

# SP Energy Networks Preparing for Net Zero Conference Wednesday 9<sup>th</sup> March 2022

## Preparing for EV, Heat Pumps and Heat Networks



# SPEN Preparing for Net Zero Conference

## Wednesday 9<sup>th</sup> March 2022



### Agenda

Preparing for Low Carbon Technologies:  
Electric Vehicles and Heat

*Thank you for taking the time to attend  
today.*

*We value your opinions,  
and we are keen to generate an open  
session with opportunities to hear your  
feedback.*

13:30 – Welcome, Housekeeping & Safety Contact

13:40 – SPEN Website Improvements

14:00 – Project CHARGE & ConnectMore Tool

15:00 – Break

15:05 - Heat Up Innovation Projects

15:25 – Net Zero Knowledge Forum

15:45 – ICE Update and Feedback

16:00 – Close

# SPEN Preparing for Net Zero Conference

## Wednesday 29<sup>th</sup> March 2022



### Housekeeping

Preparing for Low Carbon Technologies:  
Electric Vehicles and Heat

*Thank you for taking the time to attend today.*

*We value your opinions,  
and we are keen to generate an open  
session with opportunities to hear your  
feedback.*

- *This session is being recorded*
  - *please let Louise know if you are not comfortable with this and we will take your comments in the Chat section*
- *Please try and keep background noise to a minimum by using the mute button when you are not speaking*
- *We are keen for this to be an interactive session as your feedback is important*
  - *please raise your hand electronically or use the chat function if you would like to ask questions to the speakers*

# Safety / Environmental Contact - Zip Ties

Very versatile and inexpensive ..... but at what cost?



430MM X 4.8MM

- £3.73p per 100pack

780MM X 9MM

- £15 per 100pack

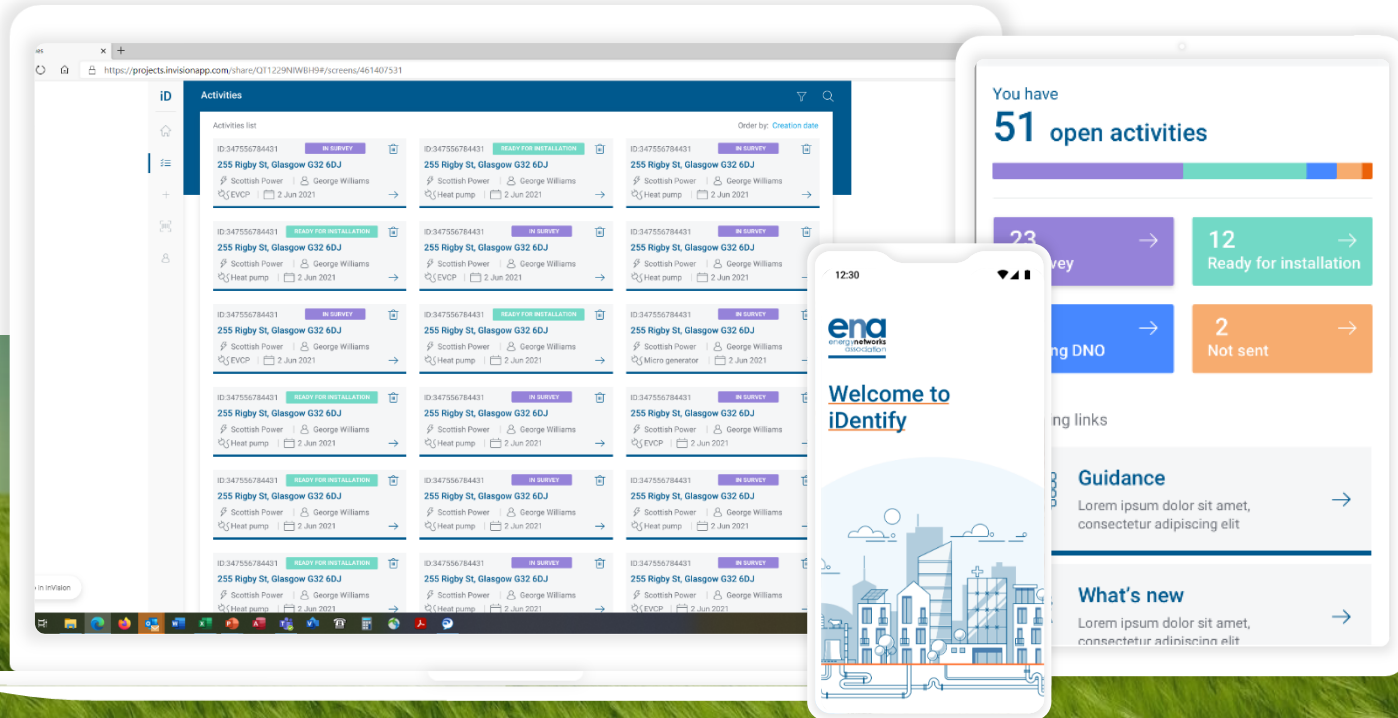
# SPEN Website Form Updates

- ▶ Michael Alexander
- ▶ SPEN Business Improvement Lead



# iIdentify

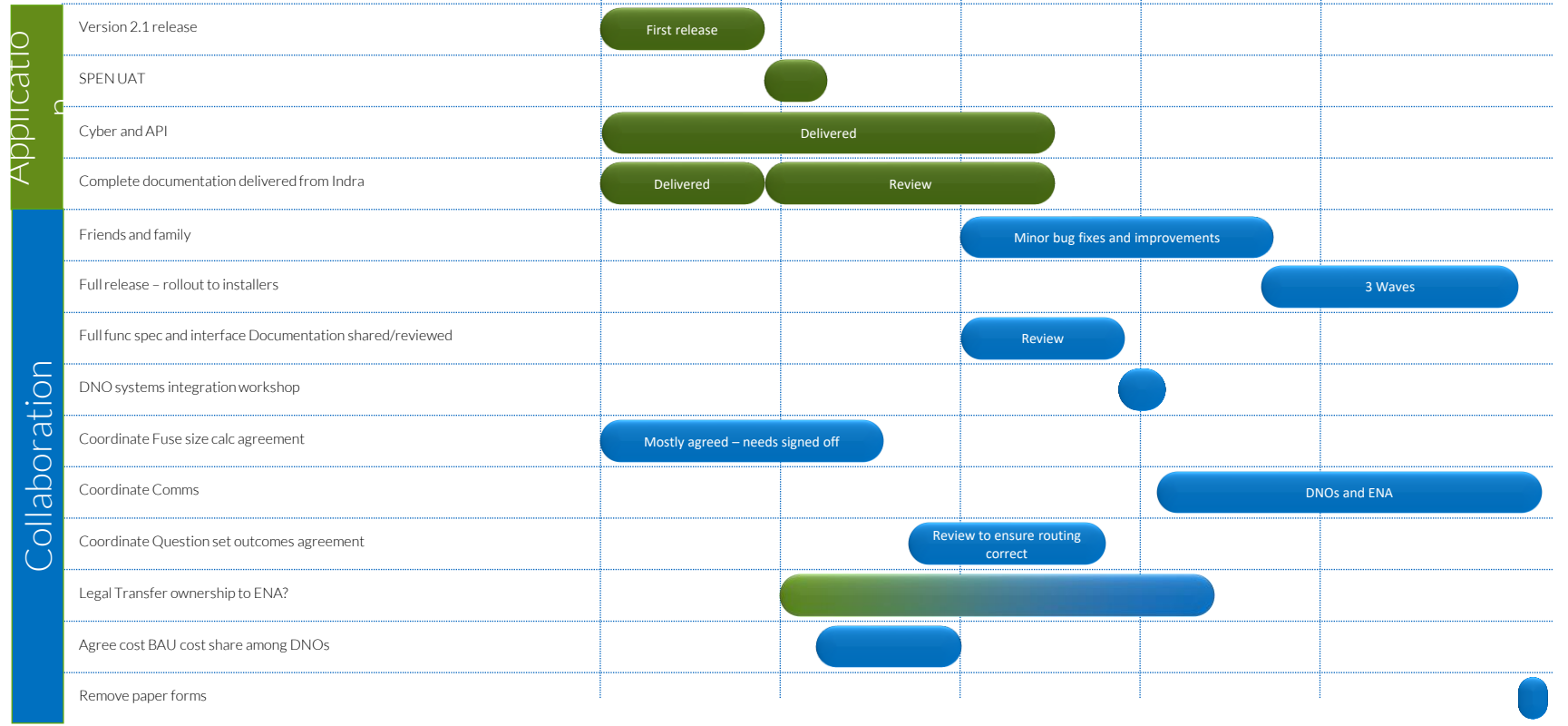
Exploit **AI Recognition** technology to **crowdsource** data on DNO service equipment and customer LCT and high load devices to enrich datasets enabling better decision making when designing electrical networks.



ENA App and portal	Principles	Two step process	Data return	For what?
<p>Smartphone app and website to replace EVCP, HP and G98 paper forms, with the addition of a fuse size calculator and Artificial Intelligence recognition of the customers cut-out</p>	<ul style="list-style-type: none"> <li>Imagined and developed by SPEN – ownership transferred to the ENA – NIA funded</li> <li>Replace EVCP, HP and G98 paper forms</li> <li>App for frequent users (installers)</li> <li>Installer authentication</li> <li>Crowdsource existing and new household high load devices and return to DNO near-real-time.</li> <li>Ensures data is mistake proofed and routed to the correct DNO</li> <li>Information provided to DNO by API or download</li> <li>Developed with installers to ensure</li> </ul>	<ol style="list-style-type: none"> <li>Property survey to calculate existing and new devices – either on app or website</li> <li>Installation of new assets completed on app only.</li> </ol>	<ul style="list-style-type: none"> <li>Existing customer devices</li> <li>Work to be completed by DNO to enable installation</li> <li>New customer device</li> <li>Installers details</li> </ul>	<ul style="list-style-type: none"> <li>Cut-outs</li> <li>EV charge points</li> <li>Heat pumps</li> <li>MicroGen</li> </ul>



Q1 Q2





# Project CHARGE and ConnectMore

- ▶ Tim Butler and Ana Durant
- ▶ EA Technology

# SPEN Low Carbon Connections Conference

## ConnectMore Demonstration

Tim Butler (Senior Consultant, Project Manager)

Ana Durant (Senior Consultant, Product Owner)

# Agenda

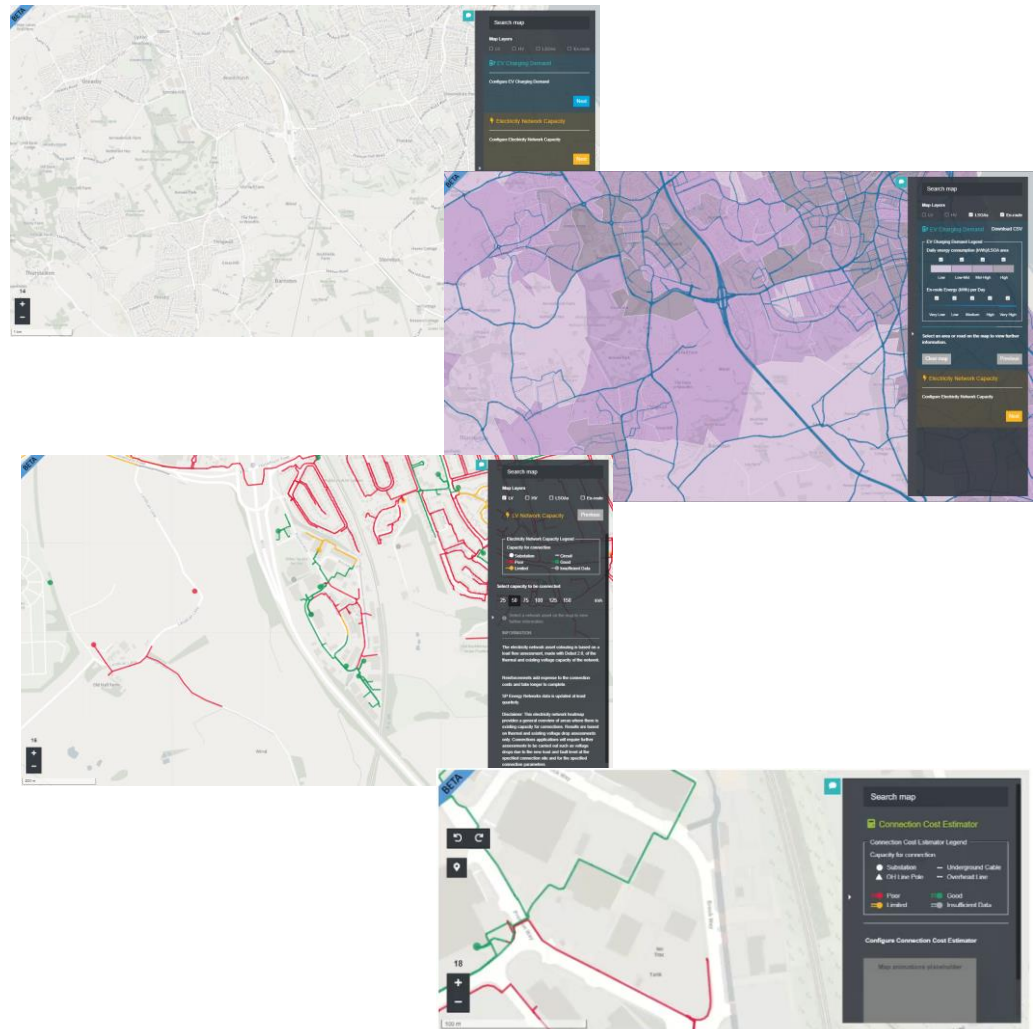
- Introductions
- ConnectMore and the Charge project
  - Why? Who? Where? What?
- Overview of the ConnectMore Tool
- Demonstration
  - EV Charging Energy Requirements
  - Network Capacity Visualisation
  - Cost Estimator Functionality

# Overview of the ConnectMore Tool



# ConnectMore

- Our main role in the Charge NIC Project is in the creation of 'ConnectMore'
- £1.9m of our £2.6m role (total project value of £8.5m)
- A web-based application for SPM which:
  - Overlays a transport model (that predicts EV charging demand) on the network model
  - Identifies the best location for EV chargepoints – now and into the future
    - Indicates where there is sufficient network capacity for the required connections (and forecasts when intervention will be required)
    - Includes flexibility options in the assessment to optimise use of available capacity and give customers greater choice
  - Provides connection cost estimates to users to streamline the process



# Demonstration



# Your challenge . . .

**TODAY ONLY:** <https://connectmore-heatmap-uat.azurewebsites.net/>

**You** are a charge point installer / operator looking to install charge points at locations in the Manweb area.

Take a look at ConnectMore:

- Find a destination
- Take a look at the potential EV demand in that area – would they be well used?
- Take a look at the available capacity on the network now – where could they be most easily installed?

## WHAT DO YOU THINK OF THE TOOL?

**Please tell us in the meeting chat, or via the  
Feedback Button.**

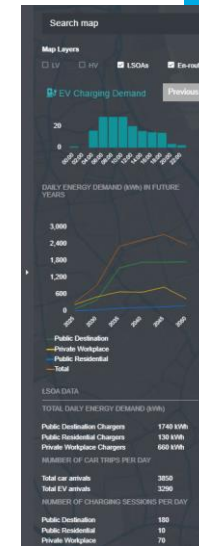
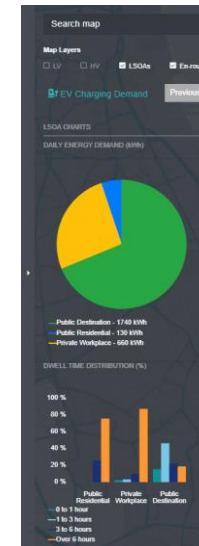
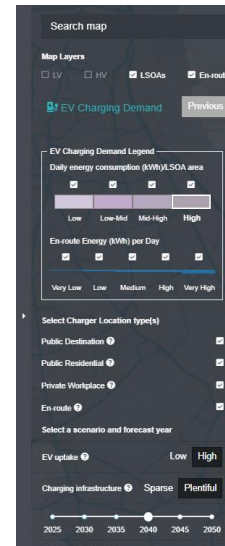
Example areas:

- Heritage Locations
  - Llandudno / Conway Castle / Snowdonia
- Sports Venues
  - Anfield / Goodison Park
- Shopping Locations
  - Liverpool One / Cheshire Oaks
- Transport Hubs
  - Holyhead Port
  - Crewe Station

# EV Charging Energy Requirements

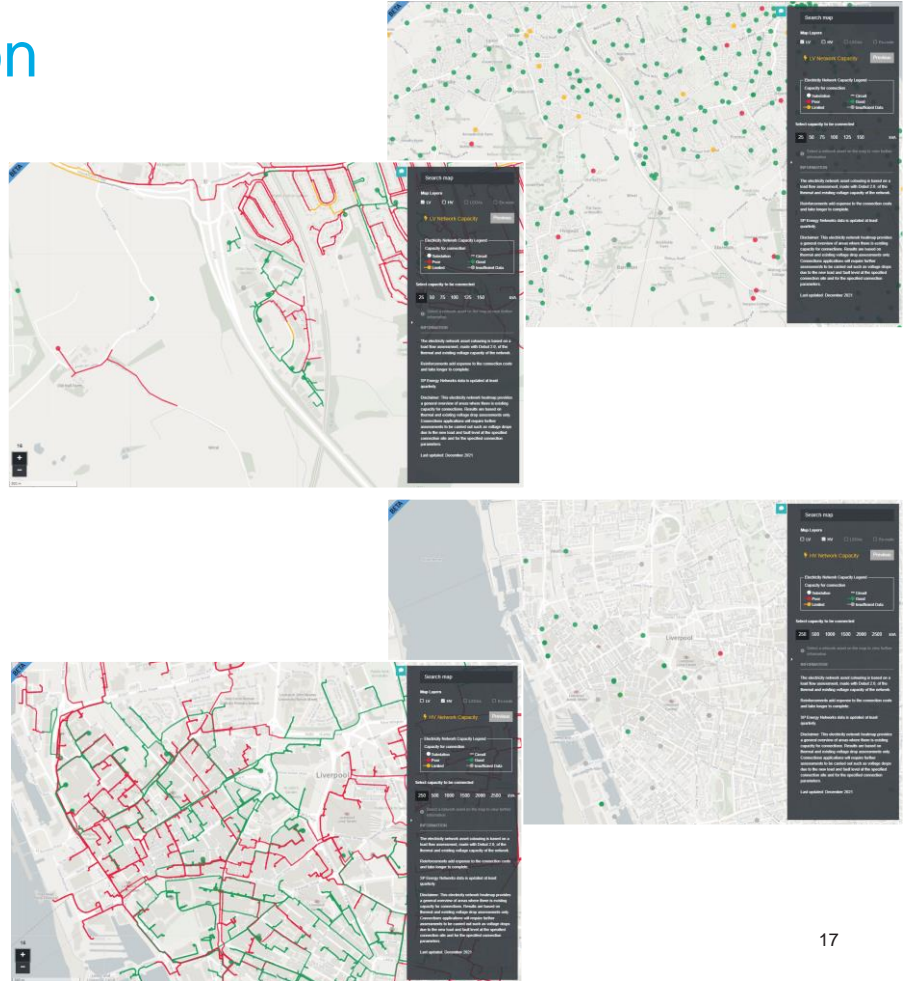
- Transport Layer built from analysis undertaken by PTV.
- Used to identify the EV charging energy requirement by LSOA.
- Detailed information available for each LSOA covering:

- Anticipated number of vehicles
- Charging events (by duration and energy requirement)
- Total energy requirement over a 24hr period
- Breakdown of charging location type (Public Destination, Public Residential and Private Workplace)



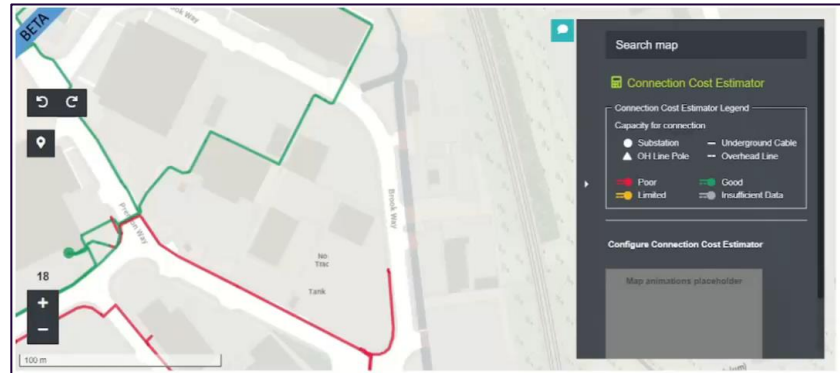
# Network Capacity Visualisation

- Network Capacity Layer details both HV and LV assets.
- Loading is modelled within the ConnectMore Tool, using SPEN data on assets and connected customers.
- Red-Amber-Green status is assigned to assets based on the existing (modelled) load, and the desired additional load to be added to the network.
- RAG status dynamically updates as the desired new connection value is changed.



# Cost Estimator Tool

- Generates budgetary estimates for LV & HV Networks.
- Determines the distance and ground types of the new connection route.
- Will calculate the reinforcement costs (if necessary).
- Warns against unsuitable ground types (railway, river, existing building).
- Outputs a total (budgetary estimate) cost for all work.
  - Customer receives a final price and outline route map.
  - Details of the estimate calculation are stored within the tool for later access if required.



- The tool is in final development stages, and not yet deployed in the 'live system'.

**SPEN 9<sup>th</sup> March 2022**

Preparing for Low Carbon Technologies:  
Electric Vehicles and Heat

**Break**

We will resume at 15:05



## Heat Up

- ▶ Watson Peat
- ▶ SPEN Future Networks Lead Engineer



**Decarbonisation of Heat**

**Interactive Session**

**How might Network Innovation Improve  
the Customer Journey?**

**Why improve the customer journey?**

**Some of the drivers.**

# Drivers: Heat Pump Rollout

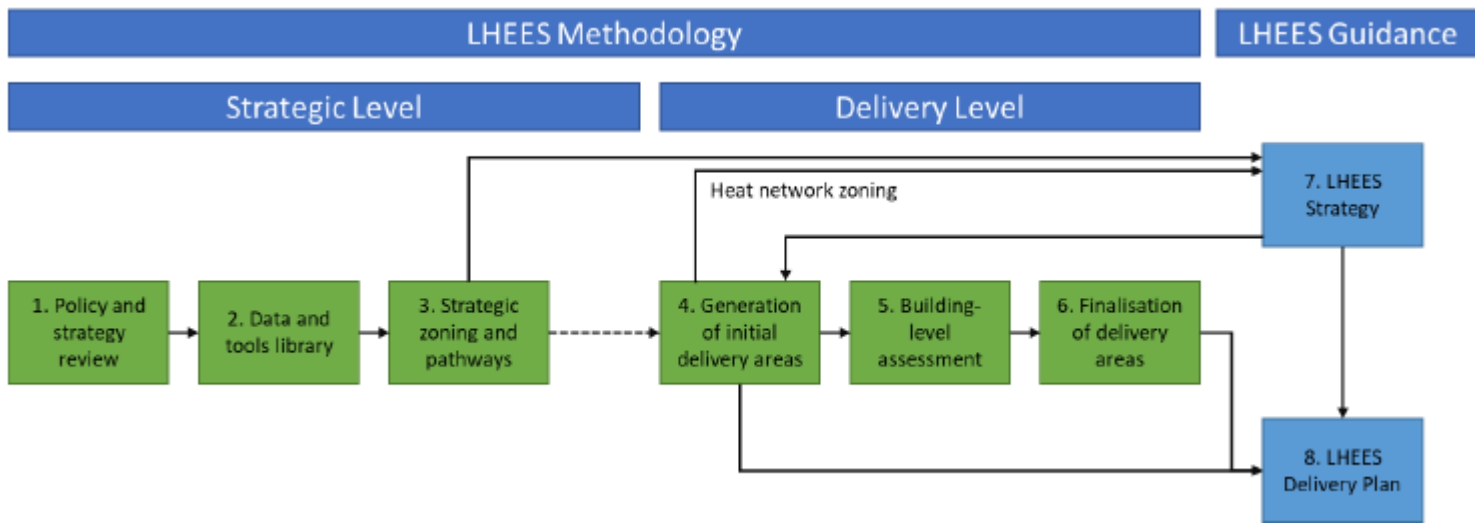
Distribution Future Energy Scenarios  
By 2030:

- Between 300,000 - 500,000 in SPD area
- Between 200,000 - 400,000 in SPM area



# Drivers: LHEES

LHEES for all Scottish local authority areas by the end of 2023



# BEIS Heat Pump Ready Programme

## Enabling Heat Pump Deployment:

How can innovation support policy mechanisms?



Reduce Upfront Costs



Reduce the Running Costs



Improve the Consumer Journey



Reduce Environmental Impact



Ready the Electricity Network



# Improving the customer journey

Some of tools we have as building blocks.

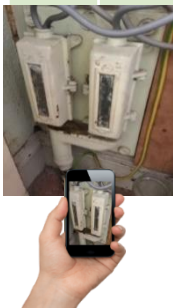


# A New App Called iIdentify

## iIdentify Vision...

Exploit **AI Recognition** technology to **crowdsource** data on SPEN assets and customer devices to update the SPEN corporate systems,

	Use Case	Principles	How does it work?	Data return?	For what?
ENA App	<u>1. Asset recognition</u>	<ul style="list-style-type: none"> <li>App for frequent users (installers)</li> <li>User authentication</li> <li>Replace paper forms</li> </ul>	<ol style="list-style-type: none"> <li>Open App</li> <li>Geo Locate address</li> <li>Point camera at asset</li> <li>accept</li> </ol>	<ul style="list-style-type: none"> <li>Asset type</li> <li>Location</li> <li>User</li> </ul>	<ul style="list-style-type: none"> <li>Cableheads</li> <li>EV chargers</li> <li>Heat pumps</li> <li>MicroGen</li> </ul>



Who installed it?



What's being installed?



Where it's installed?



Site fit for installation?



EV, HP and G83 Information

New

Registration

Verify source

Login

Survey

Fuse calc  
Cablehead check

Connect and notify

Apply to connect

Depending on  
survey outcome

Installation

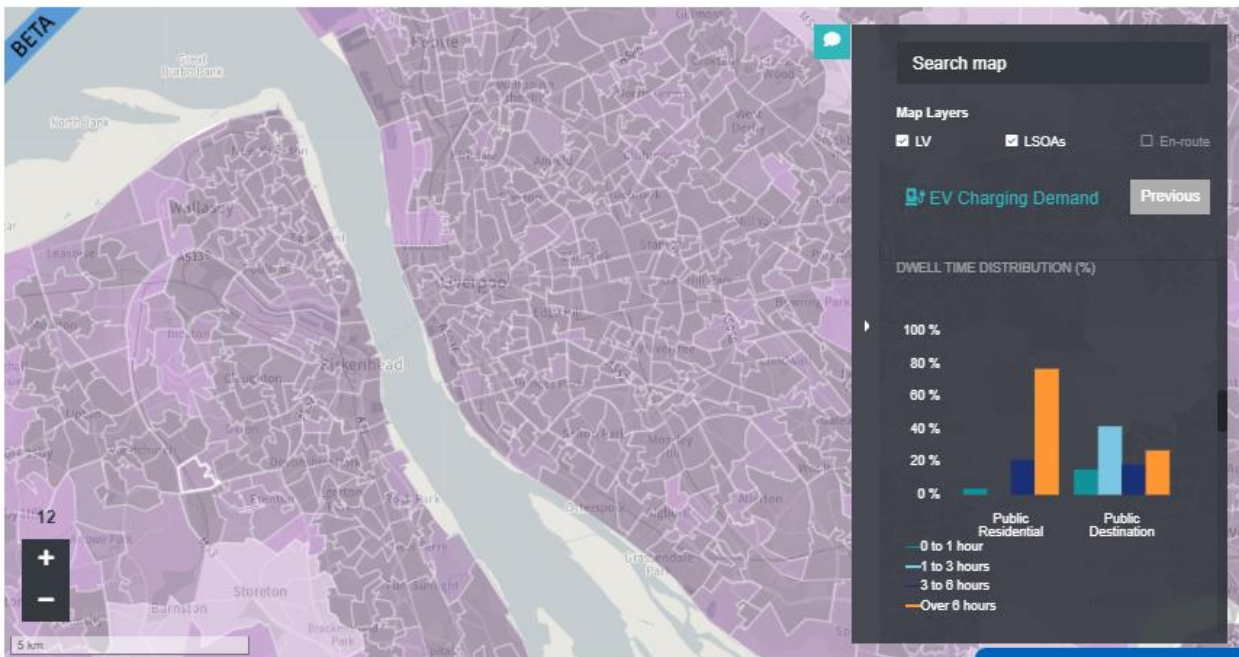
Use of ENA  
databases

Info

Installer,  
customer, ES,  
DNO

# Connectmore

## CONNECTMORE INTERACTIVE MAP



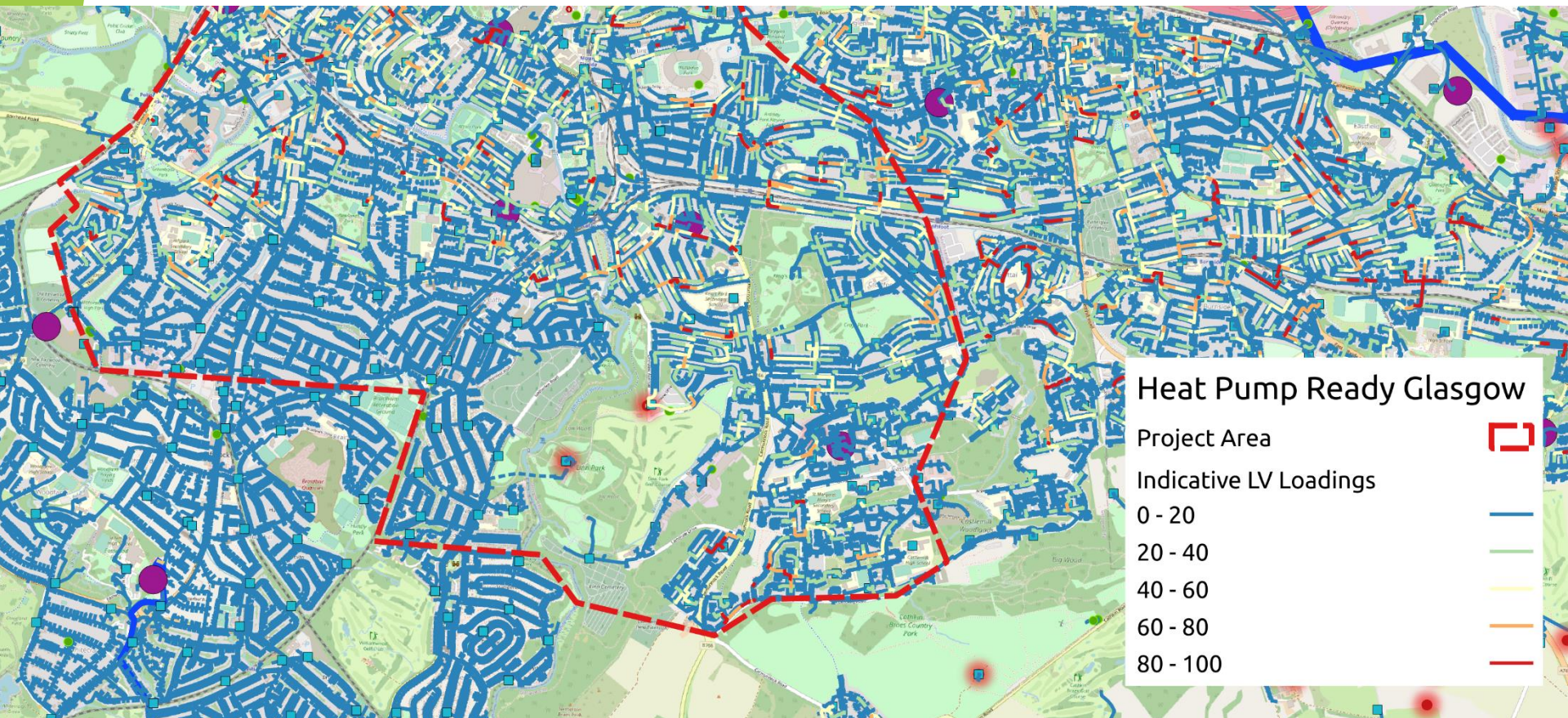
[View a larger version of this map](#)

Hi! I'm the SP Energy Networks System Agent, can I help you?





# Indicative Network Loading



# Online Cost Estimator



ScottishPower | Iberdrola.com  

[ABOUT US](#) | [POWER CUTS](#) | [CUSTOMER SUPPORT](#) | [GETTING CONNECTED](#) | [INVESTMENT & INNOVATION](#) | [CORPORATE GOVERNANCE](#)


## Getting Connected

[Home](#) > [Getting Connected](#) > [Job Estimate](#)

### JOB ESTIMATE

#### On-line Cost Estimator

\* Domestic / Commercial 

\* Distance (meters) 

\* Excavation Required 

I accept that the cost estimation is for illustrative purposes only and cannot be relied upon to assess the terms and cost of specific connections to our network.

[Please click here to read the terms and conditions](#)



# A Customer Journey



## Pre-installation check includes

- Network requirement & power supply checks.

DNO  
Response

- Approval status
- Reinforcement requirements
- Installation and confirmation.

# Discussion

Experience of heat pump connections

Comments and suggestions

Individual customer

Local Authority

Registered Social Landlord



# Net Zero Knowledge Forum

- ▶ Stuart Walker
- ▶ SPEN Customer Engagement Manager

# Knowledge Community – Governance Board Invite

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*This presentation forms part of an invite to determine if you wish to be part of the small Net Zero Knowledge Community Governance Board*

***Governance Board will ideally be constructed of the following***

- 1. Utilities x3 - 4 – SPEN, SSEN, SGN, GTC***
- 2. Academia x 3 - Strathclyde Uni., St Andrews Uni., Edinburgh Uni.***
- 3. Business leads x 3 – EON innovation, Cala Homes, Consultants***
- 4. Local Authorities x 3 – Fife, Edinburgh, East Ayrshire***

***Expectations in the role***

- 1. 2 - 3 hours per month – 1 hour Governance meeting + 1-2 hours action delivery***
- 2. Pull on existing resources to provided known information***
- 3. Provide open honest guidance and wisdom for the wider community***
- 4. Share the platform equally with all other board members and contributors***

# Knowledge Community - Purpose

**To provide information and support for all stakeholders in facilitating the UK, Welsh and Scottish Governments net zero targets**

The Ten Point Plan for a Green Industrial Revolution

Point 1: Advancing Offshore Wind

Point 2: Driving the Growth of Low Carbon Hydrogen

Point 3: Delivering New and Advanced Nuclear Power

Point 4: Accelerating the Shift to Zero Emission Vehicles

Point 5: Green Public Transport, Cycling and Walking

Point 6: Jet Zero and Green Ships

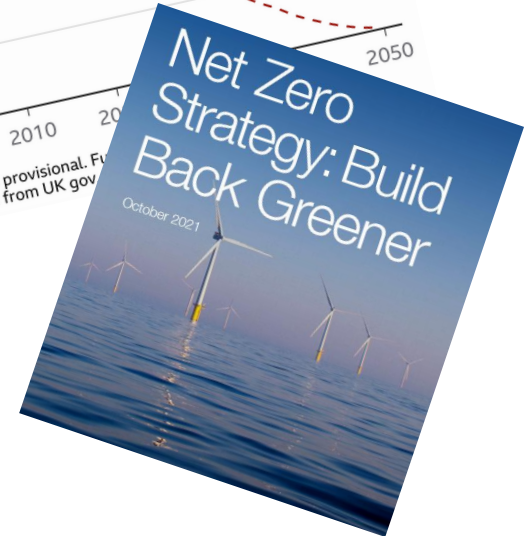
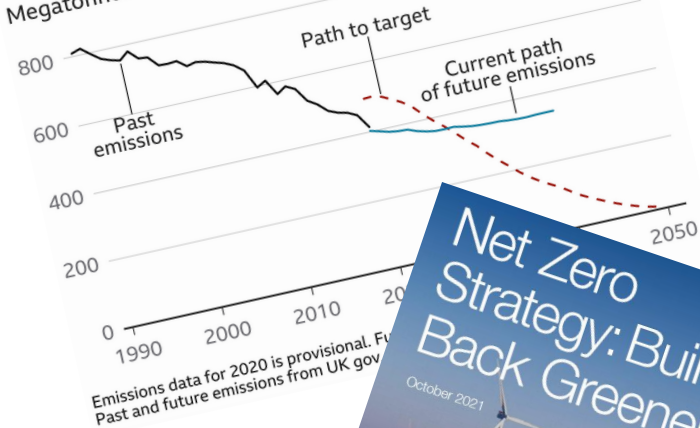
Point 7: Greener Buildings

Point 8: Investing in Carbon Capture, Usage and Storage

Point 9: Protecting Our Natural Environment

Point 10: Green Finance and Innovation

**UK will miss targets without more action**  
Megatonnes of greenhouse gas emissions a year



# Knowledge Community - Governance

*Good Governance to ensure we create a knowledge community that is timely, effective, efficient and fair to all*

## Governance Hierarchy

1. **Governance Board – Utilities, Academia, Business leads – 12 max**
2. **Expert Panel – Product and solutions Experts – 30 max**
3. **Contributor Forum – Local authority strategy partners, development associations, connection stakeholders – 100+**
4. **User group to benefit from information – 1000+**

Choose top 10 products and 5 solutions

Full life cycle expertise and business cases

Use info to accelerate net zero solutions

Endorse process and provide key net zero needs

# Knowledge Community – Progress Stages



*Progress so far to be ratified at first governance meeting*

# Knowledge Community – Potential Outputs

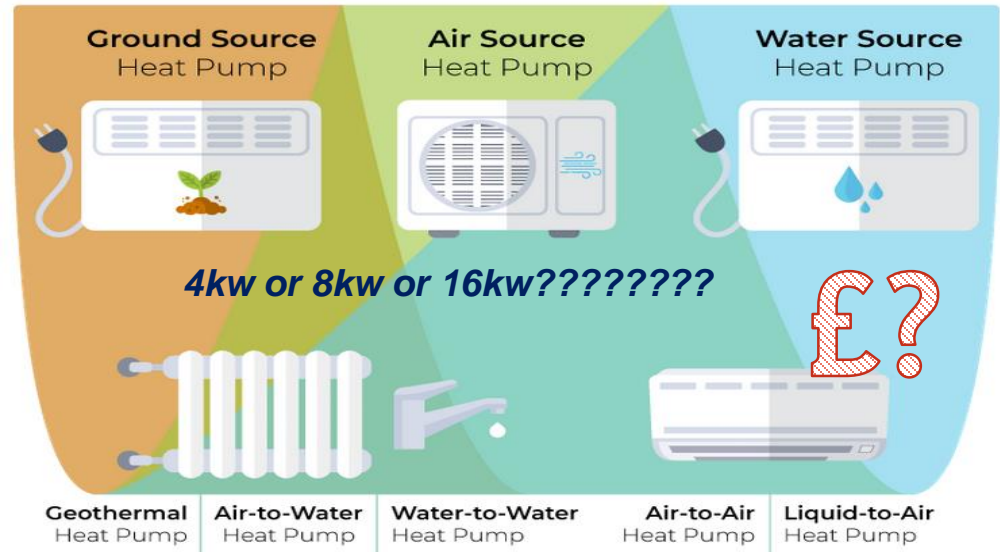
*From Stakeholder feedback so far  
our focus will be on top 10  
Products and 5 solutions – to be  
ratified at 1<sup>st</sup> Governance meeting*

## Net Zero Products (micro / macro)

1. **EV Chargers**
2. **Heat Pumps**
3. **Solar**
4. **Housing Fabric**
5. **Green Hydrogen**
6. **Energy Storage**
7. **Wind**
8. **Bio-Carbon Capture (Trees)**
9. **Hydro**
10. **Sustainability and Local Employment**

## Net Zero Solutions

1. **Heat Pumps, Fuel Poverty**
2. **EV Parking, Solar, Storage vs Demand constraints**
3. **Wind, Solar, Storage vs Generation limitation**
4. **Housing Fabric vs Heat pumps**
5. **Green Hydrogen vs EV / Heat pumps**



# Knowledge Community – Lifecycle Management 1

*Focus will be on the full life cycle of the net zero product or solution, a cradle to grave approach to answer all key questions*



1. **Cost**
  - **Purchase**
  - **Install**
  - **Commission**
  - **Run**
  - **Maintain**
  - **Decommission**
  - **Disposal**
2. **Benefits & Risks**
3. **Impact**
  - **Network**
  - **User**
  - **Community**
4. **Timescales**
5. **Case study examples**
6. **Investment payback**
7. **Net zero benefit**
8. **Comparison with other solutions / products**



# Knowledge Community – Lifecycle Management 2

A “whole of life” approach means moving away from transactional or one-off purchase to an approach which sees the acquisition as a multi-step process to be done slowly and properly.



*This includes:*

1. *Careful Need identification*
2. *Planning what is expected from it once acquired*
3. *Design effort for minimum purchase specifications*
4. *Procurement based on the previous three steps*
5. *Commissioning / installing to make sure that the business gets everything promised in the purchase contract*
6. *Operating, maintaining and monitoring the asset on a continual basis*
7. *Modifying the asset or upgrading it if possible and if this makes good commercial sense*
8. *Decommissioning or retiring/disposing of the asset so that it can be appropriately replaced*



# Knowledge Community – Book of Knowledge

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*Key output will be a Net Zero Book of Knowledge with Lifecycle Information for the top 10 Products and 5 solutions from March 2022 through to October 2023 in 4 tranches*

*The Net Zero Book of Knowledge seeks to be the foundation of the Information required for Net Zero decision making, assuming a zero base starting point for the audience.*

*In this way accelerating the installation of effective, efficient and timely net zero solutions that fit the need of the user group.*

*Eliminating in the process costly and timely mistakes made through inexperienced decision making.*

*Effectively accelerating the knowledge base of the UK Net zero community*

# Knowledge Community – Next Steps

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1. *Governance Board to confirm members and hold first Board held... next due March 2022*
2. *Newsletter to communicate Governance Boards plan for next 22 months*
3. *Expert Panel to hold first meeting and commit to authoring their key net zero area – held Yesterday... Next Due April 2022*
4. *Contributor Forum to Endorse product and solution offering and governance process... April 2022*
5. *Expert Panel to produce first tranche of products and solutions for review... March to May 2022*
6. *User Group event April 2022 - Views and improvement suggestions capture in ICE submission 2022 / 23*
7. *Repeat of process until all 4 tranches are completed and top 10 Products and 5 Solutions are capture in the first Net Zero Book of Knowledge*

*We will try to combine staged early releases of these tranches with pragmatic robust of information that can have immediate benefit while we close out each product and solution*

# Knowledge Community – Questions



# ICE

- ▶ Rachel Shorney
- ▶ SPM Stakeholder Engagement Manager
  
- ▶ Stuart Walker
- ▶ SPD ICE Engagement Manager

# Policy Updates

Our SPEN policy documents can be found at - [www.spenergynetworks.co.uk](http://www.spenergynetworks.co.uk)

1. Getting Connected
  - Document Library

2. About Us
  - Document Library

## We have recently issued 3 new Policy Documents:

1. Equipment Ratings ESDD-02-007 re-issued March 21
2. Inspection and Monitoring of Networks Constructed by Independent Connection Providers ASSET-04-020 re-issued April 21
3. Ratings and General Requirements for Plant and Apparatus for Connection to The Company's System EPS-03-033 re-issued August 21

## We are continually updating our Policies and Standard Documents.

Please send any requests or queries to our stakeholder team so that we can incorporate your requirements into our programme of updates:

- [gettingconnectedupdates@spenergynetworks.co.uk](mailto:gettingconnectedupdates@spenergynetworks.co.uk)

# Feedback and Q&A Session

- ▶ Rachel Shorney
- ▶ SPM Stakeholder Engagement Manager
  
- ▶ Stuart Walker
- ▶ SPD ICE Engagement Manager

# SPEN Preparing for Net Zero Conference

## Wednesday 9<sup>th</sup> March 2022



**Thank you for your time today.**

*Your feedback has been useful and we will follow up and incorporate your comments when planning our next session.*

**Upcoming events for the calendar:**

**Preparing for Net Zero Conference**

**Wednesday 15<sup>th</sup> June 2022**

- 09:30 to 12:00
  - Preparing for Whole System Approach
- 13:30 to 16:00
  - Preparing for EV and Heat