Iver EEC

Watford South



Feckenham  
substation



Keadby substation



# Rhigos

Working with Natural Resources Wales, Butterfly Conservation and specialist organisations to restore rare ancient peat bog and conserve the rare Marsh Fritillary butterfly





# Wormington Compressor Station

Local Wildlife Trust helping to deliver natural regeneration, promote biodiversity and create native wildflower seed share banks



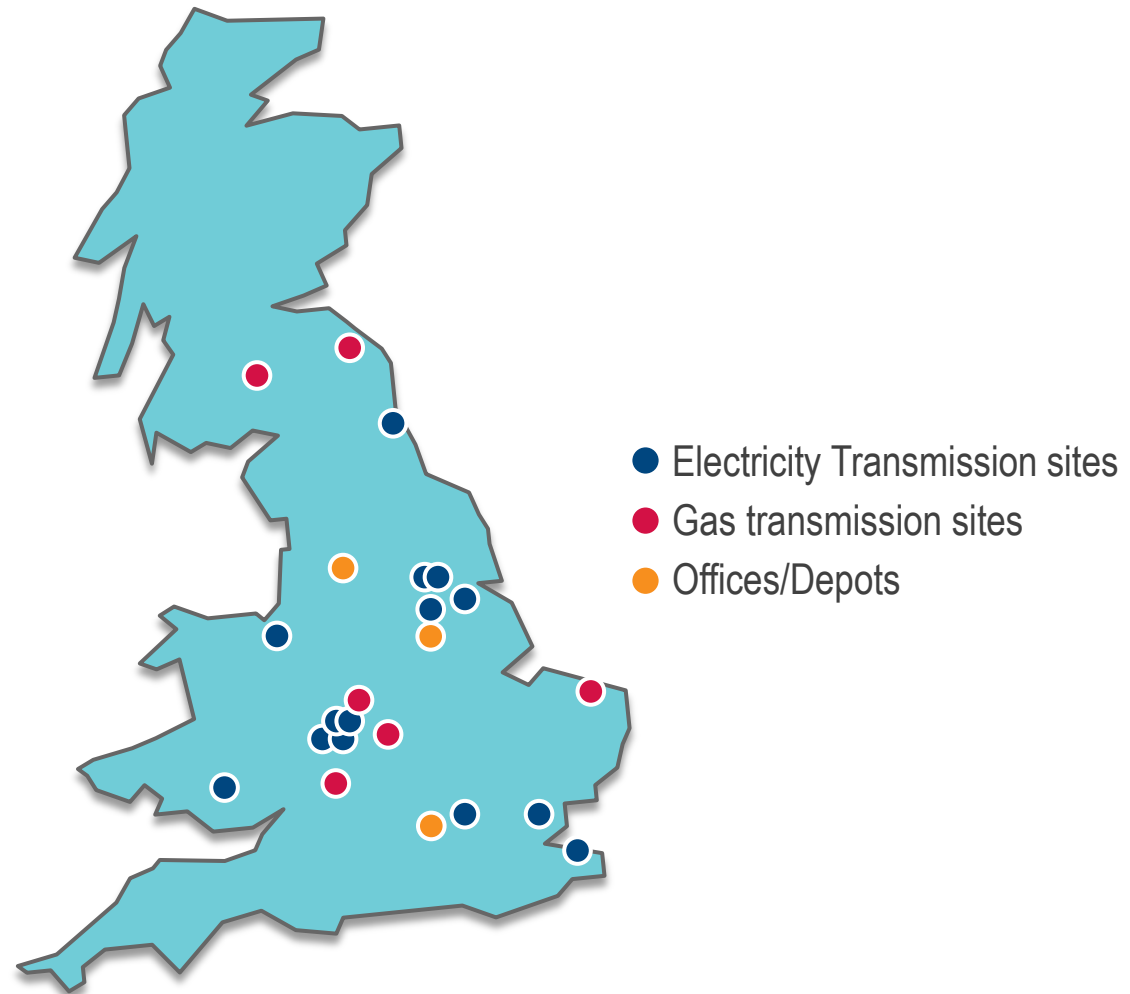


# Sites in progress

Birkenhead  
 Bishops Wood EC  
 Canterbury  
 Feckenham  
 Iver EC  
 Kirkstall  
 Nechells  
 Neepsend  
 Oldbury  
 Rayleigh  
 Rhigos  
 Skelton Grange EC  
 Thorpe Marsh  
 West Boldon Lodge EC

Alrewas  
 Backton  
 Churchover  
 Elvanfoot  
 Wooler  
 Wormington

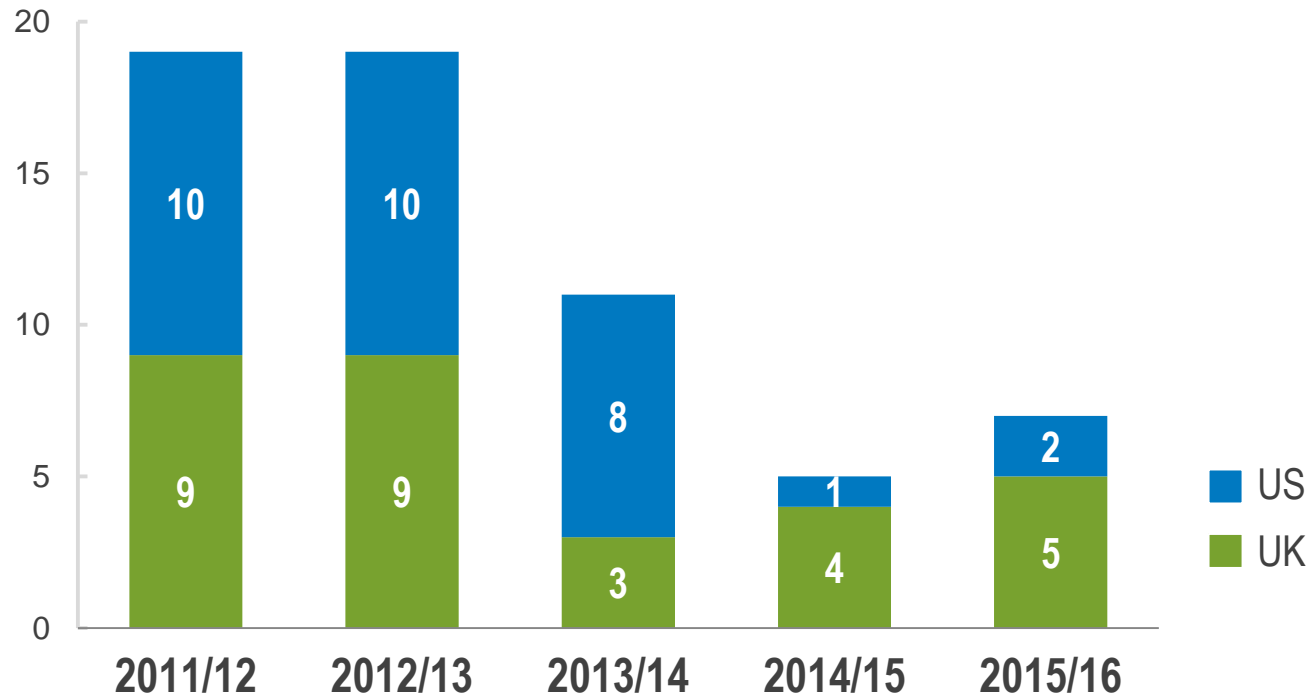
Ambergate  
 Oswald Street  
 Wokingham



# Significant environmental incidents

7 significant environmental incidents this year to date

## Indices



# Mitigation activities and special projects

## Before



Planting wild blue lupine and other nectar plants for butterfly habitat



Beach replenishment near Northport



Abandoned, wet farm field

## After



Karner Blue butterfly on wild blue lupine leaf



Beach replenishment near Northport



Wetland tree plantings to restore forested wetland



Monitoring turtles at the West Hampden Substation



Snapping turtle hatching from Reservoir Woods

## CONTACTS

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