Environmental Law update

John Mitchell, Partner, Regulatory Risk and Compliance

Brexit and chemicals

- ECHA has published guidance on how Brexit will affect British industrial users and manufacturers of chemicals
  - Current obligations to the ECHA will cease at Brexit
  - Manufacturers and importers of UK chemicals into the EU will need to be established in the EU/EEA
  - The UK manufacturer will no longer be a valid registrant of the chemical
  - The EU customer will have to register it instead
- The UK market for third country representative registrations will vanish

UK proposals on post-Brexit product compliance

- The government has set out its principles for harmonising regulatory systems after Brexit, e.g:
  - REACH
  - Medicines
  - Food
- Focus is on goods which are on the market or have approval prior to Brexit

Smart systems and flexibility plan

- Government has published its “Smart Systems and Flexibility Plan”
- Aimed at the increasing unpredictability of power supply caused by the increasing proportion of low carbon input
- The plan focusses on:
  - Developing storage
  - Smart home
  - “Flexibility services”

Heat Network Regulations birds' nest

BLAKE MORGAN

- These regulations arise from the EU Energy Efficiency Directive
- The aim is to ensure that those who are supplied by communal heating or a district network are not ripped off
- The Directive is not well drafted
- Government had to issue gold-plated guidance on what was in scope
- Now there is confusion over the criteria for compulsory installation of meters

Ambit of landfill tax to be widened – Hooray!

- It's not often that announcements increasing the burden of taxation are welcomed
- However…
  - Disposals made elsewhere than at a licensed landfill site will be subject to landfill tax
  - This means that criminals who fly tip will be liable to the tax
  - And they will be pursued for it by HMRC irrespective of what action the EA takes

Environmental Law update

John Mitchell, Partner, Regulatory Risk and Compliance

Dextra GROUP PLC

Your Presenters

Tracey Lucas – Internal Sales Director

Natalie Hunt - Specification Manager

INNOVATE to ILLUMINATE

Set the Record Straight – Myths & Facts

Myth – All LED's are the same

Fact – The quality, efficiency and performance of an LED can vary considerably. It is very important that you take careful consideration over the light fitting as a whole as opposed to the LED chip itself.

Myth – The higher the wattage the brighter the fitting

Fact – An LED's output is measured in lumens. Quality LED's will give a much higher lumen output with minimum wattage

Myth – LED's last forever

Fact – It is a myth that LEDs last forever, but with good luminaire design they can exceed the design life of other components within the luminaire.

Myth – By changing to LED you will cut your energy costs

Fact – Multiple facts must be taken in to consideration when making a fitting choice.

Its Not Just an LED Chip

LEDs occasionally fail, but more commonly depreciate in lumen output until they are no longer deemed to be an effective light source, typically at 70% output or below.

Key criteria in luminaire design to ensure maximum LED lifetime is attained:

Thermal management.

LED operating current.

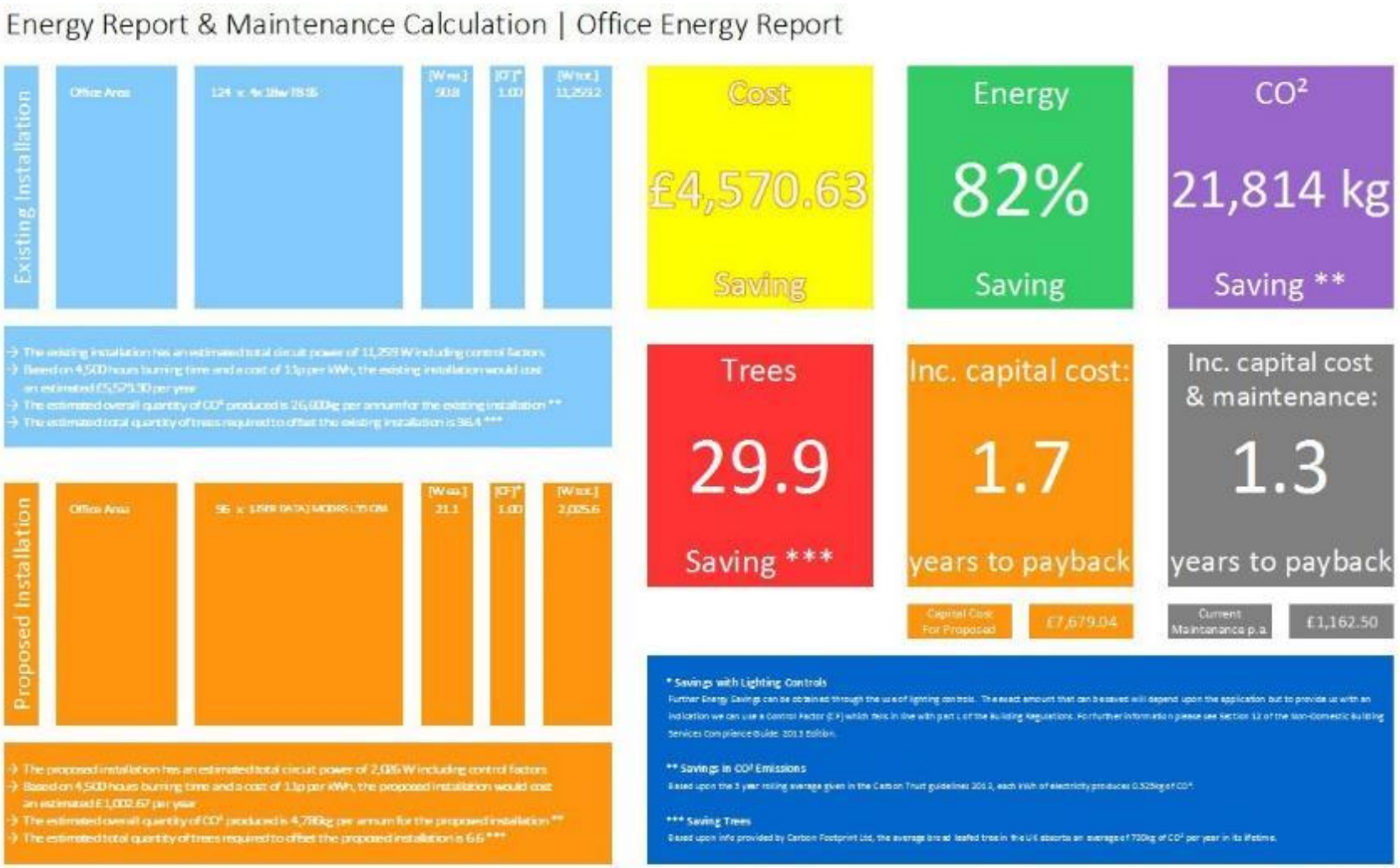
Ensuring that the junction temperature of the LED does not exceed that used in the LM80 test carried out by the LED manufacturer.

Ideally ensuring that the junction temperature of the LED is significantly lower than the that used in the LM80 test to extend lifetime

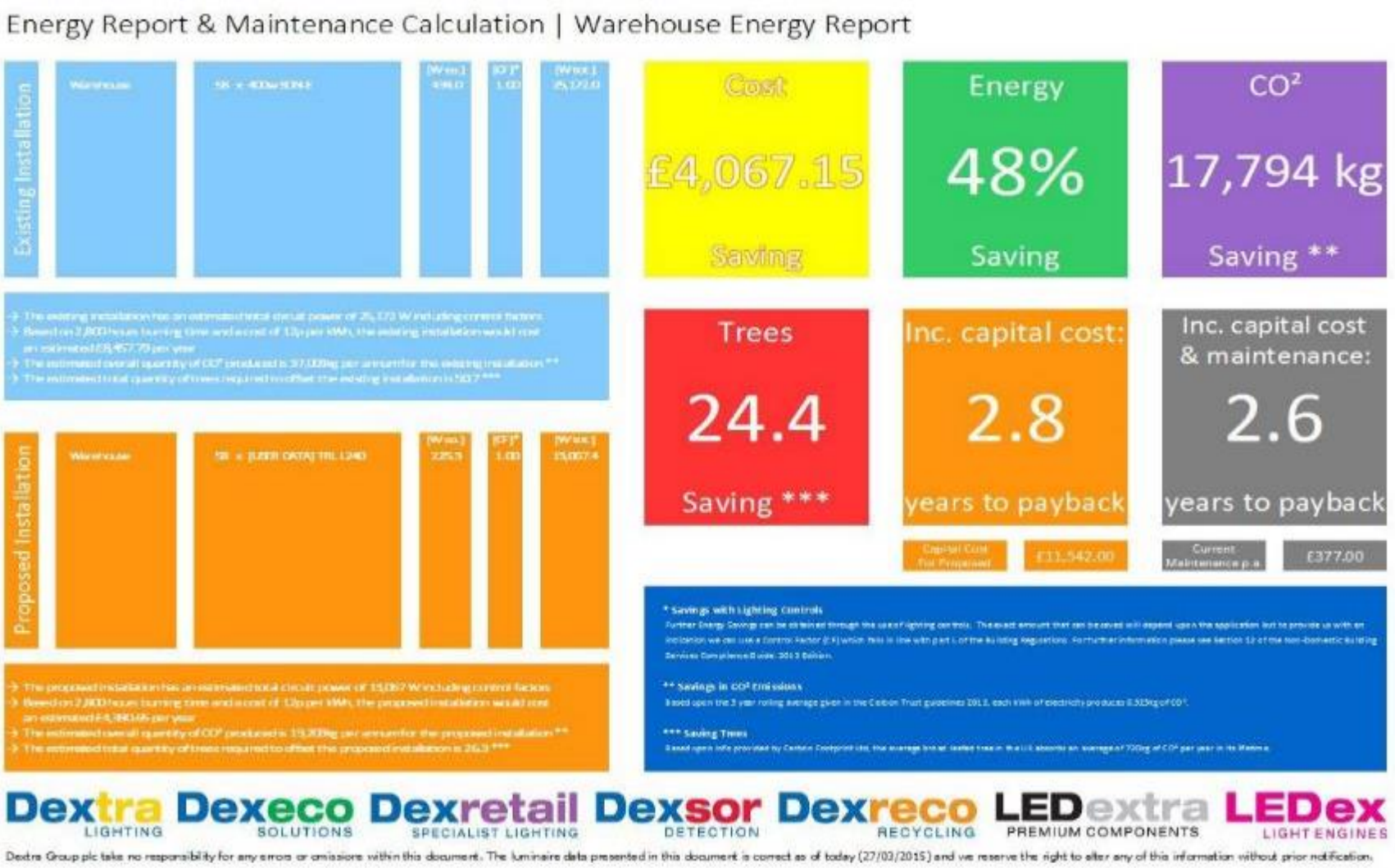
LED LIGHTING / DESIGN – THOUGHT PROCESS

- Fact – Got to have Lighting
- Lighting is at the heart of many debates within the work place- many demands and needs
- Lighting Guide BSEN 1264 – 30 Years old
- Old T8 V LED – T8 high wattage very inefficient – high maintenance – lamp depreciation up to 80 % end of life . LED – Complete opposite
- Should we be designing with old guide lines ?
- When designing / writing a spec, using a good quality LED chip reduces energy, less luminaries against T8 –

Case Study One



Case Study Two



To Summarise What You Are Looking For?

- Chip manufacturer, chip binning, quality of light source, colour temperature and rendering Macadams Ellipse.

- Accredited Carbon Trust Supplier – accredited in recognition in designing and delivering high quality energy efficient lighting solutions.

- Other key comparisons; warranty and ability to support warranty over the promised period, service, delivery and ability to deliver a wide range of variants and customised product at short notice, on site survey and schemes, aesthetic considerations, options for control integration, compliance of installation, ROI calculations and WEEE disposal.

Questions & Answers

Dextra Group plc

Telephone: 01747 858100

Email: enquiries@dextragroup.co.uk

Web: dextragroup.co.uk

INNOVATE to ILLUMINATE

A retailers approach to onsite renewables

Dave Merefield
Senior Sustainability Manager

we are Sainsbury's

Agenda

- Sainsbury's sustainability Plan
- Why is it important
- Energy pricing
- Project Graphite – carbon reduction
- Waste
- Water
- Innovation
- Questions

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Sustainability Plan

Our plan continues to reflect our 5 values

Living healthy lives	Sourcing with integrity	Respect for our environment	Making a positive difference to our community	A great place to work
Help customers make healthy choices	Source our raw materials to an independent standard	Grow our business whilst reducing our waste, energy and water	Increase the impact we have in our local communities	Be an employer where people love to work
• Healthier baskets • Active kids	• Key raw materials • Sustainable fish • Fairly traded • British • Animal welfare • Packaging • Sustainable sourcing	• Operational waste • Customer waste • Carbon • Water	• Community impact	• Colleague engagement • Jobs and skills • Diversity and inclusion

Our Target - We'll reduce our operational carbon emissions by 30% absolute and 65% relative (to 2005)

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Why is it important to us?

Commercial

The right thing to do

we are Sainsbury's

Supply / Demand Squeeze

In a nutshell

- Coal generation closing
- Many renewables are intermittent
- Market prices wont justify new gas generation investment.

SO what does that mean?

- Government intervened with new. legislation called EMR in 2013.
- Price certainty for all generators.
- Higher costs for users.

The Impact

- New levies and charges to budget for and monitor.
- Estimate impact in future years – double digit % electricity price increases.
- Look at ways to mitigate these costs.

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Energy pricing

- Electricity costs – double digit inflation due to non commodity costs i.e. costs to balance and run the network not by the wholesale price.

- Increase in time of day electricity costs volatility and price predominantly driven by;
  - In day system balancing costs
  - Energy supply security (avoiding brown outs) extra standby power generation that is charged for during early evening weekdays between 16:00 and 19:00.
  - Prices in winter between 17:00 and 18:30 rising to circa £1.20 per MWh.

- Brexit and our reliance on interconnectors between UK and Europe to supply electricity & Gas

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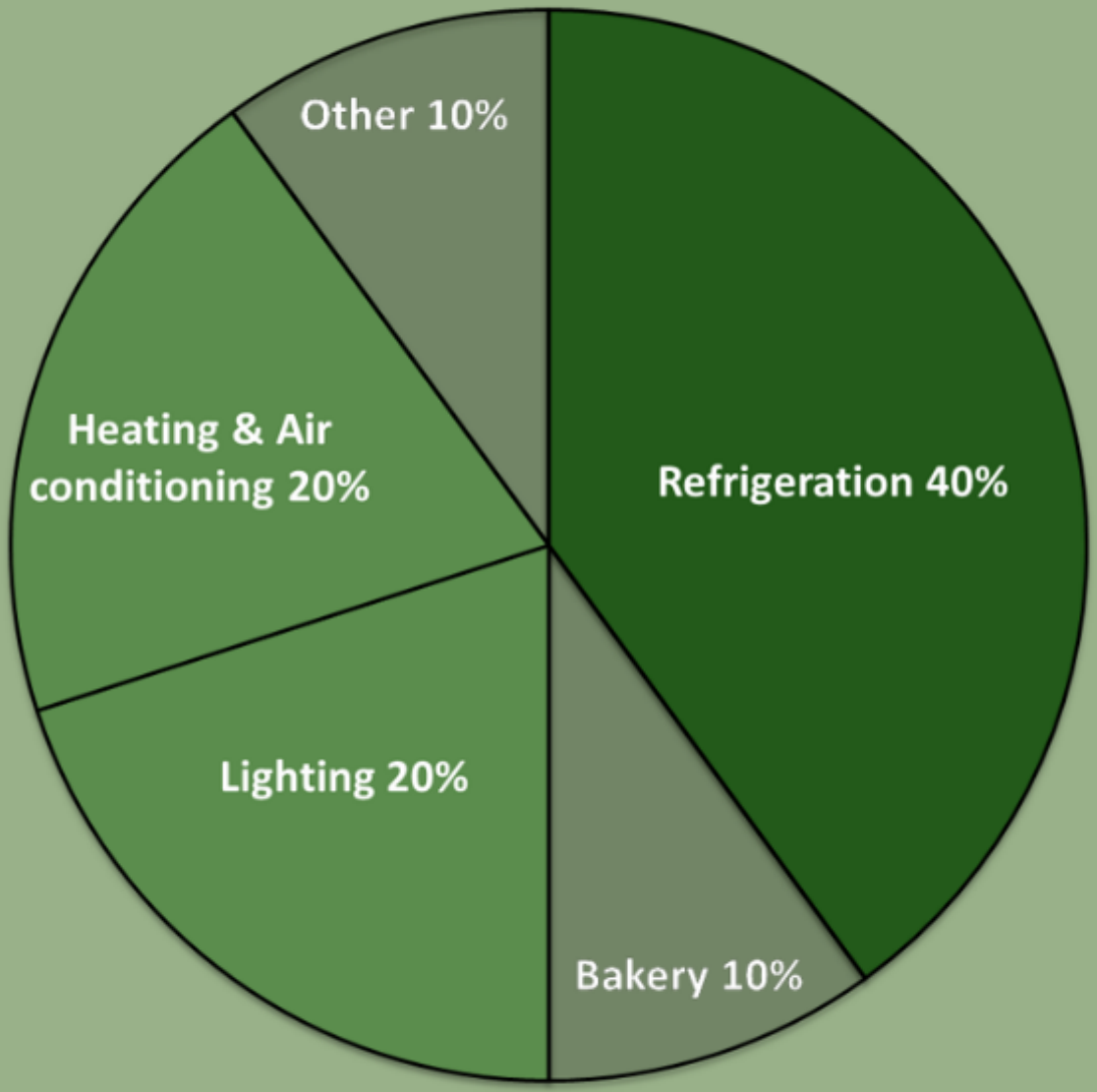
Our Energy Pie



Graphite - energy efficiency:

Natural Daylight

Lighting Levels

Night Blinds

Building Management System

Variable Speed Drives

Movement Sensors

Voltage Optimisation

ASHP Heating

= 143 x

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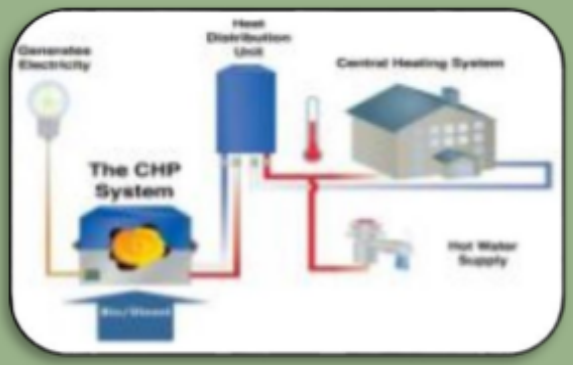
Graphite – energy infrastructure



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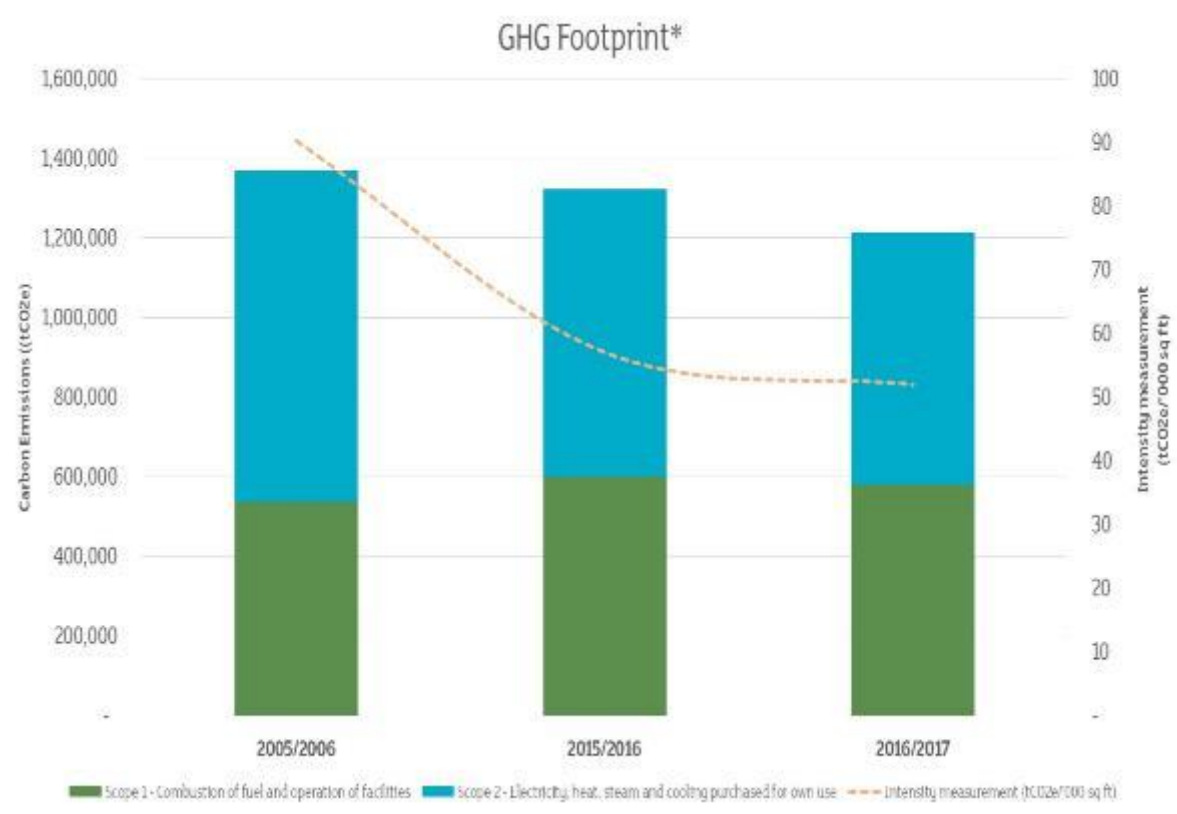
How are we doing?
Carbon Reduction



21.5%
Absolute reduction vs 05/06

47.4%
Relative reduction vs 05/06

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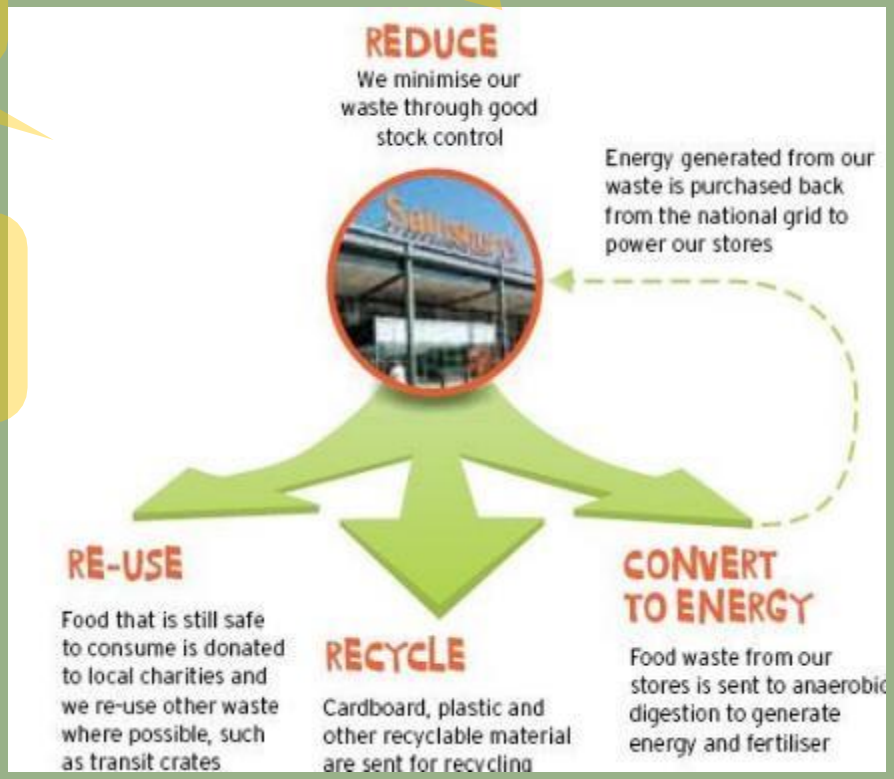
Waste – Our Resource Recovery Strategy

All stores ZERO FOOD waste to landfill

Donate in code food

Recycle cardboard, plastic, cooking oil, wood, paper

Customer recycling offer – packaging , textiles, small WEEE, light bulbs, batteries



ZERO WASTE TO LANDFILL achieved end 2012

UK's largest retail user of Anaerobic Digestion

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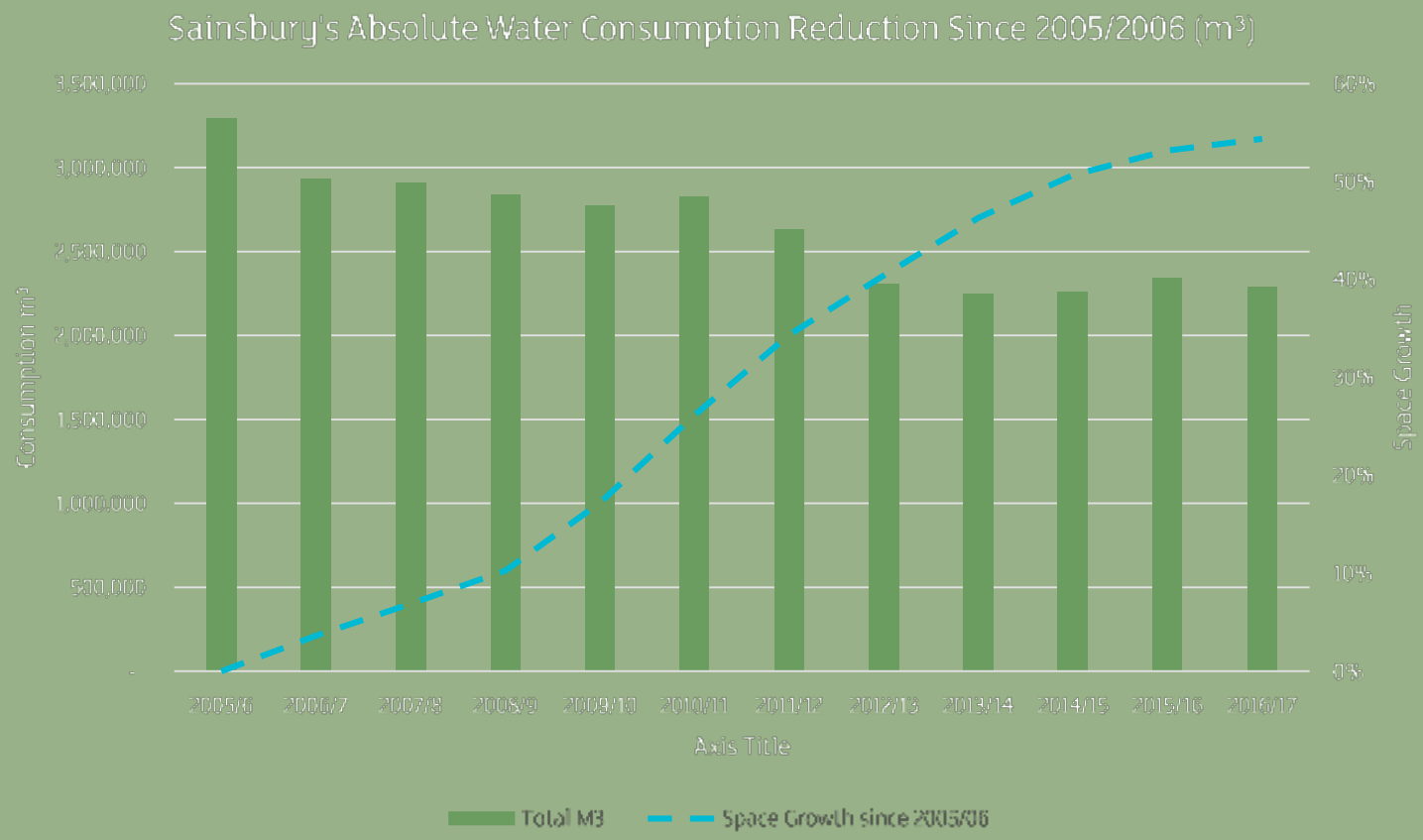
Water Reduction



Percussion Taps

Water Management Systems

Waterless Urinals

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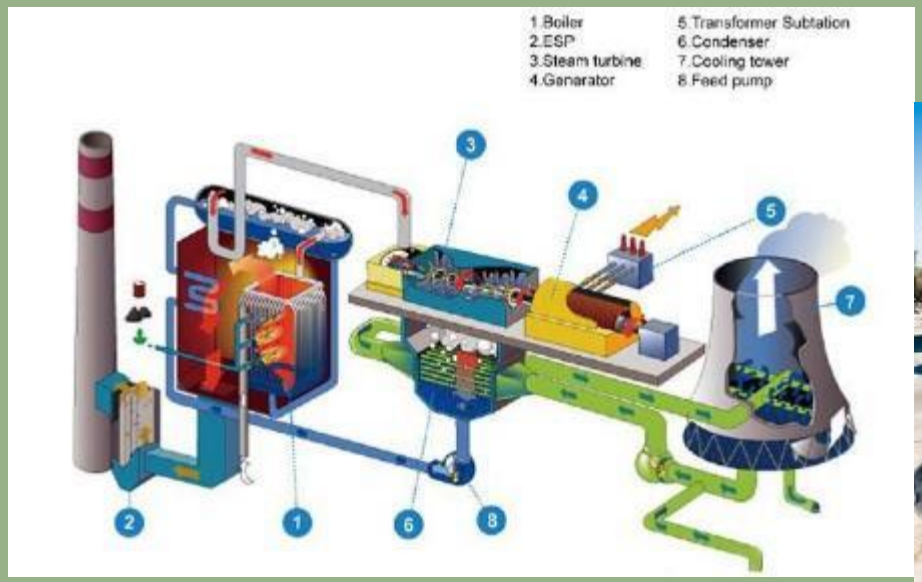
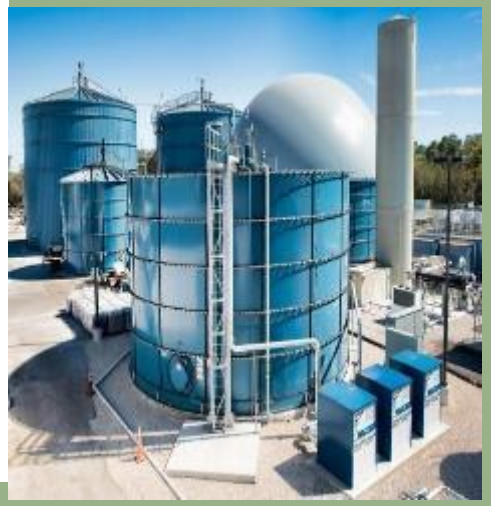
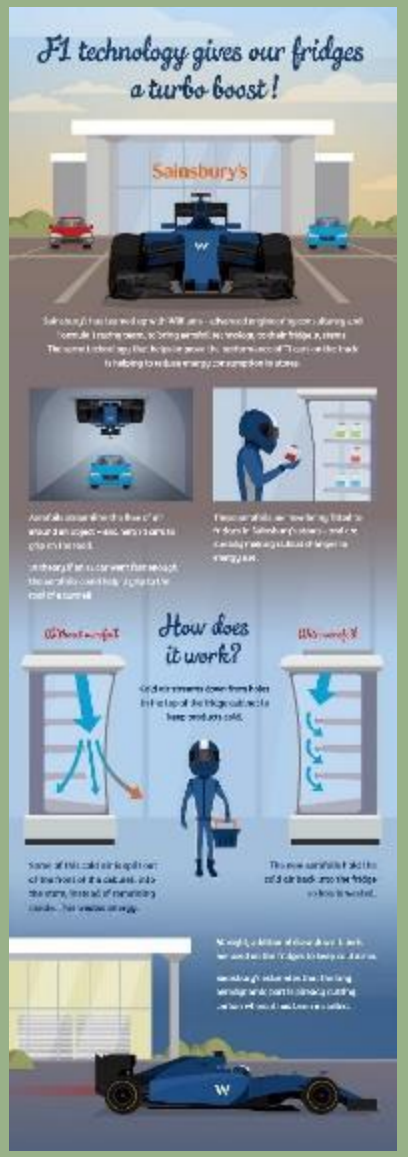
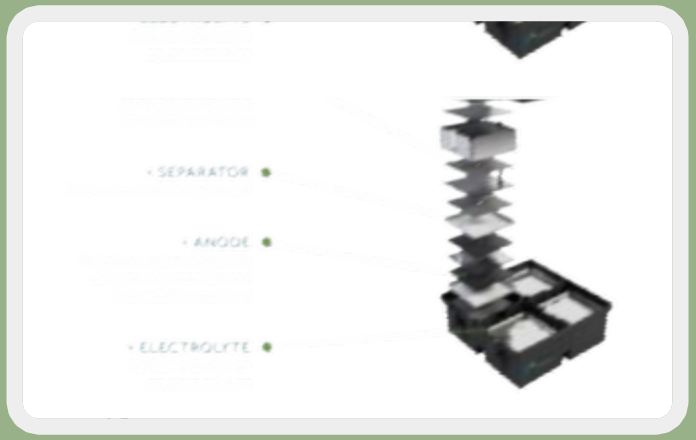
Sustainability Innovations









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Any
Questions?
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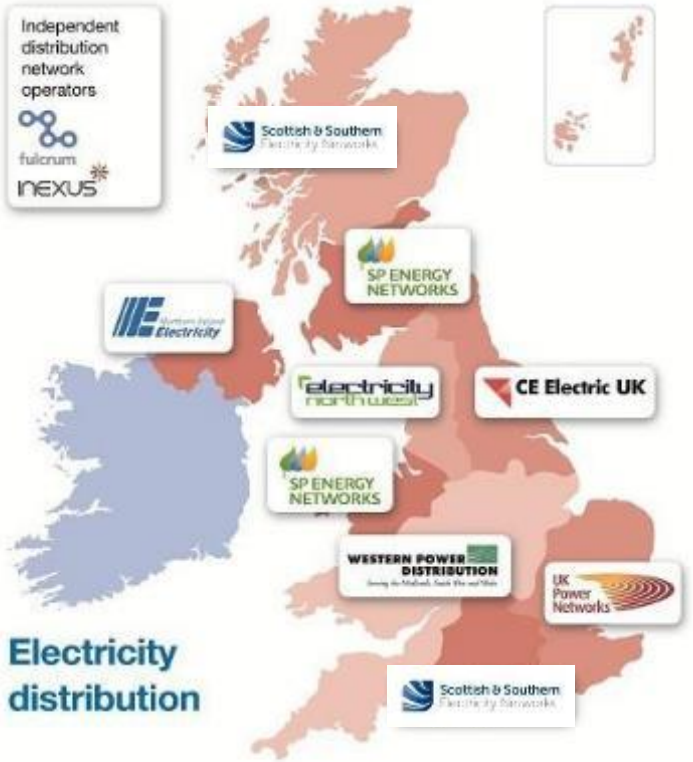
Network Innovation.

Driving change and improvement.

Alex Howison- Active Solutions Manager
Charlie Edwards- SAVE Project Manager

Scottish & Southern Electricity Networks

Scottish and Southern Electricity Networks



We own

- one electricity transmission network
- two electricity distribution networks

106,000 substations

128,000 km of circuit

100+ submarine cable links

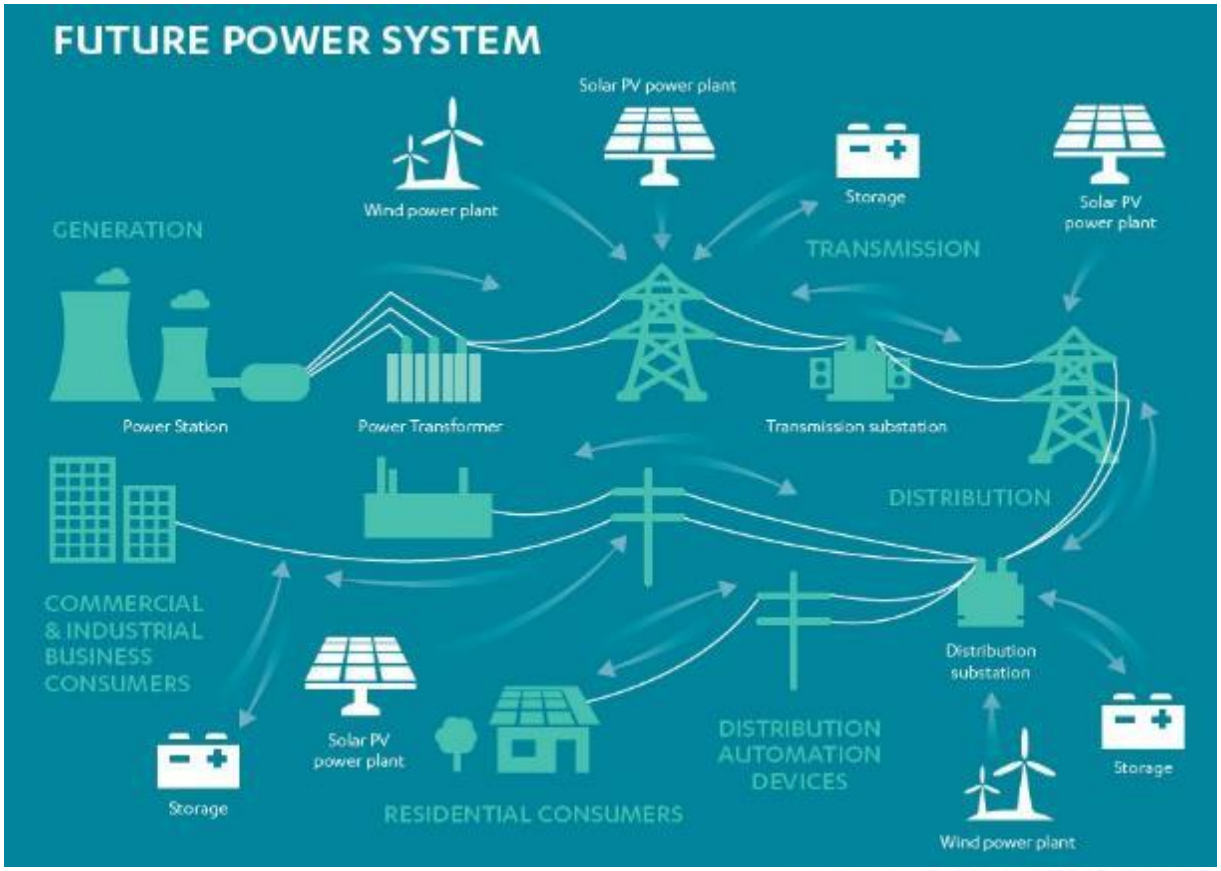
across one third of the UK landmass.

Serving 3.5 million customers

Scottish & Southern Electricity Networks

Opportunity

Increasing need for flexibility driven by changing requirements



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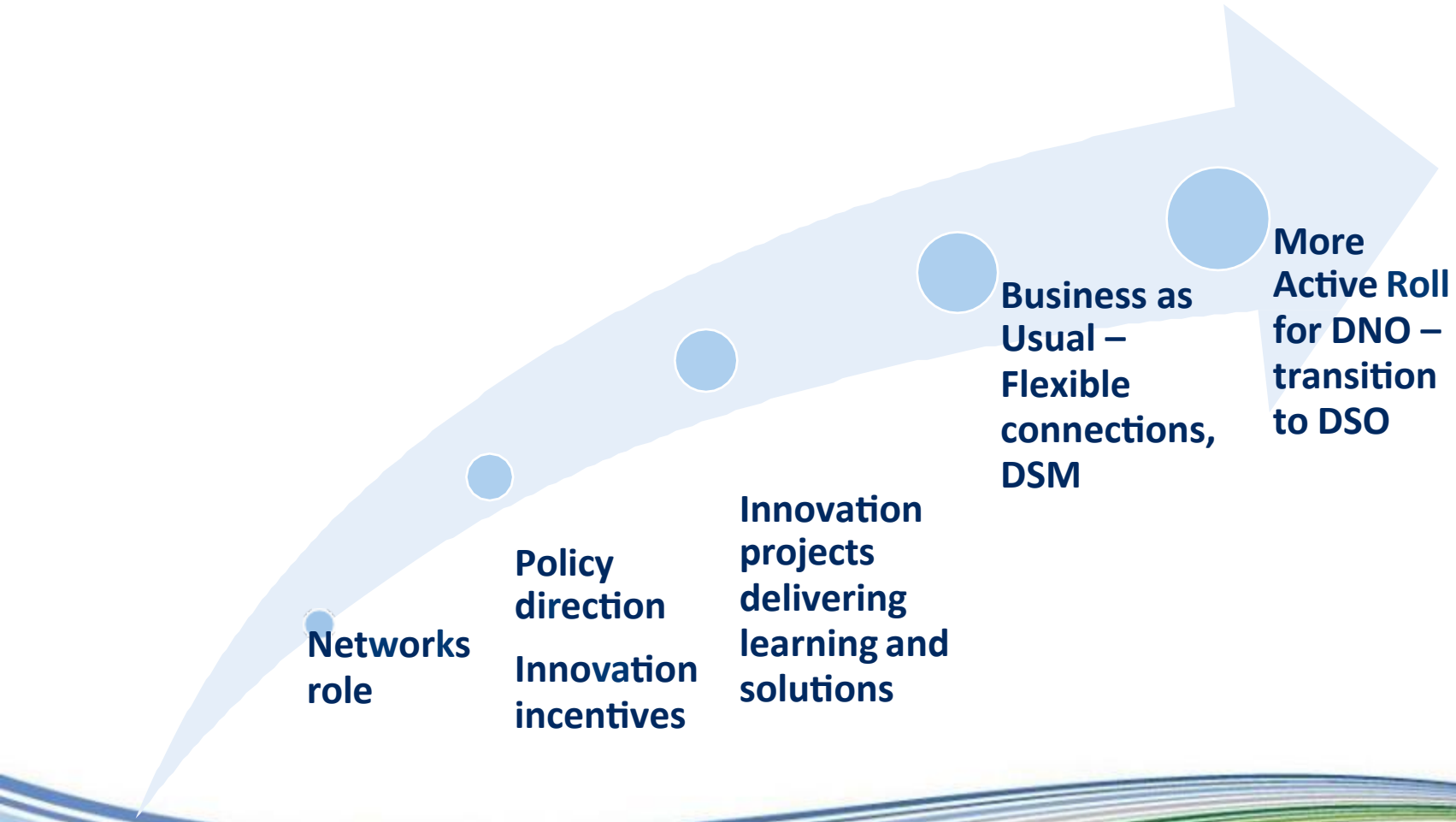
Adapted from National Infrastructure Commission report, Smart Power, 04/03/2016.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505218/IC_Energy_Report_web.pdf

Changing role for DNO



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Distribution project portfolio

Reliability & Availability

Connections & Capacity

Customer & Social Obligations

NINES	Thames Valley Vision	My Electric Avenue	SAVE (Solent Achieving Value from Efficiency)	LEAN
Shetland 1MW Battery	LV Network Monitoring	Impact of Electrolysers on the Network	ACCESS (Community Energy)	Orkney Energy Storage Park
LV Connected Energy Storage	Digital Substation Platform	Domestic Demand Side Management	Network Damage Reporter	Field Team Support Tool

Safety, Health & Environment

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NTVV Project metrics

- Focusing on the LV Network
- Bracknell and the surrounding Thames Valley area

THAMES VALLEY VISION

Bracknell Forest Council

ea technology

Honeywell

DNV·GL

UNIVERSITY OF OXFORD

University of Reading

"by better understanding our customers and the loading on the network, we can build a model of the low voltage network and use this to better anticipate and manage the impact of low carbon technology take-up scenarios, allowing timely and targeted investment decisions, minimising disruption and costs to customers"

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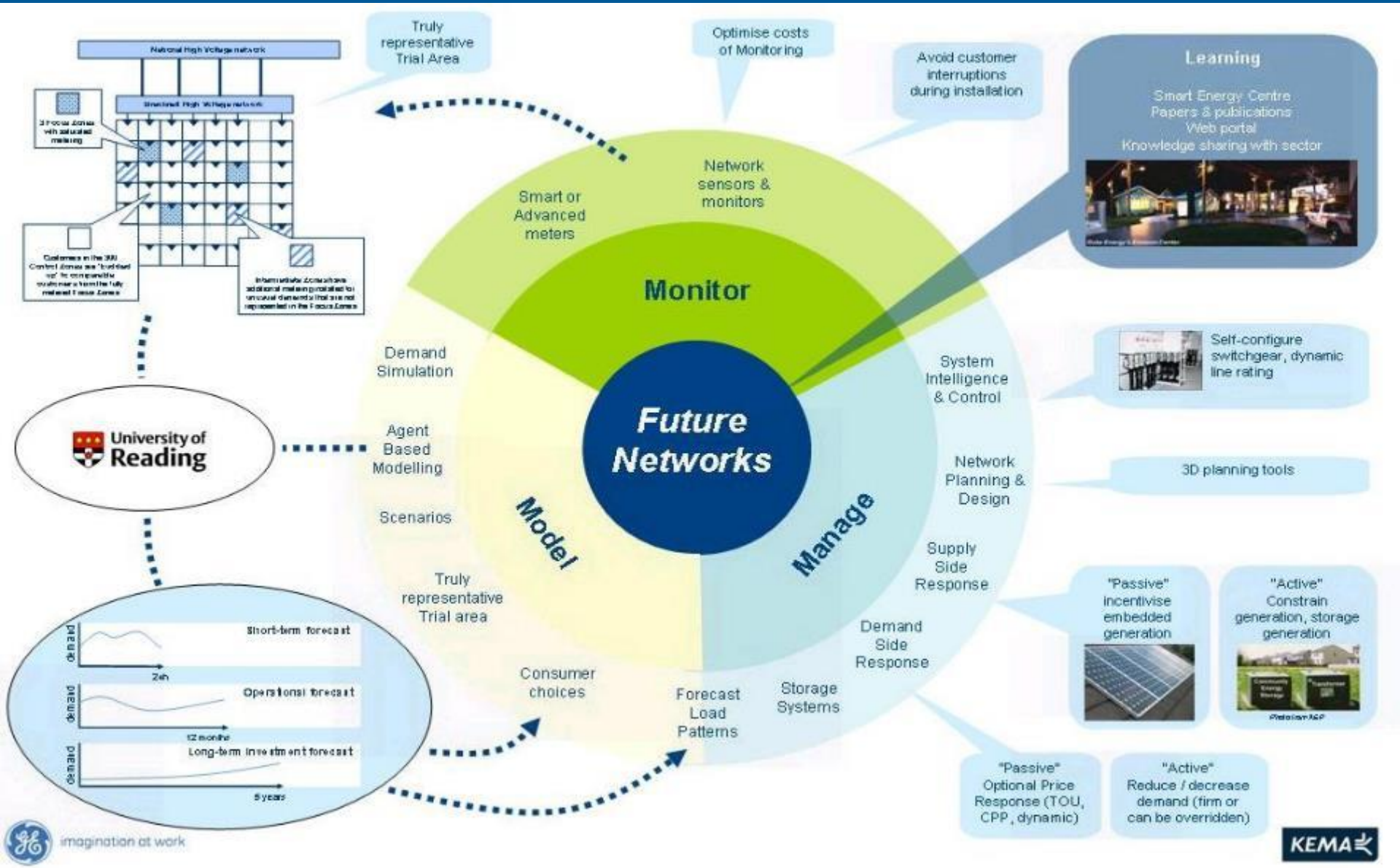
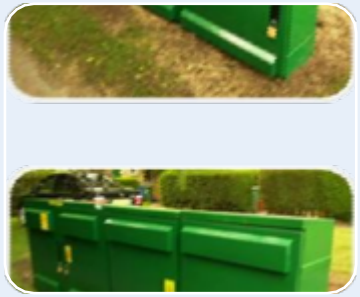
The NTVV Project



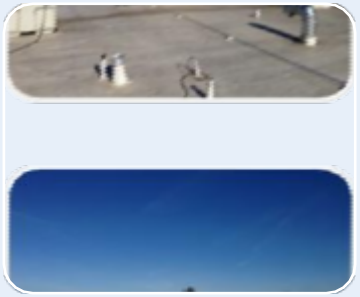
Then we can deploy smart solutions to resolve the issue



Energy Storage and Management Units

(ESMU)

Hot Thermal Storage (EMMA)



Cold Thermal Storage

(Ice Bear)

Automated Demand Response (ADR)

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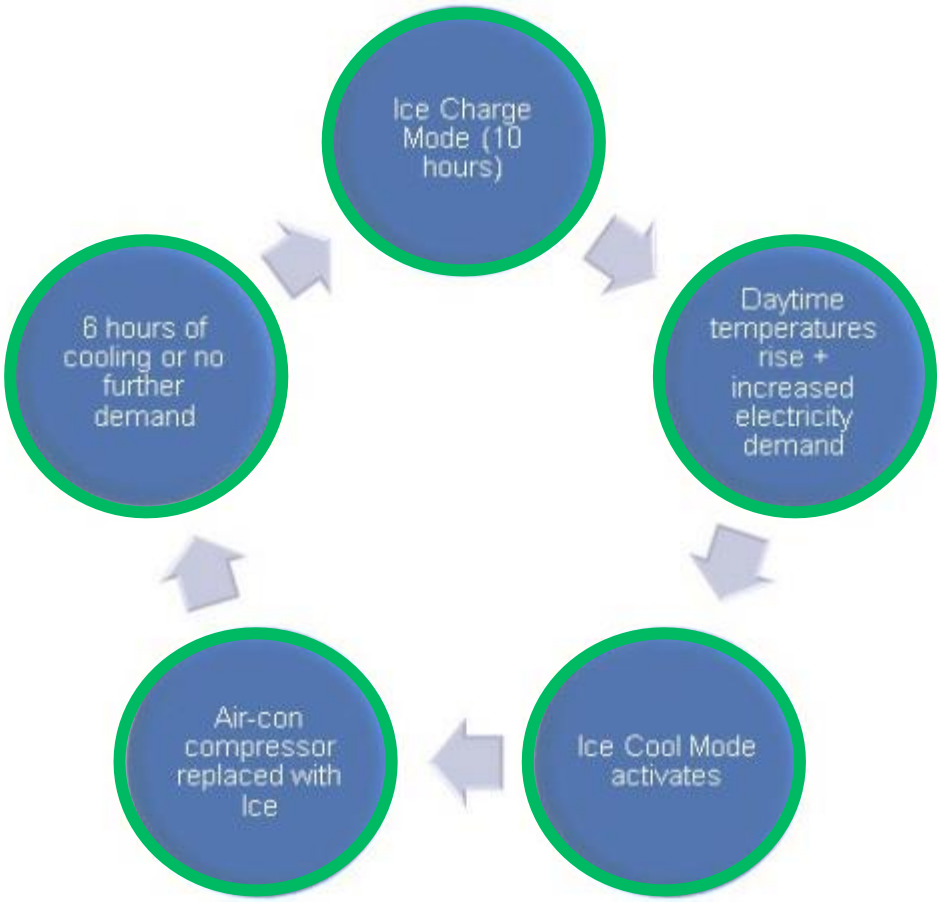
Cold Thermal Storage



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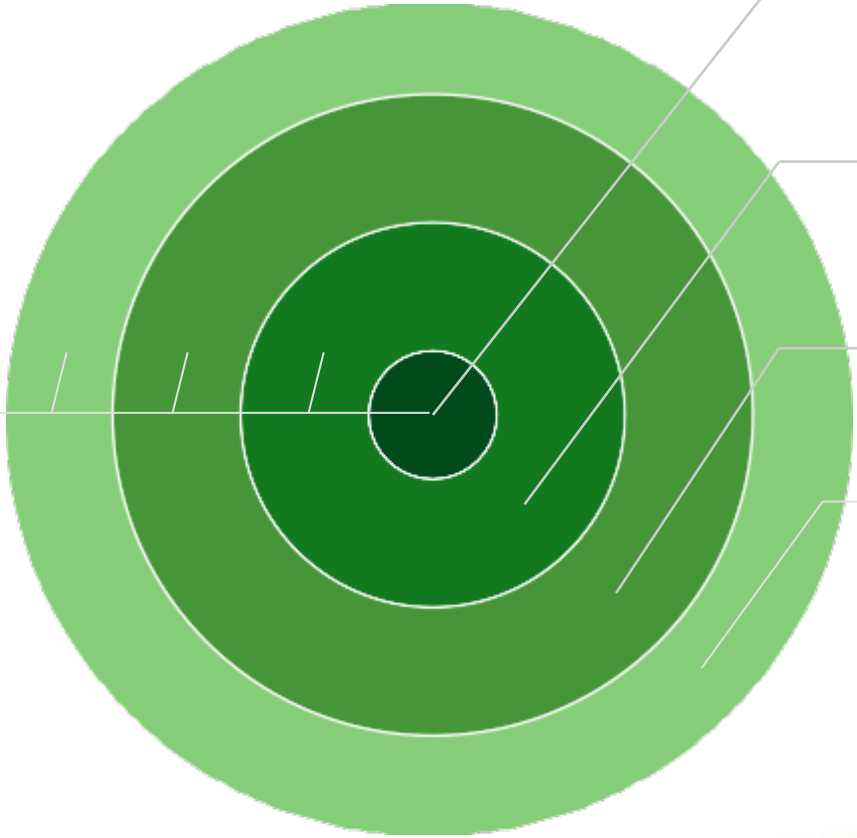
Ice Bear Value Case



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Our Trials- Overview

OVER 2000 LOAD SHEDS	EVENTS UP TO 4 HOURS	NO NOTICE EVENTS	INTENSIVE SHED WEEKS
Across 7 trials on 30 customers running from March 2014 to November 2017	Load-sheds ranged from 30 mins to 4 hours. Across a variety of weekdays/times	Notification varied from 2 day to no notice	Load-shed every day of the week. Modelling of BaU scenarios

Parameters increased over time to maximise a buildings output.
Close customer engagement lay at the core of this.

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What does a load shed look like?

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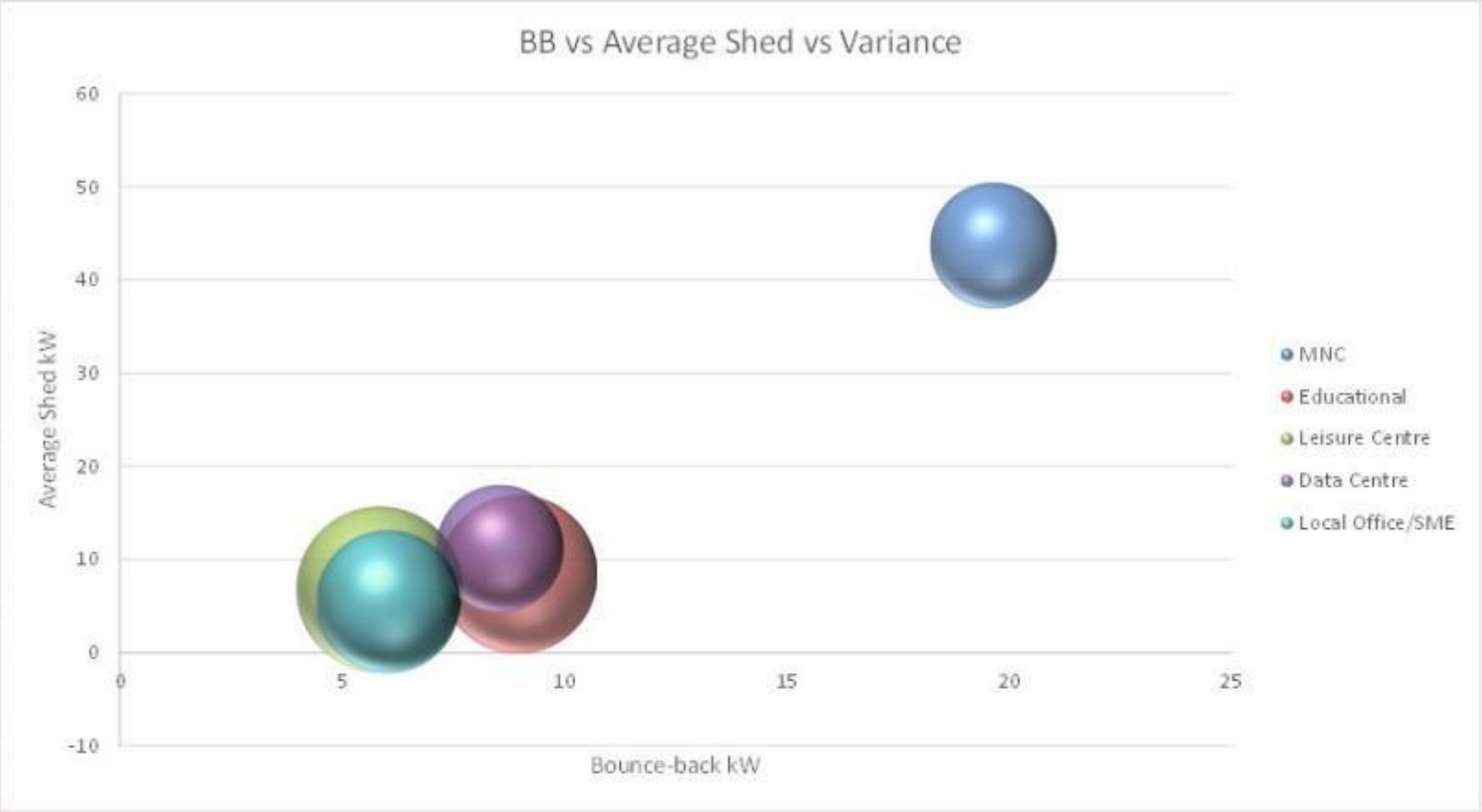
Customer Capabilities



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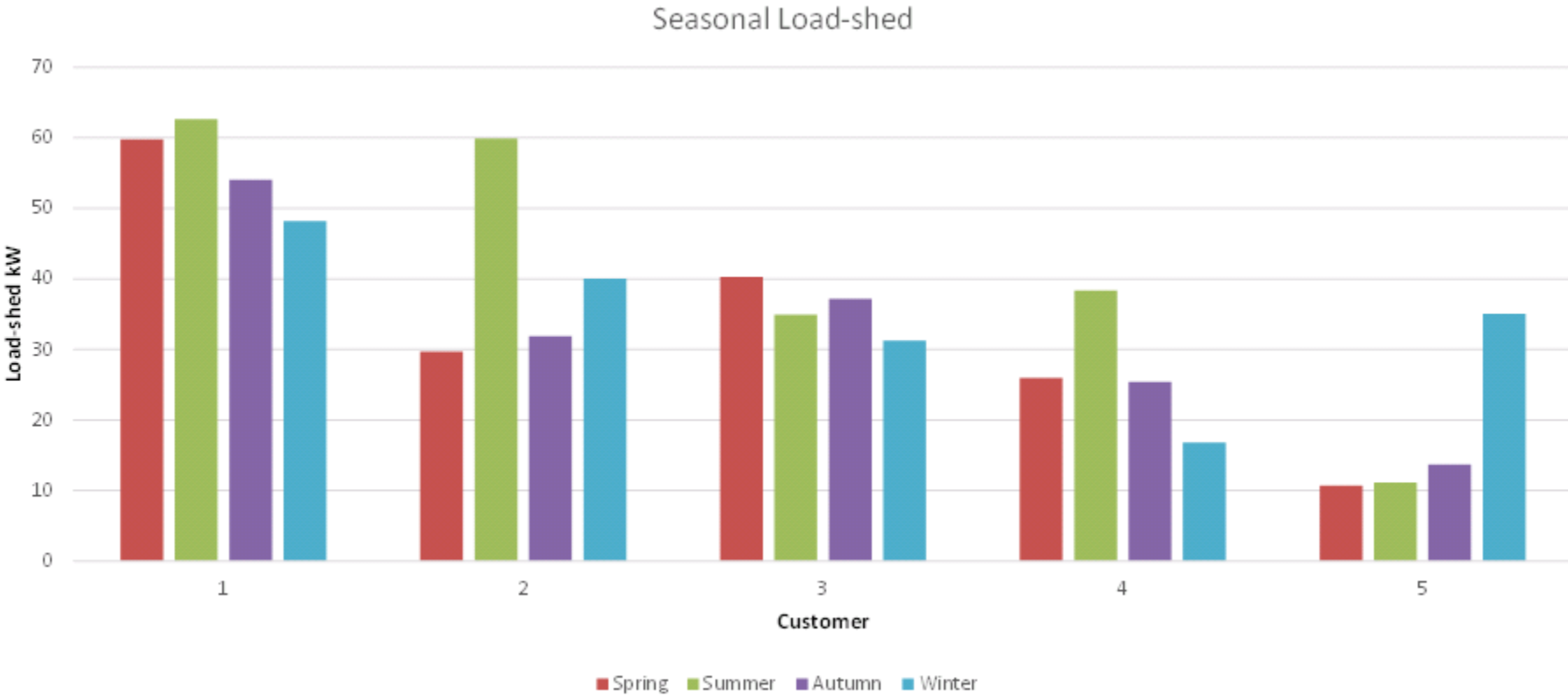
Seasonal Variation



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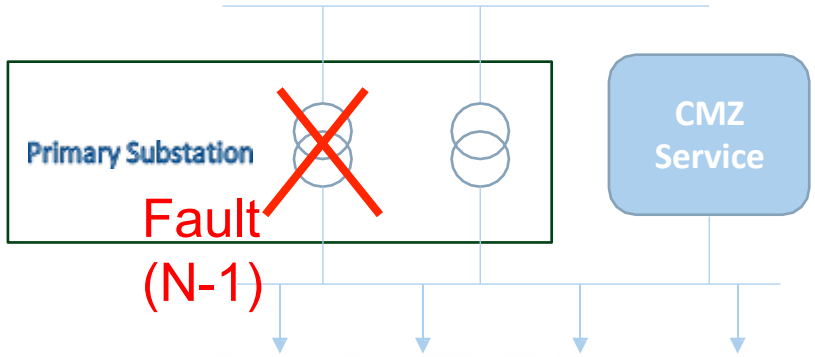
SSEN Use of Demand Response

- TVV
  - Learning into: customer engagement, technicalities, network impact, factors influencing reductions, analysis

- Constraint Managed Zones (CMZ)
  - Peak electrical demand under post-fault conditions managed through the use of demand reduction or demand shifting techniques, provided as a managed service to SSEPD by CMZ Supplier



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Key facts

Jan 2014- Jun 2015

£10m Ofgem funded project

Based in Solent Region

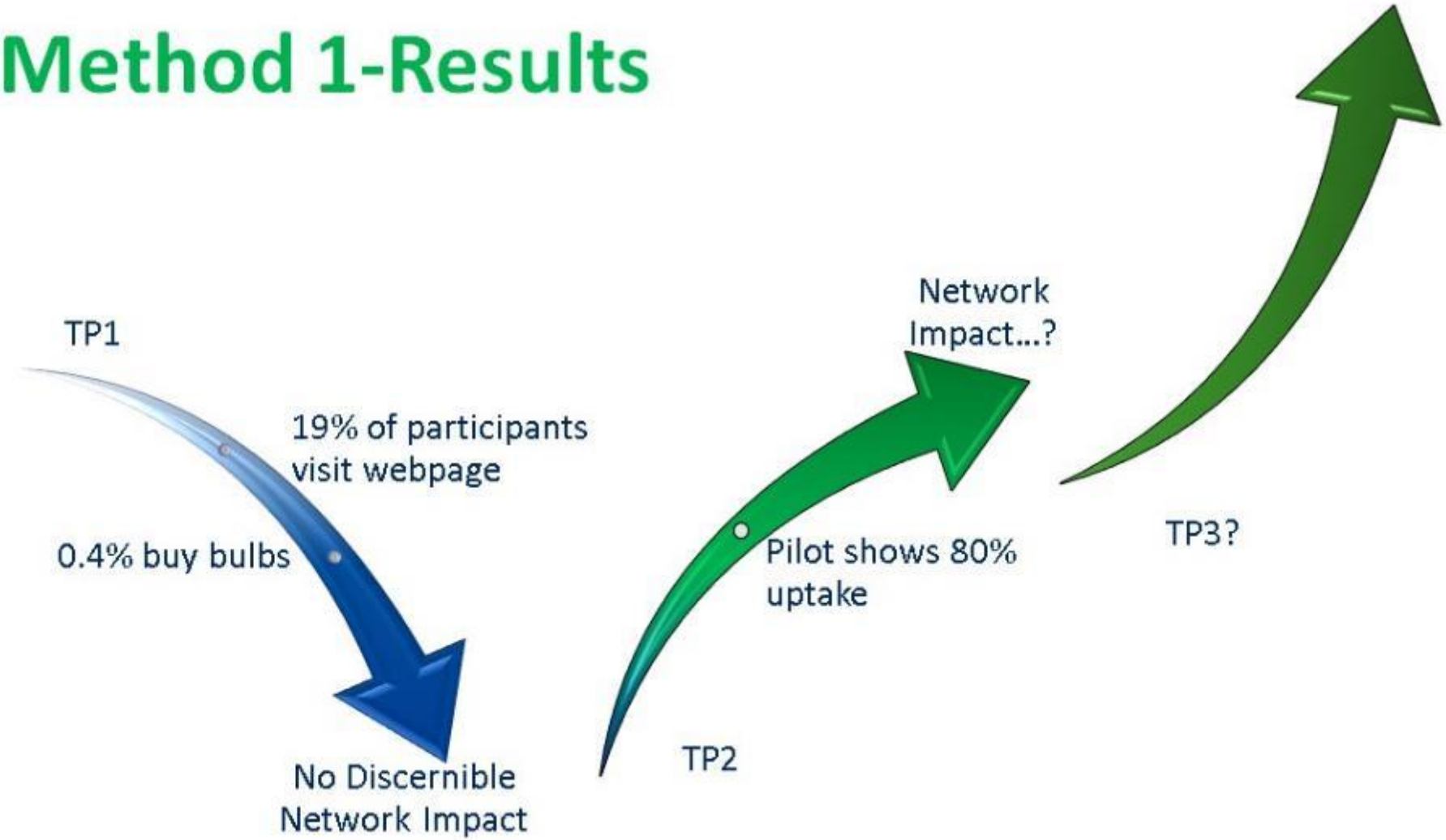
8000 domestic customers

Network Investment Tool

Methodology

Interventions			
Domestic Monitoring			Feeder Monitoring
1. LED lighting trials -Lighting is responsible for 19% of evening peak demand	**2. Data informed engagement** -other trials suggest reductions of around 11%	**3. Data informed engagement + prices signals** -other trials suggest reductions of around 11%	**4. Community Energy Coaching** -Two communities, one affluent one deprived -Other benefits i.e. PSR customers

Method 1-Results



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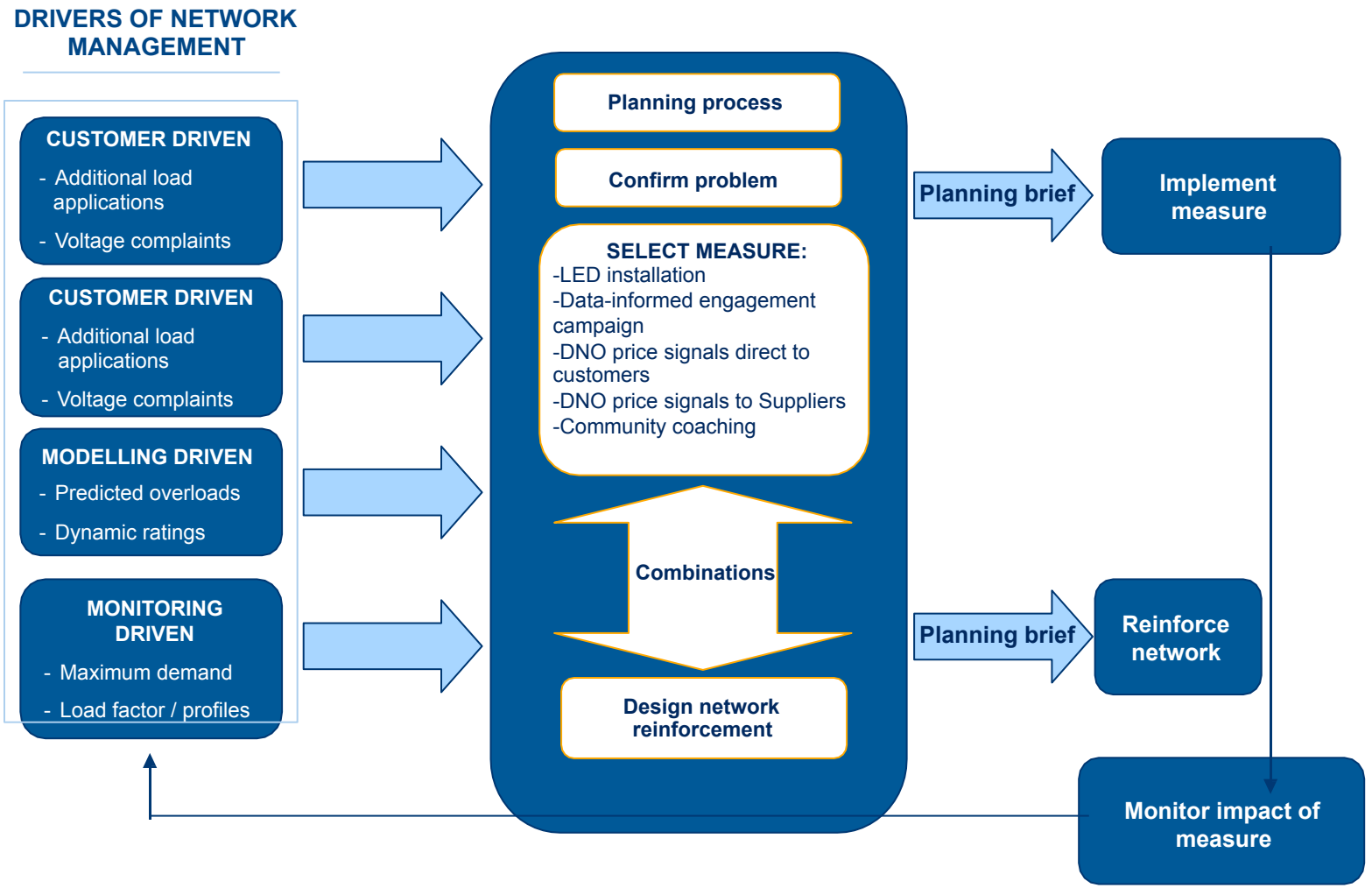
Proposed use of Network Investment Tool for planners



Scottish and Southern Energy Power Distribution

Thank you

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