**Local Energy Accelerating Net Zero**

# Project LEO (Local Energy Oxfordshire)

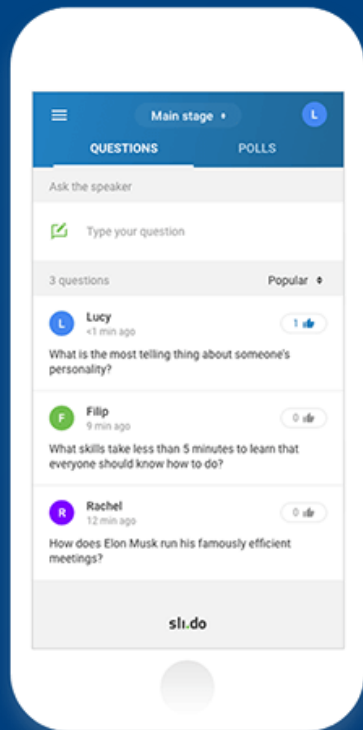**How are Local Networks Enabling the Energy Transition?**

*Melanie Bryce*
*Oxfordshire Programme Director*
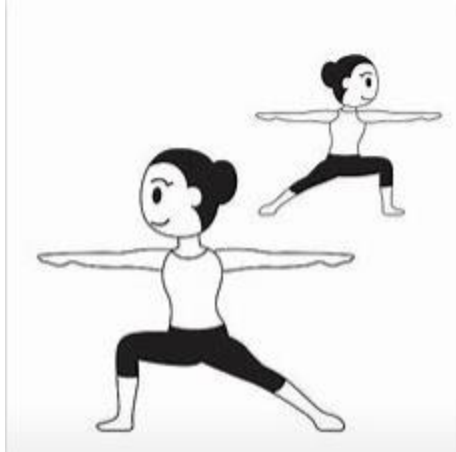Scottish and Southern Electricity Networks

We are using a voting tool in today's session called **Slido**

Please use your smartphone or tablet and follow the instructions below:

Go to: **www.slido.com**

Enter code: **#LEOTeam**

A
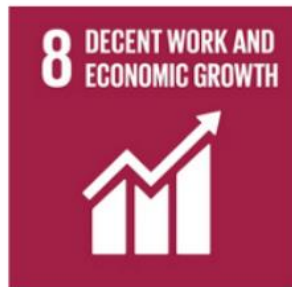


B



C

Q1. To which of the following 17 UN Sustainability Goals has SSE aligned its Strategy?

# SSE 2030 Sustainability Goals

**Scottish & Southern Electricity Networks** | Powering our community

## Cut our carbon intensity by 50%

Reduce the carbon intensity of electricity generated by 50% by 2030, compared to 2018 levels, to around $150gCO_2$/kWh.

**13 CLIMATE ACTION**

## Treble renewable energy output

Develop and build by 2030 enough renewable energy to treble renewable output to 30TWh a year.

**7 AFFORDABLE AND CLEAN ENERGY**

## Help accommodate 10m electric vehicles

Build electricity network flexibility and infrastructure that helps accommodate 10 million electric vehicles in GB by 2030.

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

## Champion Fair Tax and a real Living Wage

Be the leading company in the UK and Ireland championing Fair Tax and a real Living Wage.

**8 DECENT WORK AND ECONOMIC GROWTH**
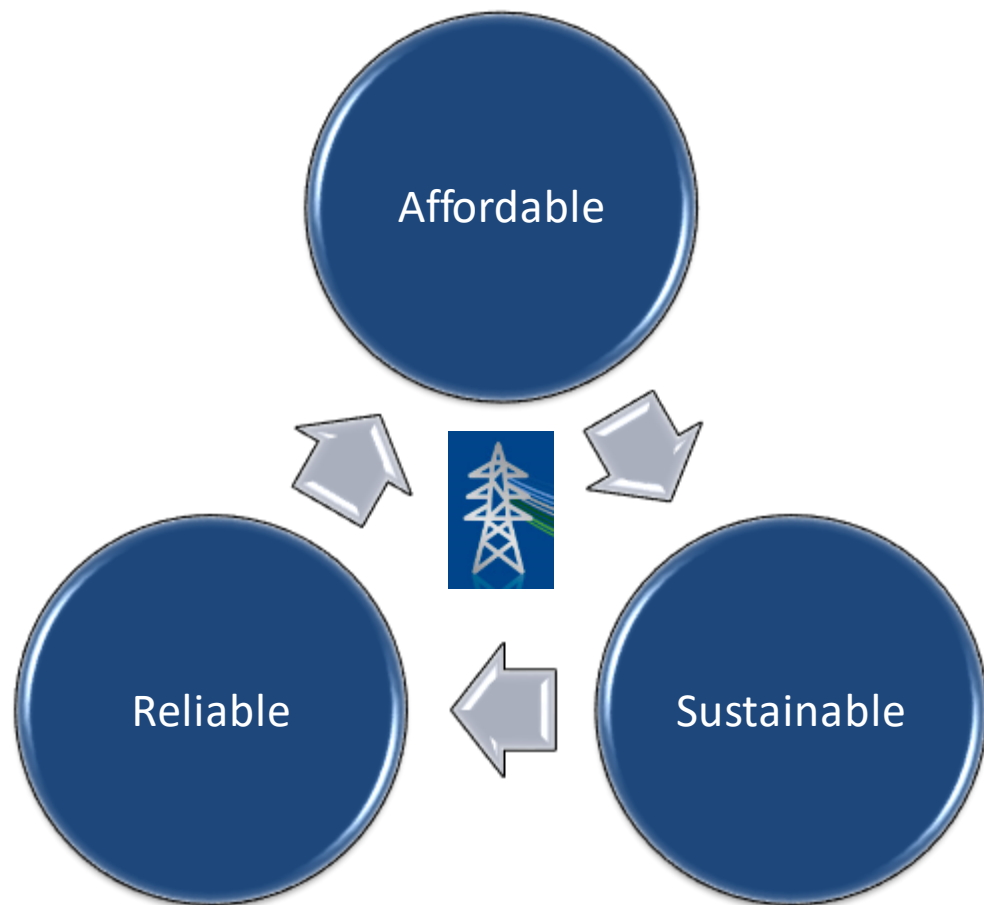
LEO

# SSEN - An Overview

**We own and operate the Electricity Transmission and Distribution Networks in the North of Scotland and the Distribution Network in Central Southern England.**

- SSEN is regulated by Ofgem under RIIO; part of SSE plc (UK FTSE listed).

- We have 4,000 employees, 85 depots/offices across 7 regions
    - serving 3m customers in England and 0.75m customers in Scotland
    - 130,000 km of lines and cables and 106,000 substations
    - over 100 subsea cables, powering island communities
    - we take 550,000 calls from our customers p.a. (over 1,500 a day).

- Strong supporter of the 2050 Net Zero emissions target, and committed to investing in its network to support 10 million EVs in the UK by 2030.

- Accommodated the rapid rise in renewables with 28 GW of local generation capacity connected - enough to power 4 million homes.

- Supporters of the Living Wage and Fair Tax.

# SSEN - Electricity System of the Future

Affordable

Reliable

Sustainable



Scotland: Net Zero by 2045

UK: Net Zero greenhouse gas emissions by 2050

Wales: -95% by 2050

The UK can end its contribution to global warming within 30 years by setting an ambitious new target to reduce its greenhouse gas emissions to zero by 2050, the Committee on Climate Change (CCC) - 2 May 2019

LE

# SSEN – Electricity System of the Future

Scottish & Southern Electricity Networks | Powering our community

Smart Solutions
Flexible Connections
- Time of day
- Shared use

Price Signals

**B**

**A**

Congestion
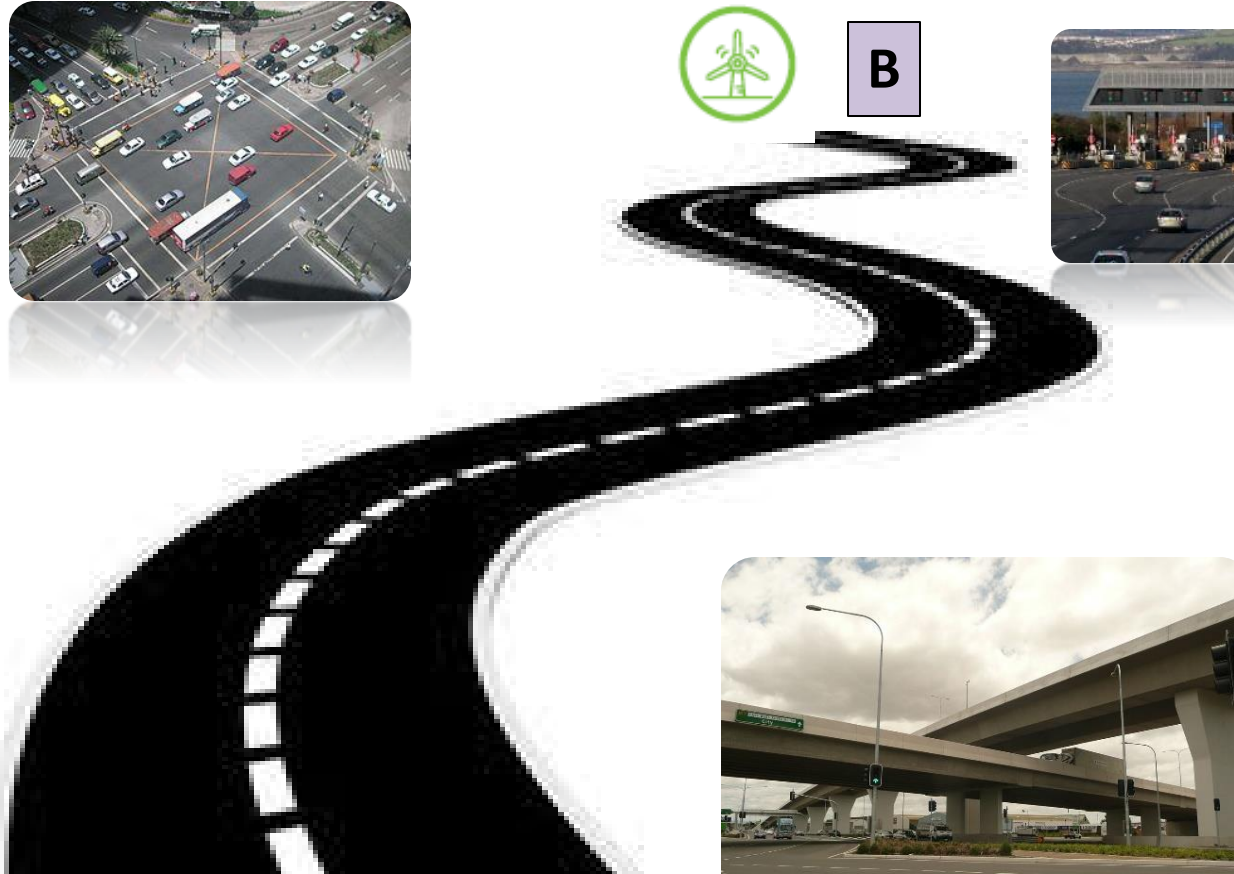
Network Investment

Active Management

LE

A – 11,156 km

B – 1,763 km

C – 580 km

D – 25,628 km

# SSEN's Assets in Oxfordshire - facts and figures

| Cable type | Kilometres |
|---|---|
| 132 KV | 176 |
| 33 KV | 516 |
| High Voltage Underground Cable | 2271 |
| High Voltage Overhead Line | 2578 |
| Low Voltage Overhead Line | 1770 |
| Low Voltage Underground Cable and Service | 3845 |
| TOTAL | **11156** |

| Substation Type | Number |
|---|---|
| Distribution Transformer | 5917 |
| Primary Transformer | 50 |
| Bulk Supply Point | 7 |
| Grid Supply Point (Cowley) | 1 |
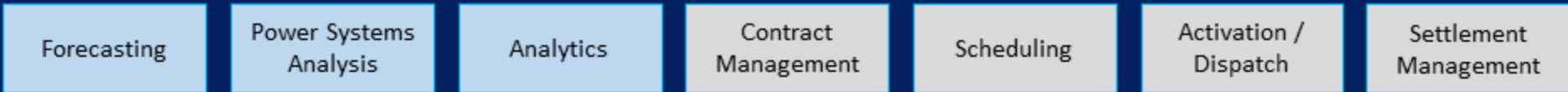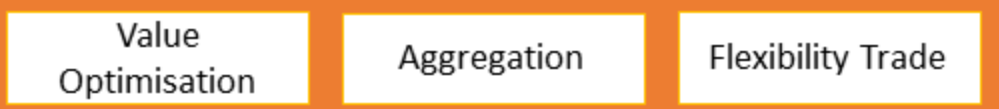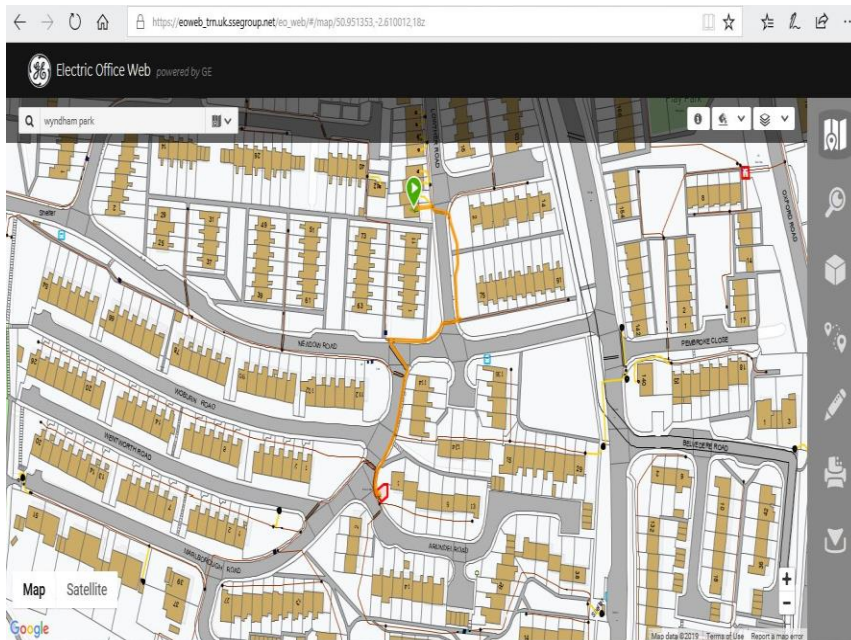
# Local Networks



Local Low Voltage Electricity Network
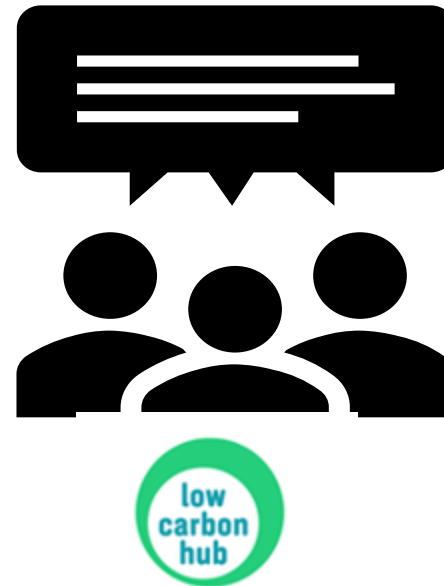


Local People Network



Generic Network
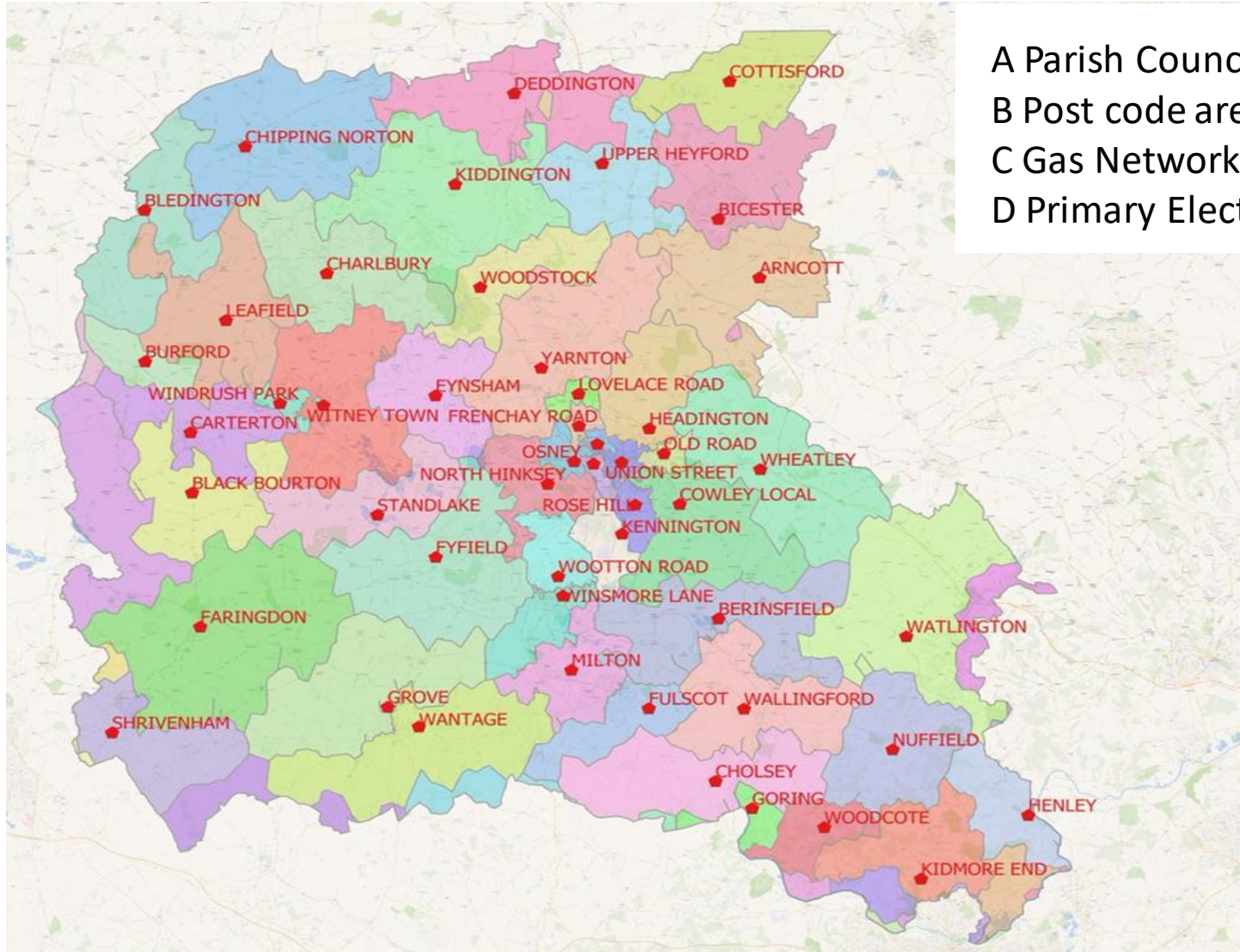
A Parish Councils
B Post code areas
C Gas Network Localities
D Primary Electricity Substations

# Site Selection

Oxfordshire Primary Electricity Supply Areas (ESAs)

12 Primary Substations

- Key Assets
- Consortium Assets
- Consortium Recruited Assets
- Technology Diversity
- Urban/Rural
- LCT uptake potential
- Smart and Fair Neighbourhoods
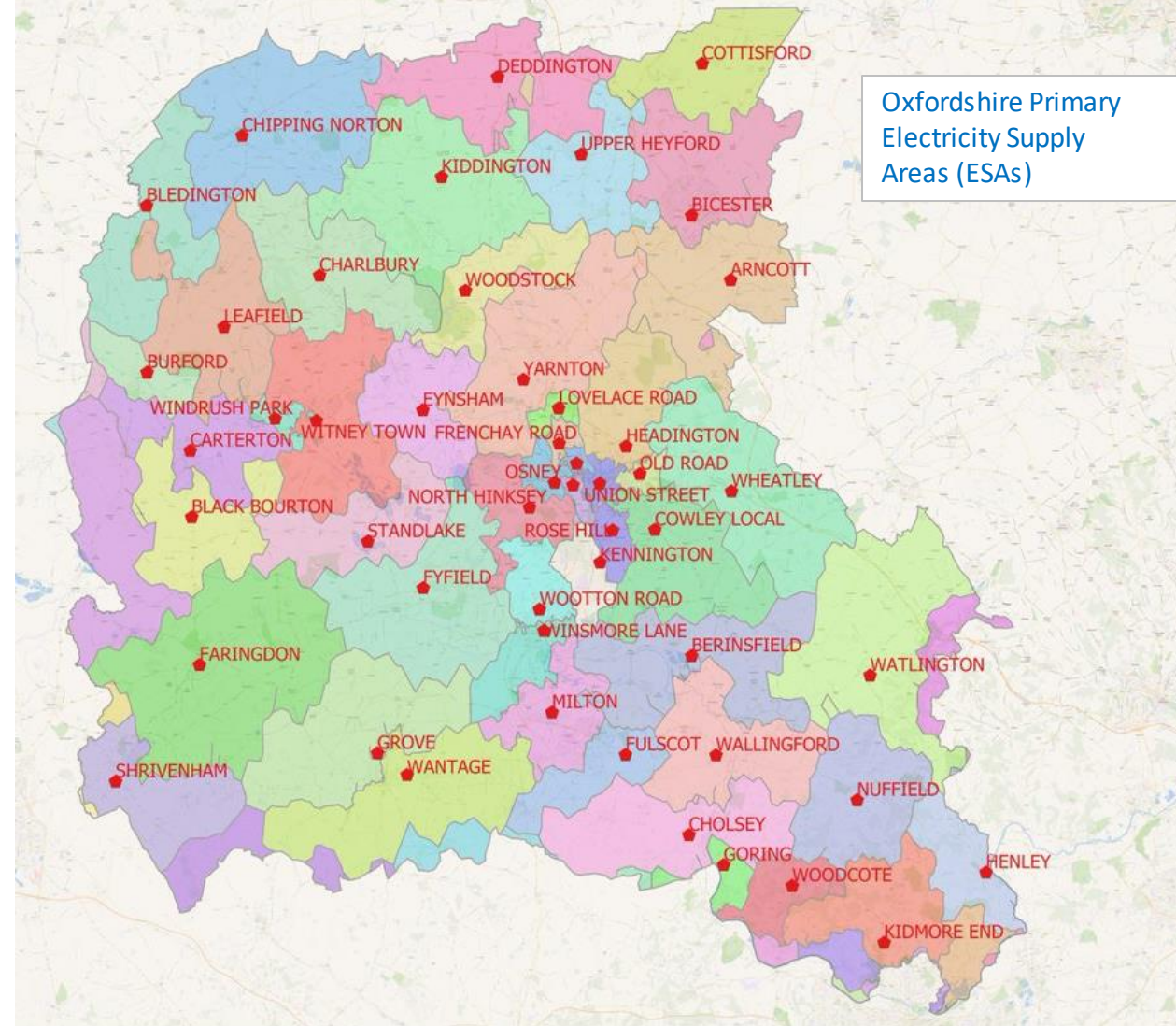
# Minimum Viable Systems


Oxford Bus Co. Batteries (Storage)


Sackler Library, University of Oxford (DSR)


Nuvve 'Vehicle to Grid' chargers (Aggregation)


Sandford Hydro (Generation)

**Learning**
- Battery Configuration
- Metering Data
- Water Levels
- Building Control Systems
- Contingency

- A - Constraint Management
- B - Peak Management
- C - Capacity Exchange
- D - Offsetting
- E – STOR (Short Term Operating Reserve)

# Flexibility Services and Market Rules
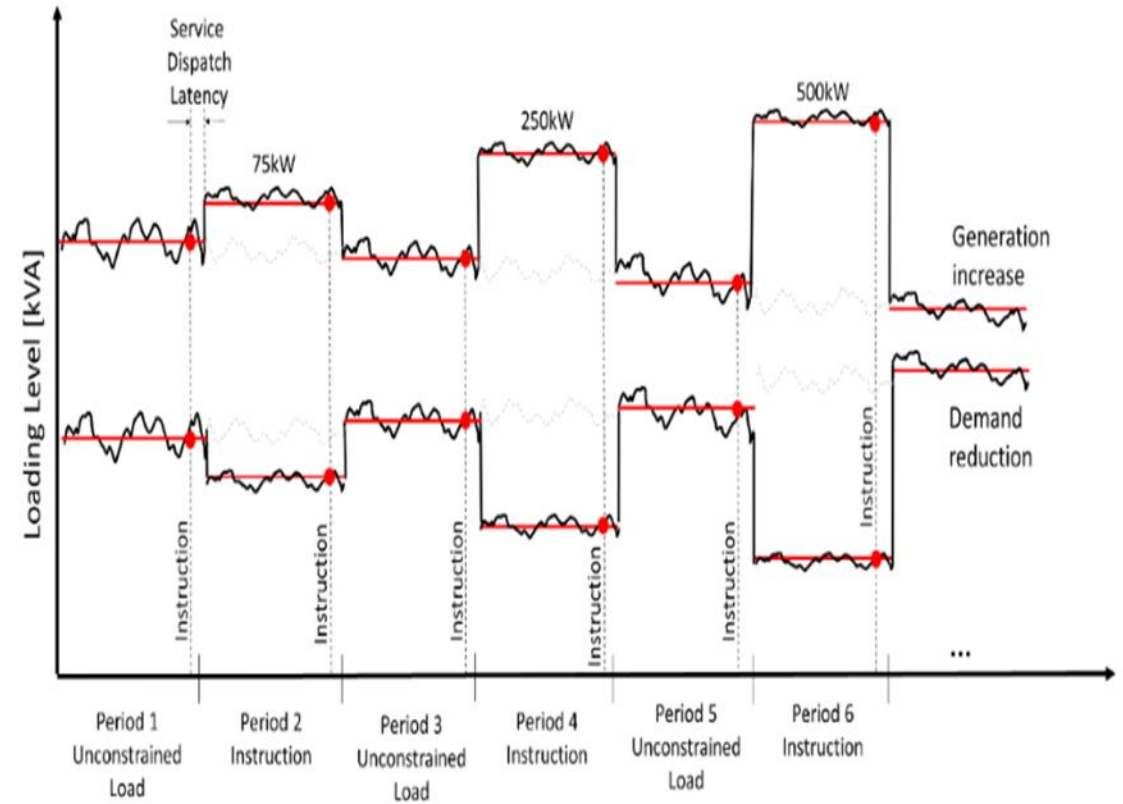
# Smart and Fair

- Equitable Energy Transition
  - Essential Service with social licence to operate
  - Focus on Domestic Households
  - Pace of Change

- Ethical Framework
  - Smart and Fair
  - Communities, employers, government
- No one gets left behind – Example Electrification of Heat

Financial

Tech Readiness

Personal and Social
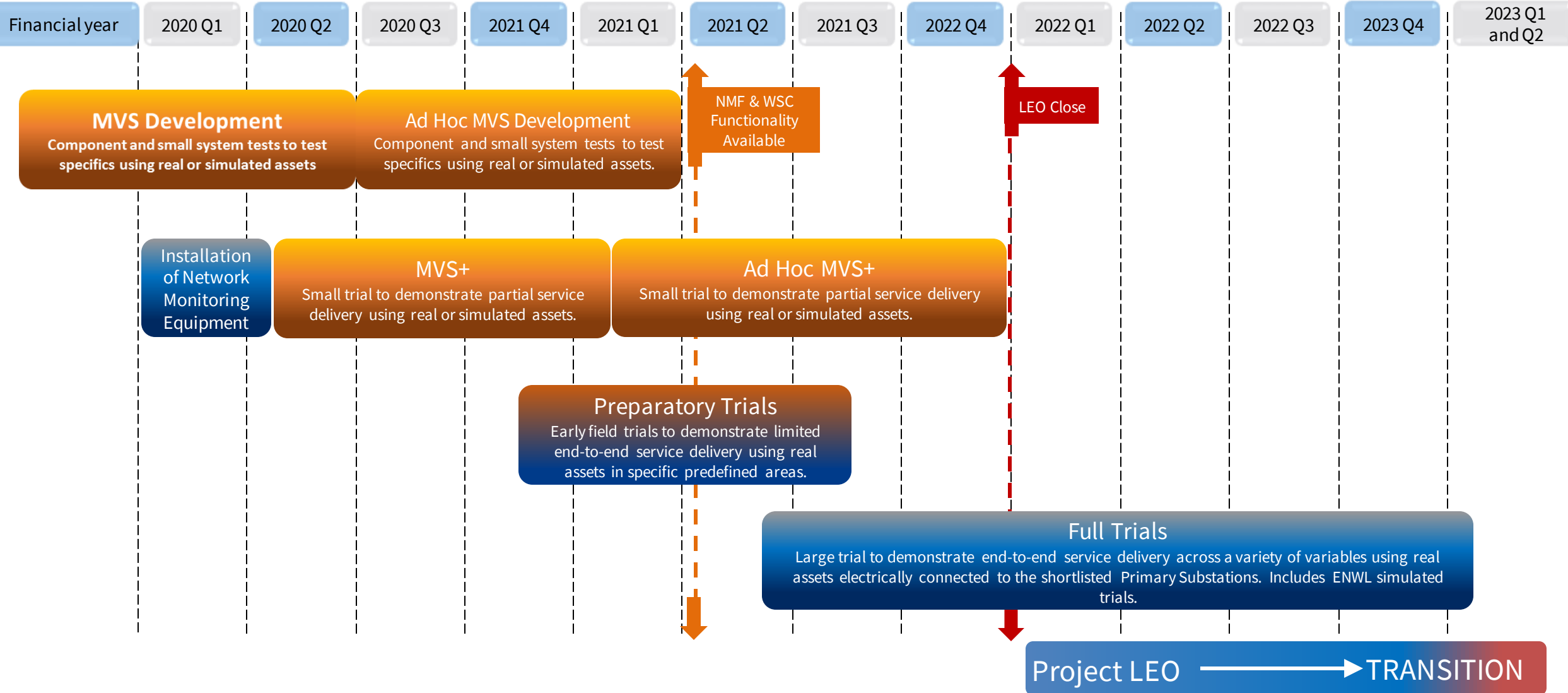
Energy & Tech Usage

Dwelling and Local Area

Capability Lens

- A – 3 years
- B – 5 years
- C – 10 years
- D – until 2050

# MVS & Trial Phasing



| Financial year | 2020 Q1 | 2020 Q2 | 2020 Q3 | 2021 Q4 | 2021 Q1 | 2021 Q2 | 2021 Q3 | 2022 Q4 | 2022 Q1 | 2022 Q2 | 2022 Q3 | 2023 Q4 | 2023 Q1 and Q2 |

**MVS Development**
Component and small system tests to test specifics using real or simulated assets

**Ad Hoc MVS Development**
Component and small system tests to test specifics using real or simulated assets.

NMF & WSC Functionality Available

LEO Close

Installation of Network Monitoring Equipment

**MVS+**
Small trial to demonstrate partial service delivery using real or simulated assets.

**Ad Hoc MVS+**
Small trial to demonstrate partial service delivery using real or simulated assets.

**Preparatory Trials**
Early field trials to demonstrate limited end-to-end service delivery using real assets in specific predefined areas.

**Full Trials**
Large trial to demonstrate end-to-end service delivery across a variety of variables using real assets electrically connected to the shortlisted Primary Substations. Includes ENWL simulated trials.

Project LEO ⟶ TRANSITION

- A Dundee

- B Manchester

- C Warrington

- D Birmingham

Dundee


Warrington

# If you can answer YES ✅ to any of the following…………

- – If you would like a presentation to your community or workplace ✅
- – If you are working on policy that will be impacted by the energy transition ✅
- – If the replication of this model would suit your local area ✅
- – If you would like to know more about community energy and social enterprise ✅
- – If you would like to understand more about the Grid Edge ✅
- – If you want to learn more about the ethical framework of LEO ✅

**For more information**

https://project-leo.co.uk/

LE🔵
Local Energy Oxfordshire

- Community
- Markets
- Technology

# Low Carbon Hub Webinars

**Project LEO's smart-grid trials in Oxfordshire (so far)**
**with Dr Scot Wheeler**
**Date**: Tuesday 23 June 2020      **Time**: 6pm

**Ground mount solar in Oxfordshire**
**with Tom Heel, Business Development Director of the Low Carbon Hub**
**Date**: Thursday 25 June 2020      **Time**: 6pm

*Register by visiting* **https://www.lowcarbonhub.org/**

# Any Questions?



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Funding was provided through the Government's modern industrial strategy by Innovate UK, part of UK Research and Innovation.