NETWORKS

ESB Networks – Electricity Association of Ireland – Innovation Workshop

8th July 2021

Agenda

1. Innovation in ESB Networks
   Tina McManus – Innovation Manager
2. Dingle Project – Customer Flexibility Trials
   Ciaran Geaney – ICT Lead
3. Active System Management (ASM) Programme: Ellen Diskin – ASM Programme Manager
4. Electrification of Heat and Transport:
   Emma Silke – Electrification Manager
5. Q&A

Innovation in ESB Networks

8th July 2021

Tina McManus – Innovation Manager

2021 Innovation KPIs and Statistics – Year to Date

ESB Networks Innovation KPIs

175+
Innovation Ideas

€60M
Potential Financial Impact of Ideas

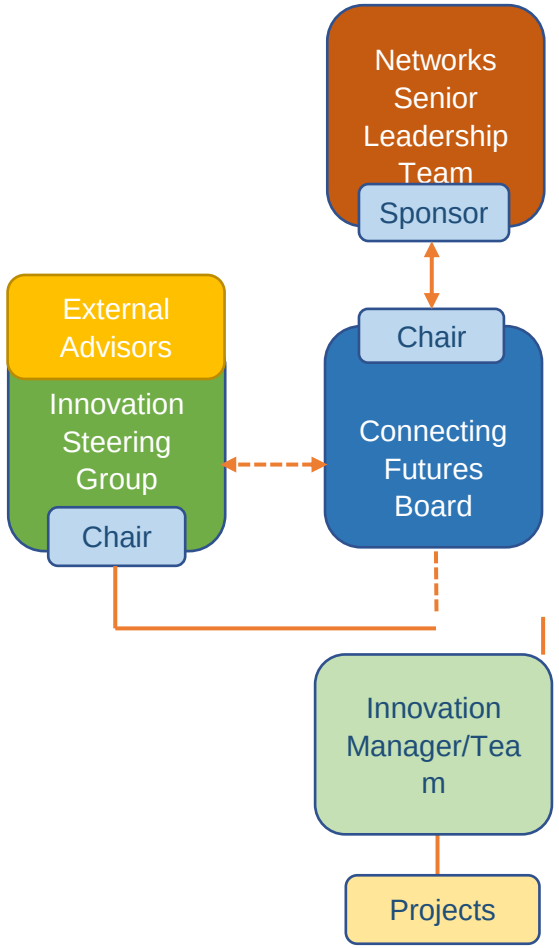
30
Active Projects

590
Staff Engaged with Innovation

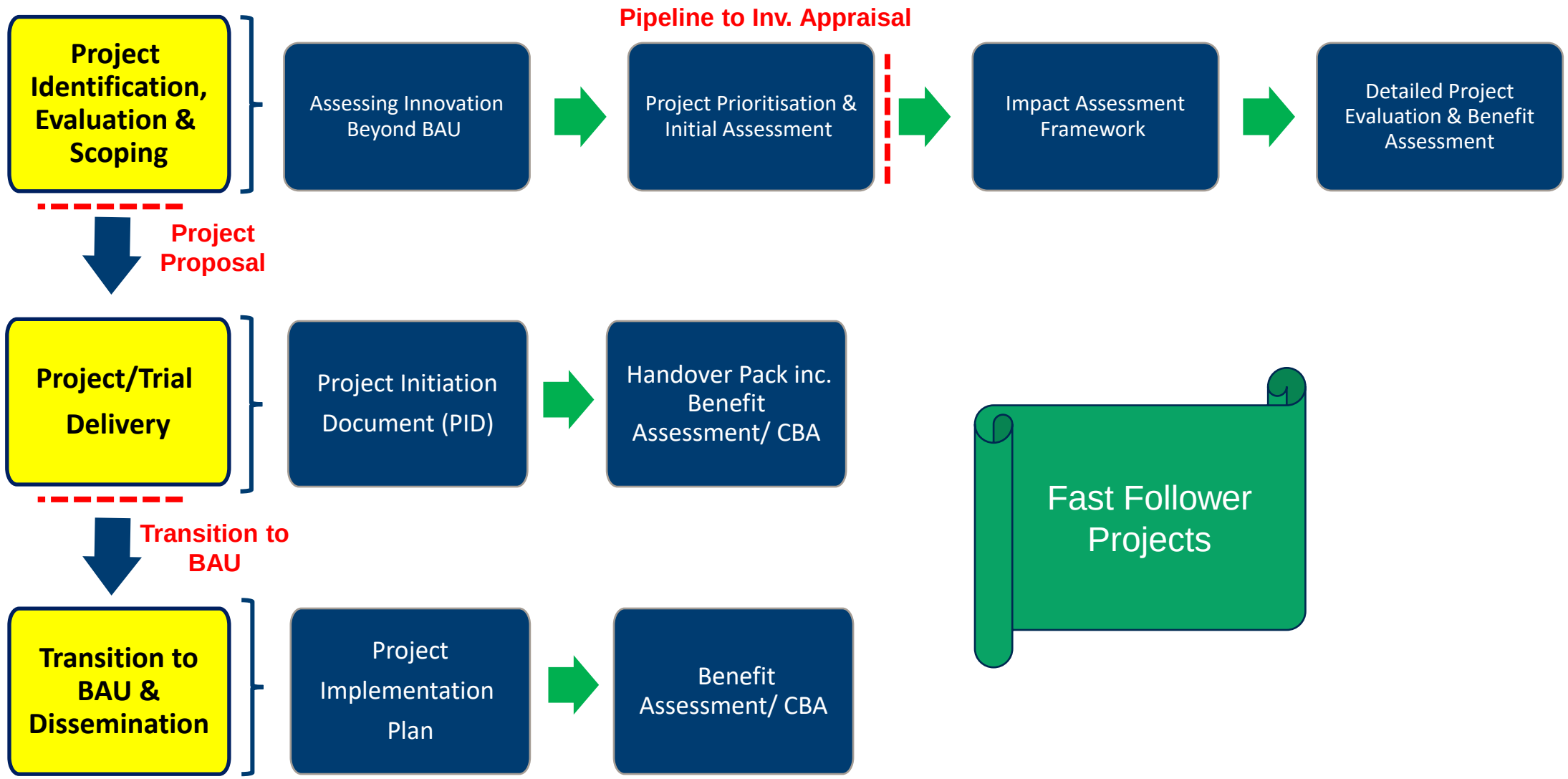
80
External Company Collaborations

40
Staff Working on Innovation Projects

Innovation Governance Structure



Innovation Process



Focus Areas Under the 3 Innovation Pillars

Future Customer – Empowering and Supporting Customers and the Economy

- Community Energy
- Peer to Peer
- Flexibility Services
- Energy Storage
- LV Visibility & Modelling

Climate Action – Decarbonising Electricity, Heat and Transport

- Electrification
- Connecting Renewables
- Microgeneration & Storage
- Climate Adaptation Requirements
- Impact of Low-carbon Technologies

Network Resilience – Efficient, Secure, Reliable Electricity

- Smart Grid
- Active Network Management
- O&M Innovations
- Fault reduction
- Reinforcement Innovations

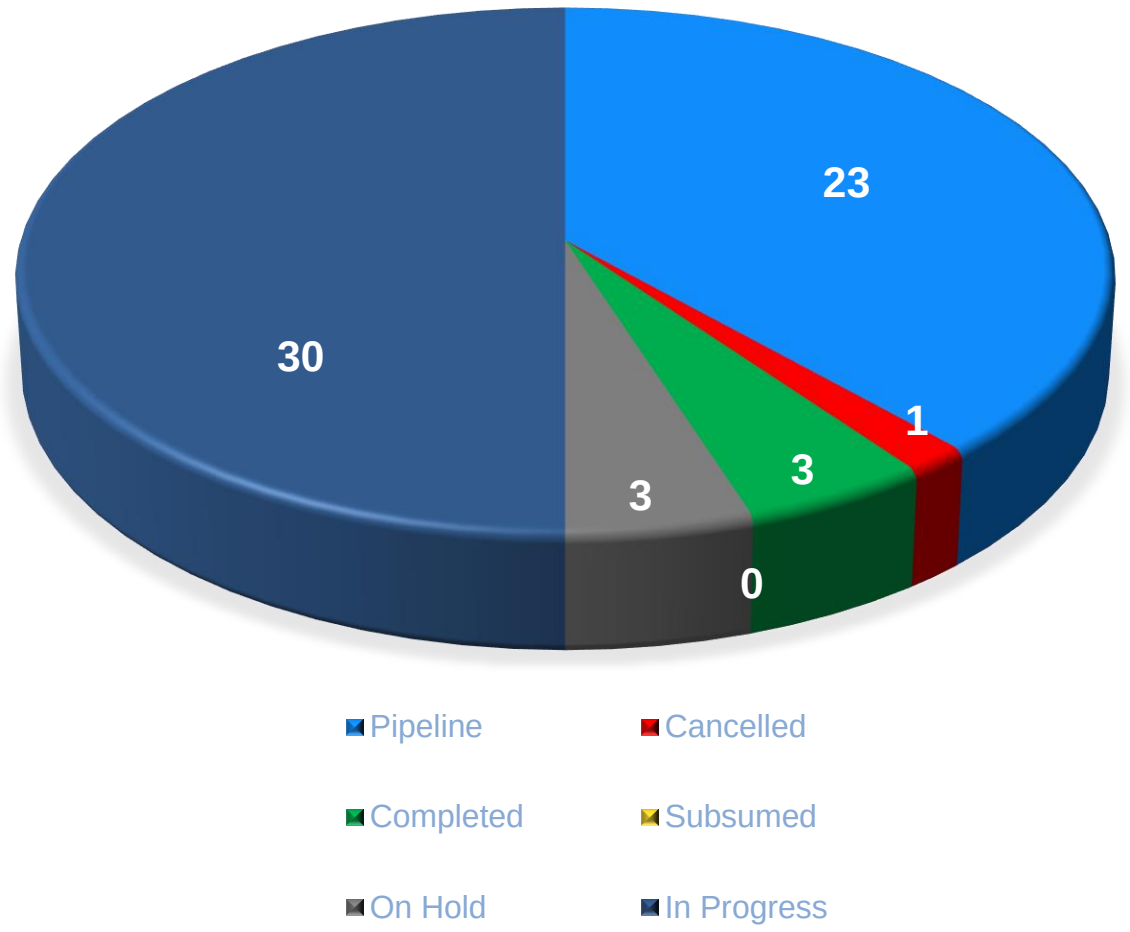
e.g. Novel Use of Radio Bandwidth for Smart Grid Telecommunications

e.g. Innovative Methods to Connect Renewables to the Grid

e.g. Using Drones and Image Processing Analytics to Inspect Network Assets

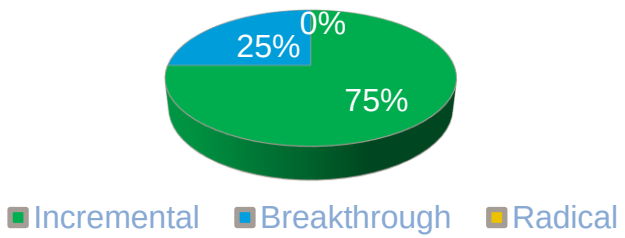
Alignment with ESB Networks Strategy & CRU PR5 Objectives

Innovation Project Portfolio Statistics

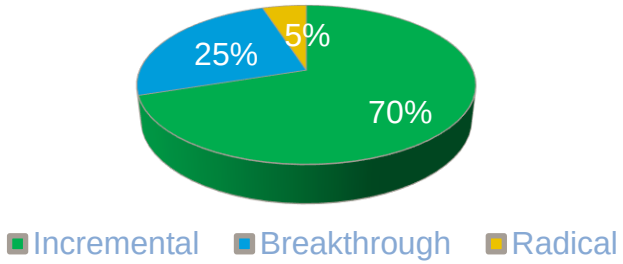


Incremental	The innovation builds on existing systems, equipment or processes.
Breakthrough	The project potentially provides new systems, equipment or processes.
Radical	Business altering innovation.

Current Innovation Type Split



Target Innovation Type Split



Future Customer Project Portfolio – 18 Month Plan

REF.	PROJECT TITLE	IT	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2
23	SERVO	B		Q2 '21				
45	StoreNet Customer Side Energy Storage	B	Q1 '21					
51	Smarter HV and MV Customer Connections	I		Q2 '21				
59	Dingle Electrification Project	B					Q1 '22	
74	Exploration of ASHP for Ireland's Residential Heating Needs	I						Q2 '22
75	+CityXChange	B						Q4 '23
81	MV Standard Modules - Generation & EV Charging Hub Connections	I					Q1 '22	
98	300kVA Ester Pole Mounted Transformer	I			Q3 '21			
158	Developing 400MHz Spectrum Use for Smart Grid Applications	I						Q4 '25
169	Improved ADMD Estimates for Domestic Customers	I			Q3 '21			
170	Using Real Options for Establishing Investment Justification ADMD Change	B						Q2 '22
171	Using Sigfox Temperature Sensors to Assess Substation Loading	I		Q2 '21				
172	Estimating Allowable Loading on 15/33kVA Single Phase Transformers	I					Q1 '22	
210	REACT - Island energy Self-Sustainability	I						Q4 '23
160	Electrification Uptake Data Analytics Forecasting	I						
214	Optimal Heat Pump Scheduling to Improve Hosting Capacity of Distribution Networks for DERs	B						
TBA	Investigate Potential Opportunities via the Horizon Europe Programme	B/R						
TBA	Collaboration Opportunities/Public Call for Breakthrough/Radical Projects	B/R						

IT = Innovation Type
I = Incremental
B = Breakthrough
R = Radical

Active Projects

Pipeline Projects

Collaboration Opportunities

Projects whose objectives are being achieved within the Active System Management Project:

103	P2P and System Wide Economic Analysis *(Enabling Active Citizen and Community Participation)*	B
104	Real Option Pricing of Flexibility	B
152	Development of LV models for the Future Network Planning and Operations, facilitating active energy citizens (VD Calculator)	I

Links to further information on our Future Customer Projects:

- Project Overview - Section 4.4 - Innovating to Transform the Electricity Network
- Future Customer Pillar - Project Reports
- ESB Networks Innovation Pipeline Projects
- ESB Networks' Dingle Project

Climate Action Project Portfolio – 18 Month Plan

REF.	PROJECT TITLE	IT	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2
22	Introduction of MV/LV Tap-Changing Transformers	I			Q3 '21			
24	Introduction of Alternatives to Creosote Wood Poles	B						Q4 '22
41	Introduction of Sidewalk Transformers	I				Q4 '21		
51	Smarter HV and MV Customer Connections	I		Q2 '21				
62	Unit Substation to 1MVA	I		Q2 '21				
77	Wildlife OHL Contact Prevention	I				Q4 '21		
82	Big Data Analytics for Wind Farm Connections	B				Q4 '21		
83	Wind Farm - Reactive Power Optimisation (Blackbox)	I			Q3 '21			
133	Tesselo - LiveEO Vegetation Survey System	I			Q3 '21			
216	Investigate Statistical Contributions from Renewable Generation (F-Factor)	B						
TBA	Investigate Potential Opportunities via the Horizon Europe Programme	B/R						
TBA	Collaboration Opportunities/Public Call for Breakthrough/Radical Projects	B/R						

IT = Innovation Type
I = Incremental
B = Breakthrough
R = Radical

Active Projects

Pipeline Projects

Collaboration Opportunities

Links to further information on our Climate Action Projects:

- Project Overview - Section 4.4 - Innovating to Transform the Electricity Network
- Climate Action Pillar - Project Reports
- ESB Networks Innovation Pipeline Projects

Network Resilience Project Portfolio – 18 Month Plan

REF.	PROJECT TITLE	IT	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2
3	Nodal Controller for Reactive Power	I				Q4 '21		
19	Inspection of OHLs Using Drones and Image Processing Analytics	I						Q2 '22
28	DistriHost Mapping Network Capacity	I				Q4 '21		
38	Data Analytics to Temperature Correct Loads	I						Q2 '22
39	Storm Resilience for Overhead Networks	I				Q4 '21		
49	New Core and Aggregation IP Network	I						Q4 '23
54	Weather Forecasting and Network Damage Prediction	I						Q2 '22
56	Development of Dynamic Line Ratings	I						Q2 '22
69	HV Stations Health Index	I				Q4 '21		
102	MV LV Voltage Allocation	I						Q3 '22
150	Novel Use of Drone Technology and Artificial Intelligence for Fault Location and Line Patrolling	I						Q1 '23
153	Leveraging Enhanced LV Monitoring and Data Analytics to Optimise Targeted Network Reinforcement	I						Q2 '22
211	Real Time State Estimation on Irish Distribution Network	B						Q2 '22
71	Climate Change Adaptation Approaches (flooding)	I						
164	Optimised Design for 38kV Arc Suppression Coil (ASC) to Support RES Connections	I						
213	How to Use Data Analytics for Efficient Operation of Distribution Networks	B						
TBA	Collaboration Opportunities/Public Call for Breakthrough/Radical Projects	B						

IT = Innovation Type
I = Incremental
B = Breakthrough
R = Radical

Active Projects

Pipeline Projects

Collaboration Opportunities

Projects whose objectives are being achieved within the Active System Management Project:

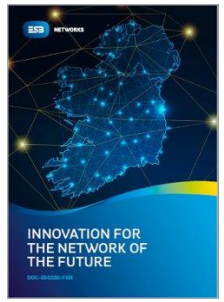
151	Identification of Network Configurations for Active Network Management	I
154	Developing and Trialling Novel Approaches to Manage LV Flexibility	B
156	Congestion Management and Capacity Allocation Using Operational Management System	I
205	Framework for Optimal Coordination of NMS and DER	I

Links to further information on our Network Resilience Projects:

- Project Overview - Section 4.4 - Innovating to Transform the Electricity Network
- Network Resilience Pillar - Project Reports
- ESB Networks Innovation Pipeline Projects

Collaboration & Dissemination

Public Consultations & Calls



- 8 Public Consultations
- 2 EOIs
  - Dingle P2P
  - Hybrid Connections

Stakeholder Bi-lateral Meetings

- Local authorities
- Dublin Chambers
- Derry City & Strabane
- Academia & Institutes
- Peer DSO's
- Electricity Suppliers

Presentations, Papers, Conferences, Membership, Collaboration Projects

- EurElectric, ENA, EPRI
- CIGRE – Conference & publications
- Journal publication
- Sogno - H2020
- IERC,MaREI, UCD, TSSG (WIT), UL,
- Close-out & Project Reports
- Dingle Electrification Project

Innovation Webinar Series

- Spring & Autumn Innovation Webinar series

Stakeholder Innovation Panel

- Call for EoI in Oct 2020
- 19 members across 10 sectors
- Meetings – Dec & March
- ToR Published

ESB Networks Website, LinkedIn, Facebook, Twitter

- Revamped Website
- Growing Social Media & awareness

Trade Associated & Rep Groups Distribution Code Review Panel

- RECI
- IWEA
- DRAI
- Local Authorities

Brand Health Survey 'Innovative in Engineering Expertise' ⬆ 6%

93% of Stakeholders Increased Knowledge & Awareness

For any queries on our Innovation Programme or any of the projects listed in our Innovation Project Portfolio, please contact us at innovationfeedback@esbnetworks.ie

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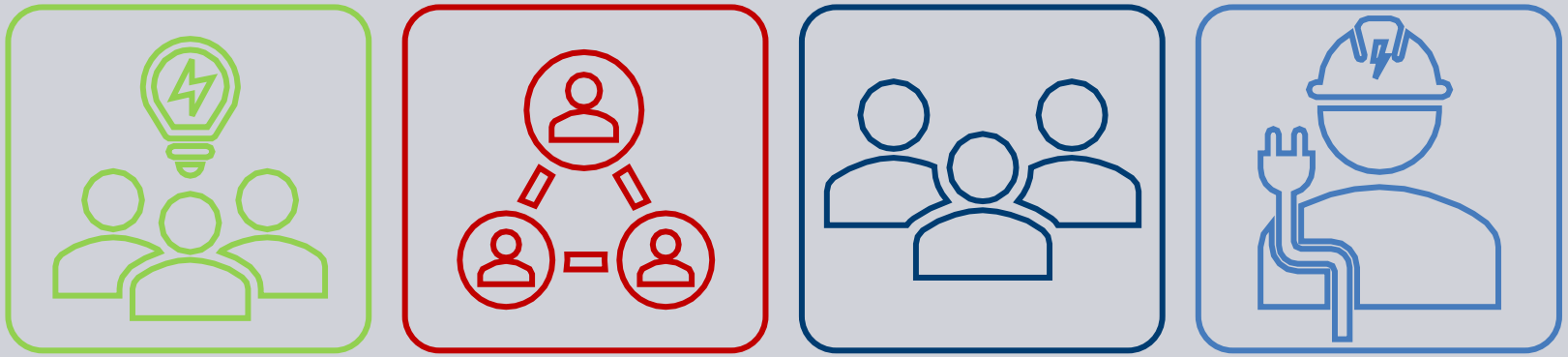
Dingle Project
Customer Flexibility Trials

Ciaran Geaney

Dingle Project - Objectives



Customer Flexibility

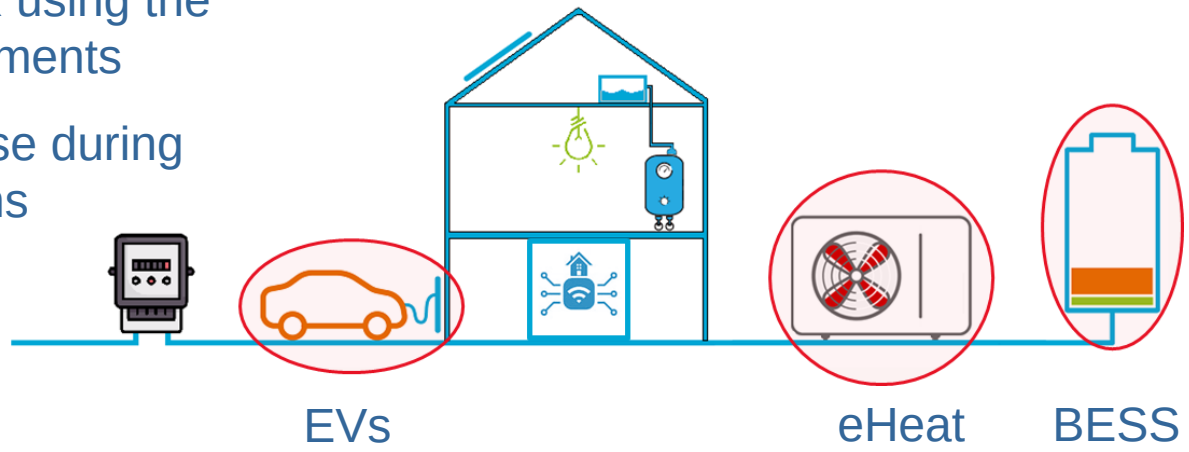
Peer to Peer Services

Active Energy Citizen

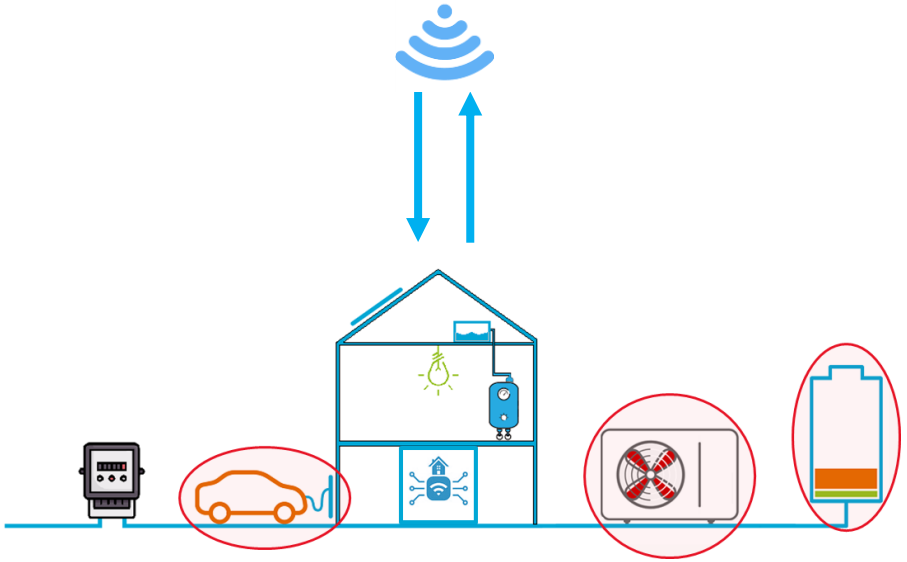
Increased Reliability

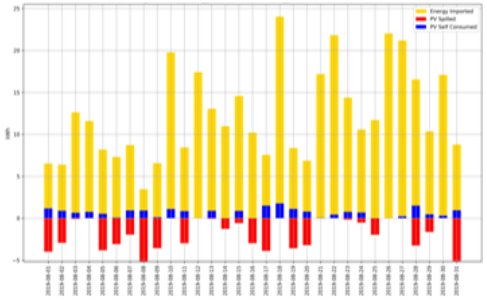
Where Could Flexibility Be Used?

- **Unlock headroom in distribution network by leveraging effective demand reduction during periods of constraint**
- **Defer traditional network reinforcements by:**
  - Optimising the energy usage in participant homes, reducing peak network loadings etc.
  - Effective management of demand from eHeat and eTransport will enable more to be accommodated on the network using the existing infrastructure and still meet customer requirements
  - Utilising short-term triggered/manual demand response during significant system disturbances or abnormal conditions



Dingle Project - Flexibility Trial Scenarios





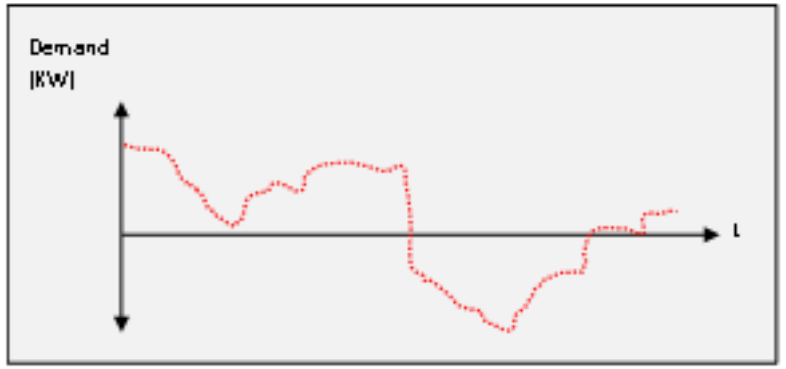
Active Power Support
(Time Scheduled or Price Responsive)

Manually Triggered
(Event Based)

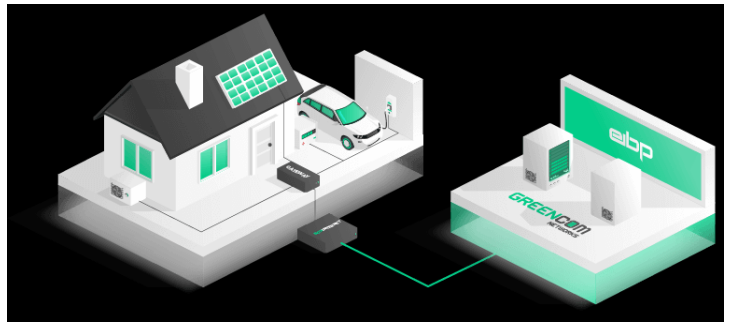
Engagement
(Drive Behavioural Change)

Customer Flexibility and Prosumers

Flattening the energy curve



Moving energy usage away from peak times



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Active System Management

Ellen Diskin

ACTIVE SYSTEM MANAGEMENT

Ellen Diskin, July 2021

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IN BUILDING THE SYSTEM OF TOMORROW WE NEED TO RADICALLY CHANGE THE NETWORK OF TODAY

ESB NETWORKS

ESB NETWORKS

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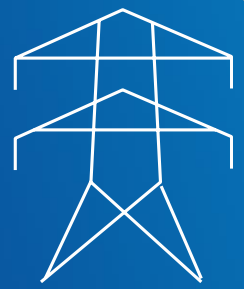

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Active System Management

ESB Networks need to deliver on the ambitious targets set out in the ESB Networks strategy

Ireland needs to deliver on the 2030 Energy targets

Customers and communities need to participate in the market

Society deserves & requires security of supply while supporting a low carbon future

The vehicle to deliver on these aligned requirements is ASM and will require collaboration with industry, communities and customers

Our Vision

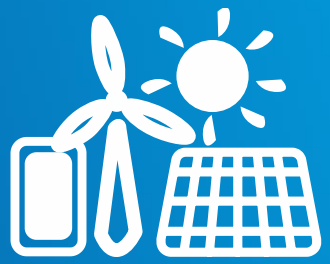
BENEFITS

HOMES & FARMS

Additional access options for new homes & businesses.
Quick, affordable access for EVs, microgen, HPs.
Better value & service from energy suppliers.
More reliable electricity.
Ability to be part of something bigger.
Opportunity to take ownership and control.

BUSINESSES

Additional access options for new connections
More reliable electricity
New routes to market & revenue streams
Opportunity to be part of the solution



INDUSTRY

Additional access options for new connections
New routes to market & revenue streams
Increased renewable energy used or stored

A secure, sustainable low carbon future

TRANSFORMATION – MACRO SNAPSHOT

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SYSTEM OF TODAY

OPERATIONS

influence

responsible

influence

GENERATION
Few large plants

MARKET
Centralised,
Mostly national

TRANSMISSION & DISTRUBUTION
Based on large power
Lines and pipelines,
Top top bottom

CONSUMER
Passive, only paying

ACTIVE SYSTEM OF THE FUTURE

GENERATION
Many small power producers

MARKET
Decentralised

TRANSMISSION & DISTRUBUTION
Small scale and regional supply, both directions

CONSUMER
Active, participating in the system

OPERATIONS

Big changes will require working collaboratively with Industry, Communities & Customers

ACTIVE SYSTEM MANAGEMENT

Enabling Ireland's journey to low carbon through delivering a safe and secure electrical distribution system which supports the new energy landscape where electricity is generated, stored, consumed in more localised marketplaces.

ESB NETWORKS

PHASE 1: High Level Design & Rollout Plan

PHASE 2A: Piloting, in parallel with detailed design and builds.

PHASE 2B: Full rollout & Scaling

PHASE 3: Building towards 2030

2021 2022 2024 2026 2030

Launching

Listening...

Communities and people need to be very involved in this...we all need to be 'active' investors... understand what it all means

it's very important for people to be able to get information. And I'm not just talking about ourselves today ...

to be able to make informed decisions over what technology you choose

We are open for consultation but ESBN needs to lead this.

ACTIVE SYSTEM MANAGEMENT

Enabling Ireland's journey to low carbon through delivering a safe and secure electrical distribution system which supports the new energy landscape where electricity is generated, stored, consumed in more localised marketplaces.

ESB NETWORKS

PHASE 1: High Level Design & Rollout Plan

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PHASE 3: Building towards 2030

2021 — 2022 — 2024 — 2026 — 2030

Access & Awareness
How we will work towards creating an active energy system

Technology
How we will optimise the system for renewable, customer and community participation

Market Design
How we will bring flexibility to the system by reimaging market arrangements

ACTIVE SYSTEM MANAGEMENT

Enabling Ireland's journey to low carbon through delivering a safe and secure electrical distribution system which supports the new energy landscape where electricity is generated, stored, consumed in more localised marketplaces.

ESB NETWORKS

PHASE 1: High Level Design & Rollout Plan

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PHASE 3: Building towards 2030

2021 — 2022 — 2024 — 2026 — 2030

Access & Awareness

How we will work towards creating an active energy system

- Piloting Roadmap
- 2030 Power System Requirements
- Local Visibility Plan
- Consultation Framework

Technology

How we will optimise the system for renewable, customer and community participation

- Data & Signals Guidance
- Platforms & Dashboards Roadmap
- Operations Systems Roadmap

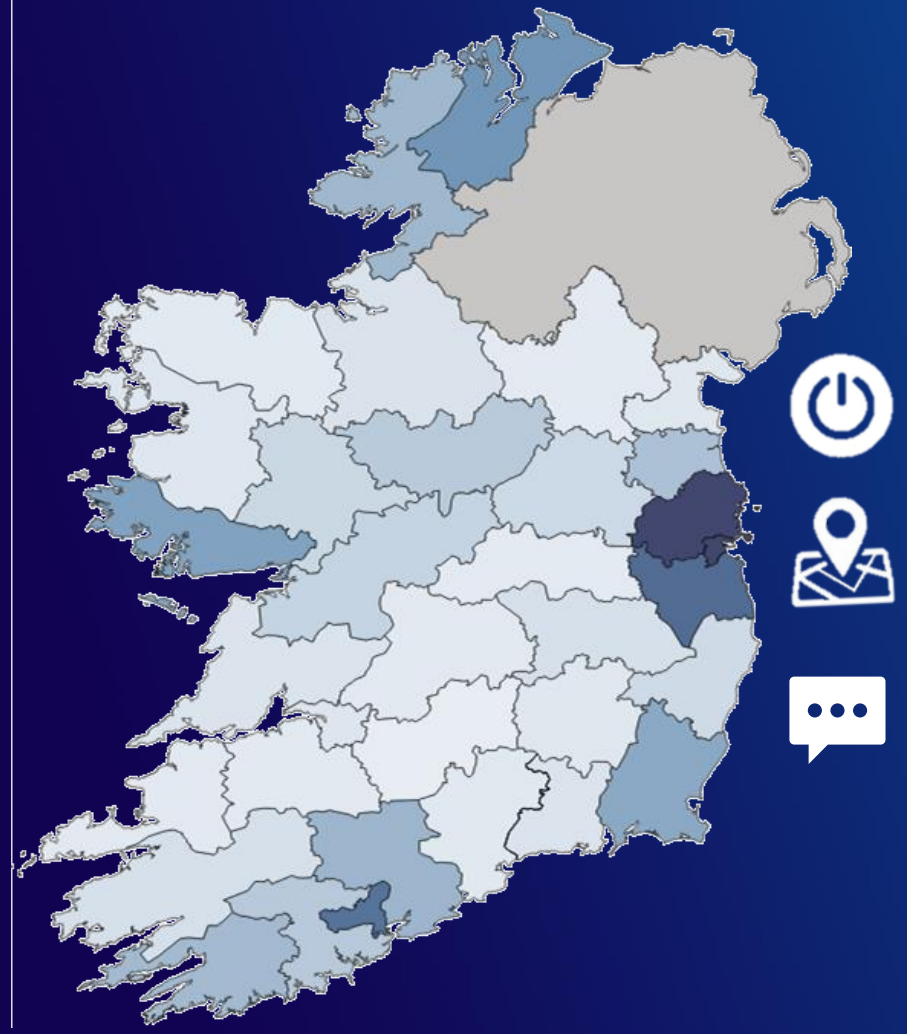
Market Design

How we will bring flexibility to the system by reimaging market arrangements

- Flexibility Market Plan
- First tender for flexibility
- Residential roadmap

Register your interest to participate in bringing the network home by emailing engagement@esbnetworks.ie

Access & Awareness - HLD Deliverables & Consultation



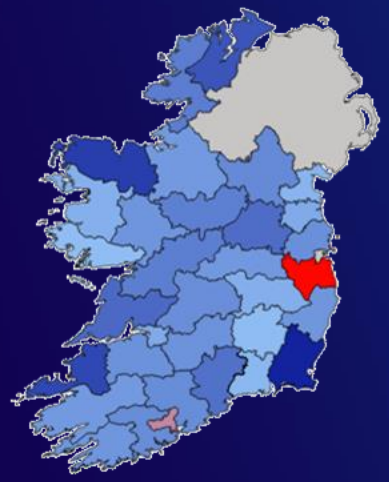
HLD Deliverables

- 2030 Power System Requirements
- Local Visibility Plan
- Piloting Roadmap
- Consultation Framework

Key consultation topics

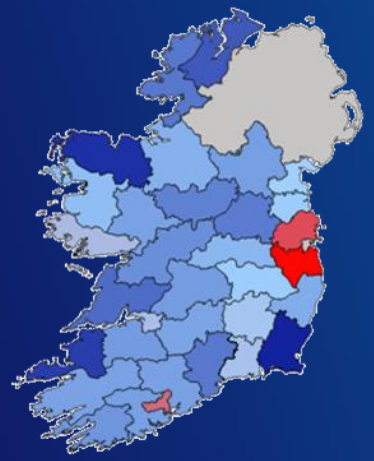
- Heatmaps showing when and where
- 10 year horizon scenarios
- SEAI and industry pipeline data
- Local visibility: a prerequisite for residential / small business
- Role of awareness, consultation & engagement
- Consultation roadmap & channels
- Piloting criteria & objectives

Scenario snapshot:
Interaction between generation and demand at a local level – Why flexibility is critical, and why localised management is critical.



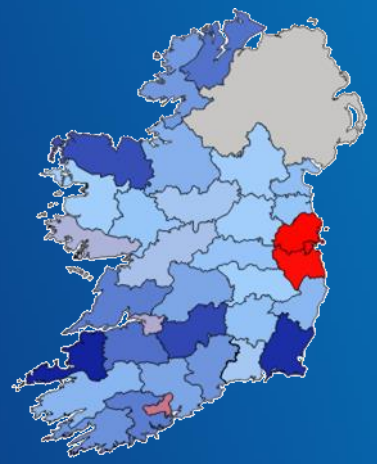
Low demand conditions
-5.65 GW

- **-494 MW**
- **0 MW**
- **188 MW**



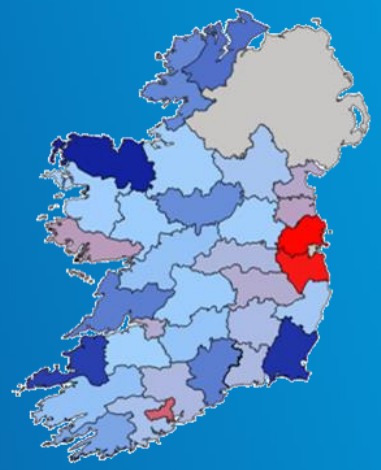
Peak demand conditions
-1.93 GW

- **-408 MW**
- **0 MW**
- **577 MW**



Peak demand +950,000 EVs
(underlying diversified behaviour)
0.54 GW

- **-344 MW**
- **0 MW**
- **815 MW**



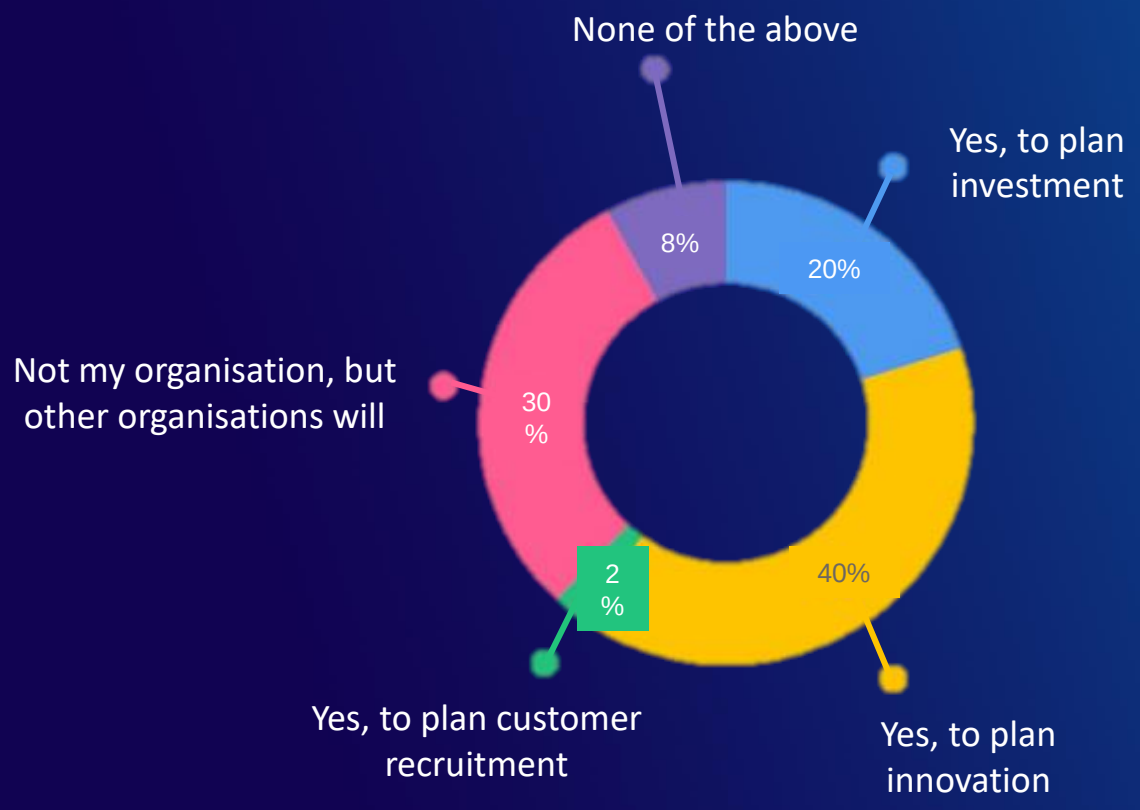
Peak demand +950,000 EVs, 600,000 HPs
(underlying diversified behaviour)
1.24 GW

- **-329 MW**
- **0 MW**
- **924 MW**

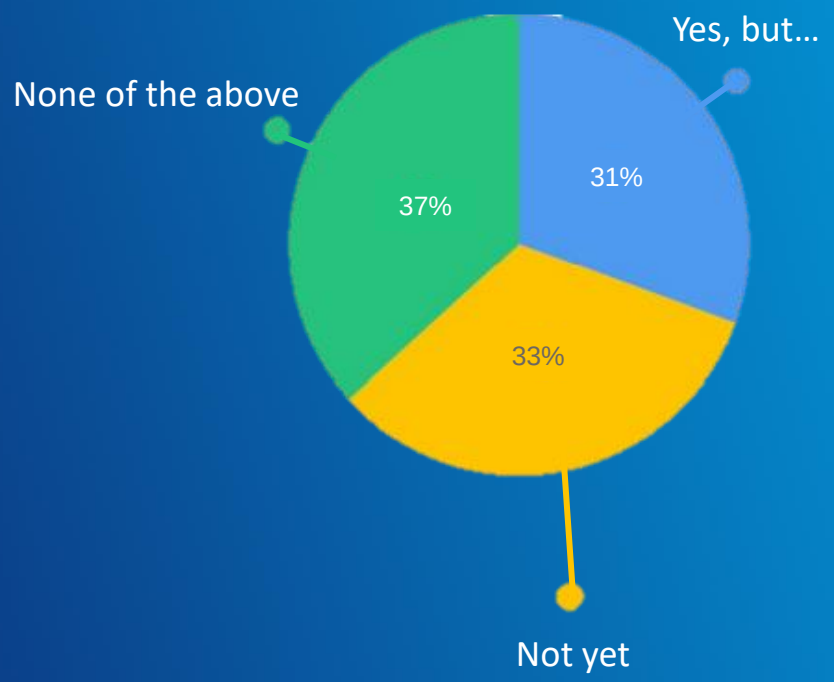
Source: CAP volumes, SEAI grant data analysis, small area statistics mapping and spatial distribution scenarios, underlying demand based on ESBN standard load measurements and forecast data, behavioural / diversity of usage from TNEI analysis of EV and HP usage in GB, WEI developers' pipeline, ESBN applications register and statistical analysis of connections to date, RESS 1 results..

Access & Awareness – Preliminary feedback

Will your organisation use this information to help plan investment, innovation and customer recruitment activities?



Are there locations where you are already working with SME and domestic customers?



Technology - HLD Deliverables & Consultation

HLD Deliverables

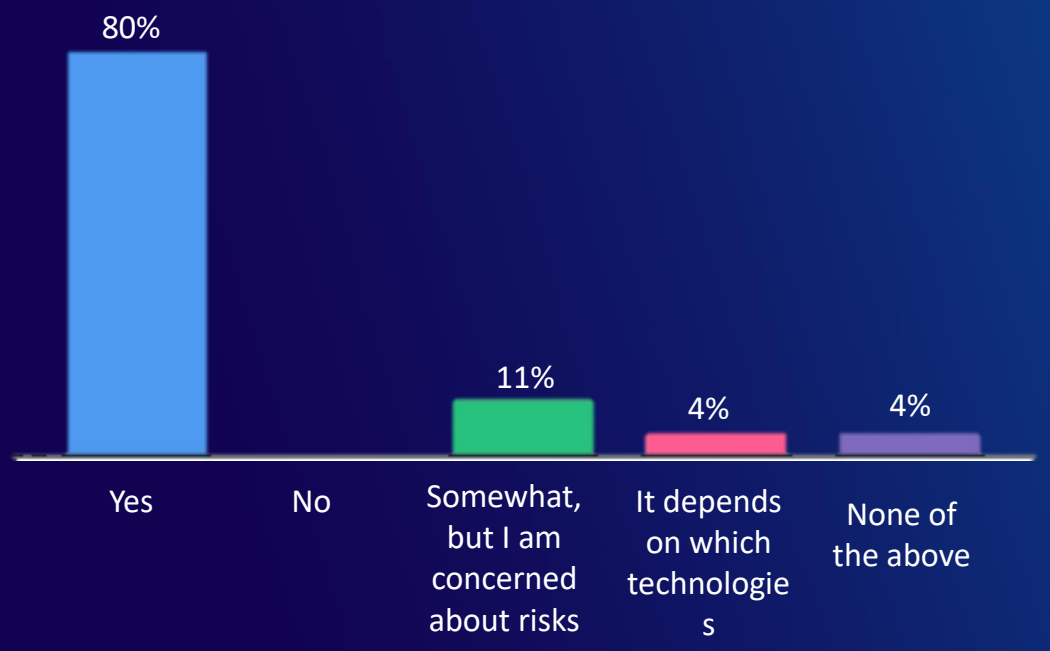
- Operations Systems Roadmap
- Platforms & Dashboards Roadmap
- Data Exchange, Control & Signals Guidance

Key consultation topics

- International standards
- Best practice platforms internationally
- Timeline, components, release plan
- Functional interfaces and market interaction
- Customer visibility and empowerment
- Reporting, transparency and awareness

Technology – Preliminary feedback

Do you consider that the development of standard data exchange, control & signals requirements for small scale resources is an important step?



RedC findings, industry focus groups…

…protocols and processes needed … it has to be compatible with devices out there.

… we definitely need standardised formats for how those systems will interact.

Grid code wasn't really written with the intention of having smaller micro scale prosumers acting in the market

…we need reassurance on technology and investment.

Market Design - HLD Deliverables & Consultation

HLD Deliverables

- Flexibility Market Plan
- First Call to Tender
- Residential Roadmap

Key consultation topics

- Proposed flexibility product roadmap
- Market framework solutions
- Flexibility enabling non-firm access
- Piloting roadmap, criteria and objectives
- Potential role of sandbox treatment
- A day in the life

2021 2022 2023 2024 2025

Flexibility Market Plan

SEM Market

Local Solutions?

Local Challenges

ding Models

To POAP

Market Design – Preliminary feedback

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First calls to tender: What criteria should we be applying to select locations

Survey feedback

What sort of economic incentives will participants get?

How and when can active system management deliver non firm generator connections?

Will the flexibility be explicitly procured or implicitly incentivised?

How will a local flexibility market interact with the energy market? What role will ESBN play in managing a local flexibility market?

ACTIVE SYSTEM MANAGEMENT

Enabling Ireland's journey to low carbon through delivering a safe and secure electrical distribution system which supports the new energy landscape where electricity is generated, stored, consumed in more localised marketplaces.

ESB NETWORKS

Thank you!

Engagement@esbnetworks.ie

ESB Networks: Electrification Strategy

Implementation of our Electrification Strategy

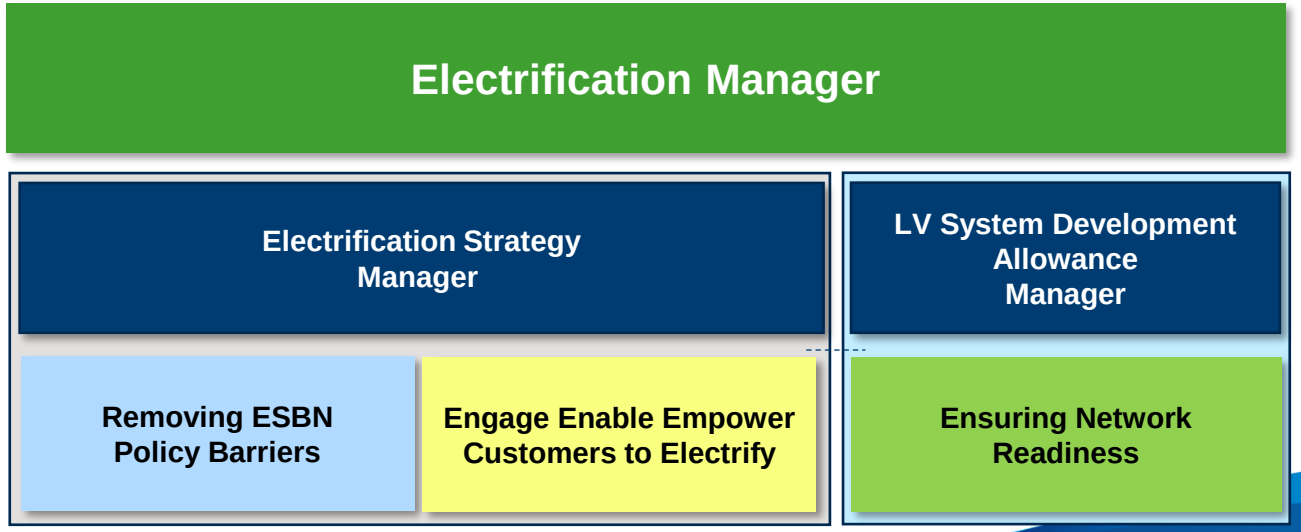
Dr. Emma Silke

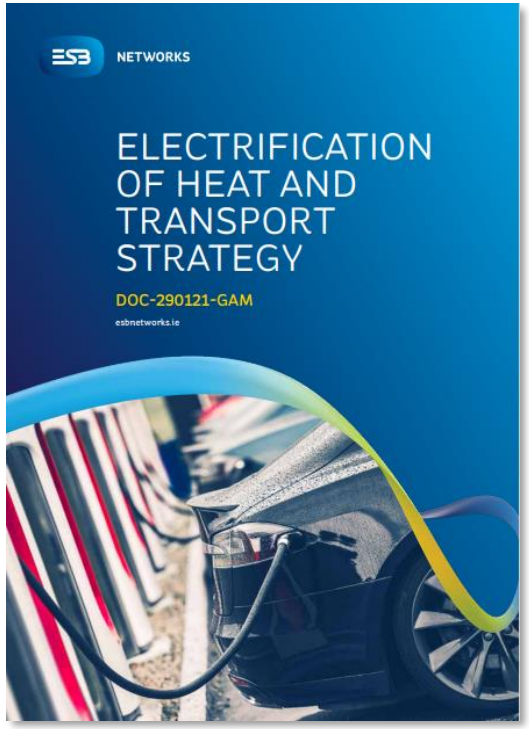
ESB Networks Electrification Strategy

Framed by **Electrification of Heat & Transport Strategy** publication January 2021

Three main themes outlined:

1. **Removing ESB Networks Policy Barriers**
2. **Engage-Enable-Empower Customers to Electrify**
3. **Ensuring Network Readiness**

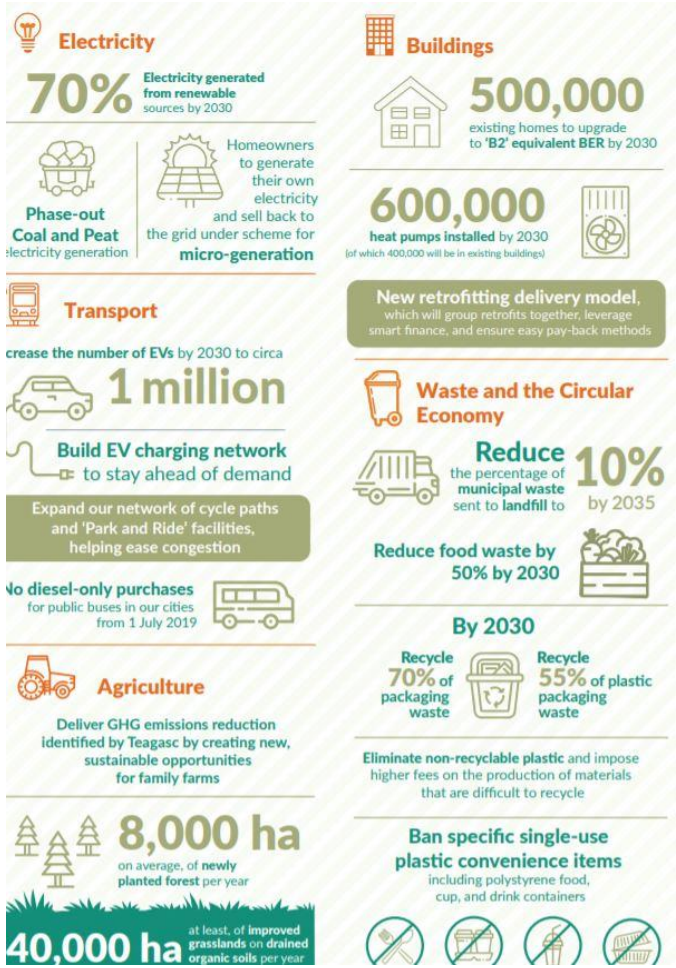




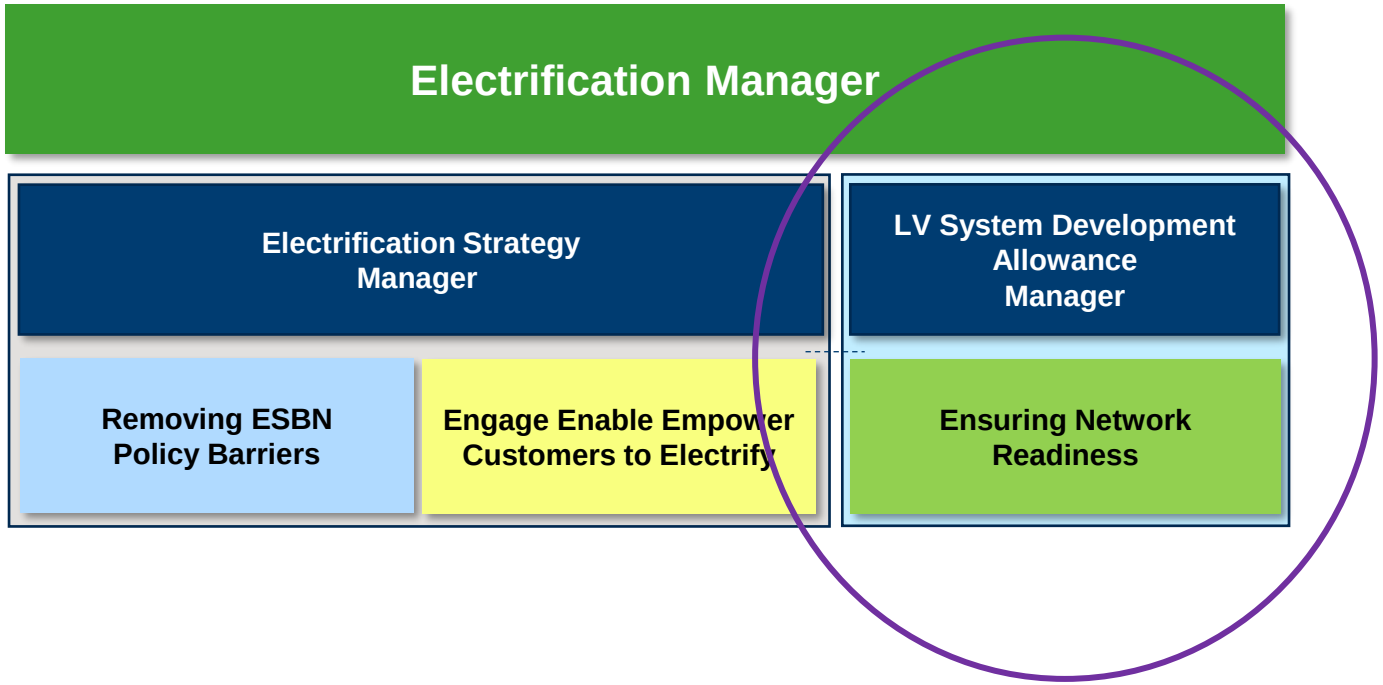
Overall Electrification Strategy Scope

In support of and with a focus on the Climate Action Plan:

*To facilitate the connection of **at least** 1 million electric vehicles and at least 600,000 heat pumps to the distribution system by 2030*



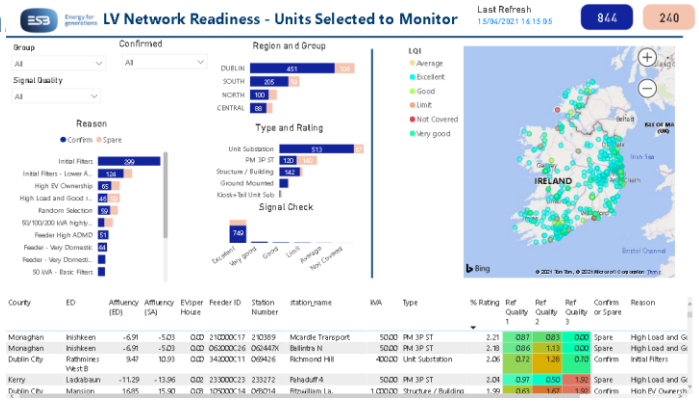
ESB Electrification Strategy Delivery



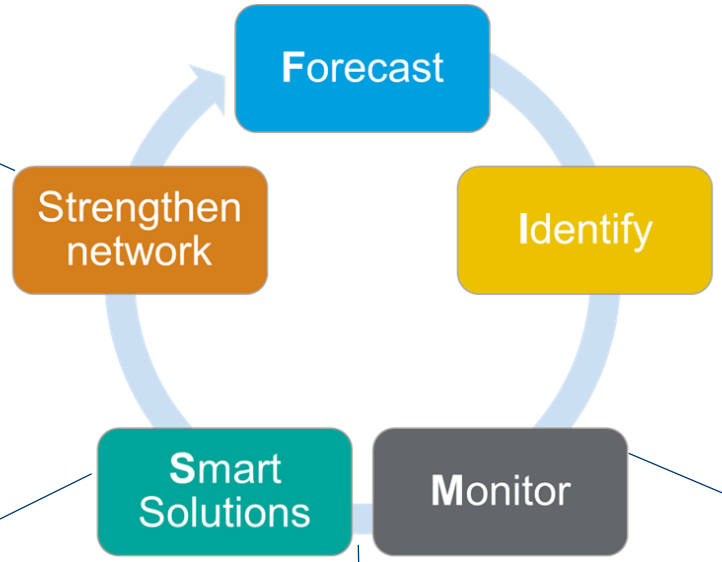
LV System Development Allowance / a PR5 Deliverable

€134m Allowance in the period 2021-2025

We have implemented the 1st version of our forecasting data analytics tool in the ESB cloud.
This allows us to shortlist MV/LV transformers where network capacity is of concern.



Currently implementing a proof of concept with smart metering programme to identify LV groups where voltage constraints are a problem. The results of this will be implemented into the 2nd version of our forecasting tool



Review of Design standards, EO Toolkits, and training out new LV design decision tree for future-proofing networks; work in progress

Coordination of resource models, logistics to LV SI; including design time, material frameworks, and construction crews.

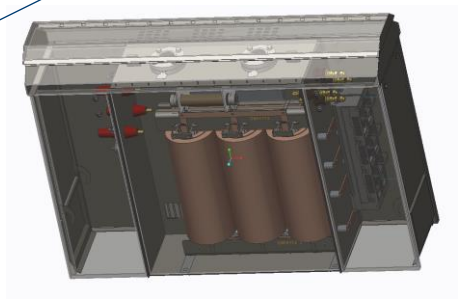
LV System Improvement Allowance Performance Metrics & KPIs in place

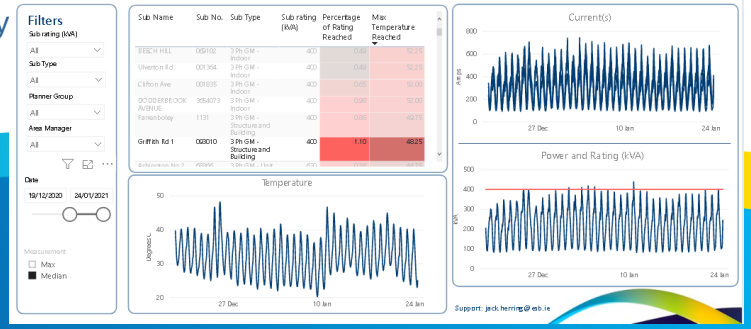
Management reporting, and CRU PR5 reports

Prototyping new innovation transformers

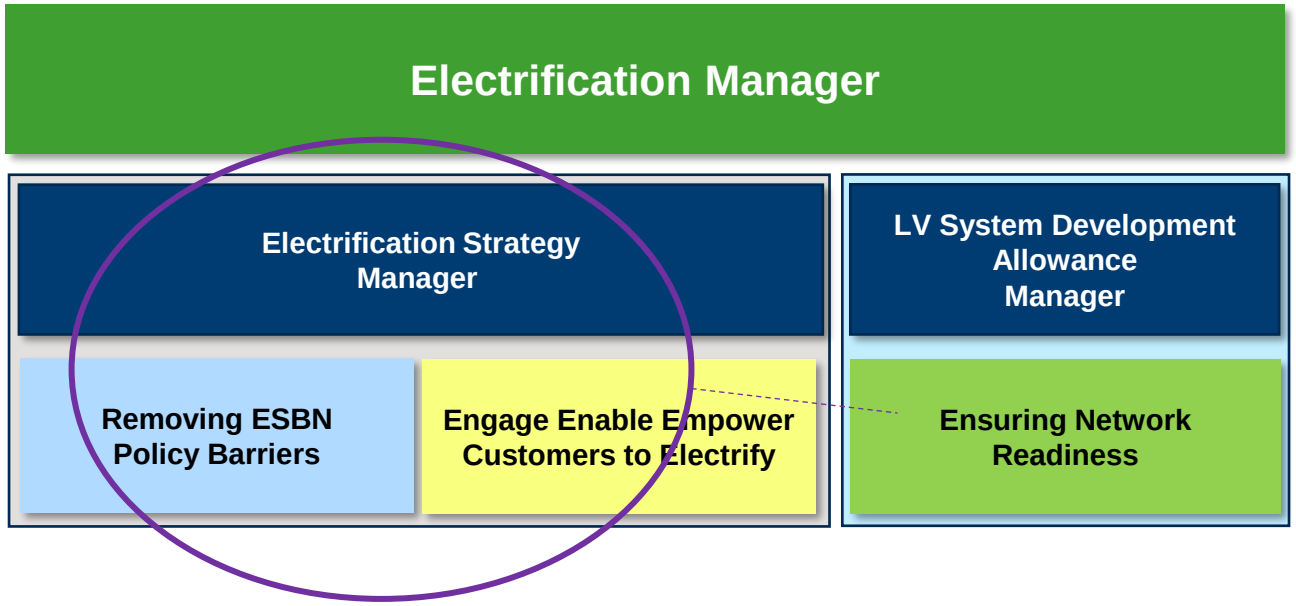
Collaborating with Active System Management

Completed Phase 1 monitoring roll-out in Q4 2020 to 100 no. MV/LV transformers. Phase 2 rollout of 1,000 monitors in H2 2021.
By end of 2021, will have monitoring on key LV network to manage LCT impacts over next several years





ESB Electrification Strategy Delivery



The Electrification Strategy Implementation Framework

1. Monthly meeting of the *Electrification Strategy Implementation Group*

Planned, specific, objective driven, agreed outcomes & metrics

2. Cross-company achievement of the Electrification Strategy

Collation & coordination of cross-company information that links to the achievement & progression of activities relating to the Electrification Strategy objectives (themes)

3. Stakeholder Action Plan

Develop and implement a Stakeholder Engagement Plan (both external and internal) that will demonstrate & offer reassurance to all key stakeholders & audiences.

- Recognition & profile for those leading the change and advances in Electrification & our achievement of strategic objectives

1. Monthly Meeting

1. Monthly meeting of the *Electrification Strategy Implementation Group*

Planned, specific, objective driven, agreed outcomes & metrics

ESB NETWORKS

- Re-brand the existing forum from the ***EV-ASHP Implementation Forum*** to the ***Electrification Strategy Implementation Group*** …. to reflect this updated structure, new mandate & our forward plan

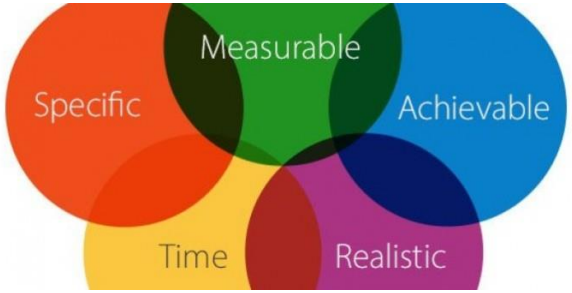
- **Move content & working methods to MS Teams to allow for better collaboration and interaction**
- **Refresh the monthly meeting format & agenda**
  - Categorise the issues log entries into 4 principal work areas & link to the 3 main objectives of ESB Network's Electrification Strategy

Technical	Policy	Commercial & Regulatory	Stakeholder
Anything 'asset' based	Internal policy	Charging customers	External bodies
Existing network adequacy	External documents	Data issues	Internal staff
			Website

- **Define the objectives**
  - Work with the business areas to specify clear deliverables & timelines, per workstream and to action a better focus on the prioritised issues
- **Clarify and redefine / clarify & support attendee roles & responsibilities**
  - Per agreed priorities, ability to assign or allocate an action to an individual/section/group

2. Cross-company achievement of the Electrification Strategy

- The Electrification Strategy Manager & Electrification function within NDE will work to collate and coordinate cross-company information & data on the achievement & progression of various activities that are linked to the Electrification Strategy Objectives (ie. our 3 themes)
- This will be achieved by:
  - Driving and enabling a matrix structure (cross company departments) and **CFB** governance for the delivery of the Strategy for the Electrification of Heat and Transport
  - Specific H2 2021 goals:
    - Develop an action plan for 2021 calling out the priority actions for this period, with relevant metrics/KPIs for tracking & transparency of performance management
    - Prepare and disseminate performance data to senior management to relay the strategy implementation is on track
    - Prepare an augmented action plan for 2022 that details priority actions for this period, building on the framework, structure and coordination efforts stood up through the course of H2 2021
    - Commence with working on detail relevant to the preparation of an outlook plan for 2023 that considers future priority areas. Examples will be to complete a horizon scanning/awareness exercise of relevant initiatives in the electrification space from other jurisdictions that may be of use to ESB Networks
      - The 3-year outlook plan will move to address direction for the remainder of PR5



3. Stakeholder Action Plan

- A Stakeholder Plan will be developed to support the successful implementation of the Electrification Strategy
- The plan will detail:
  - How best to engage (medium, frequency of engagement) with relevant stakeholders
  - How best to keep stakeholders informed
  - How to communicate relevant standards
- In doing so we will seek to utilise & leverage existing stakeholder infrastructure & processes, already successfully underway across ESB Networks:
  - Innovation Stakeholder Panel
  - Align ourselves with Strategic Engagement Team plan
  - Completed and active participation in future webinars / stakeholder meetings
  - Other communication platforms
  - Relevant completed consultations

Sample external stakeholders include:

County & City Managers Association	SEAI
NSAI: EV WG & National Wiring Rules WG	DECC
Local Authority EV Charging WG	CRU

Sample internal stakeholders include:

Customer Experience Team	NCD Organisation – EOs, Design Managers, AMs, etc
ASM Project	Network Planning Teams
Innovation Team	Strategic Engagement Team

Governance & Management of the Electrification Strategy Implementation Framework

- Governance structure & escalation route for decision making

Connected Futures Board
- NDE Manager

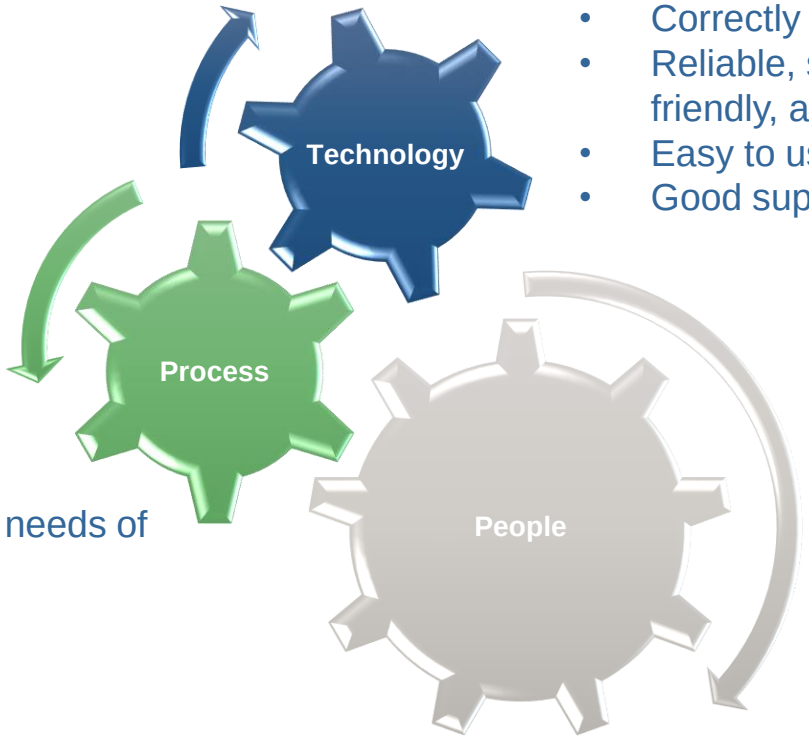
Electrification Manager (sponsor)

Electrification Strategy Manager
- Monthly meetings – specific actions / objectives / tracking of same
- Discussion & decision making
- Data collation, performance reporting & KPIs
- Recognition & profile for the Group achievements

Electrification Strategy Implementation Group
- Cross company matrix
- Individual actions per policy/area being progressed
- Normal company-compliance obligations
- Normal document approval channels (for ex. One Source etc)

Guiding principles to implementing CAP
….and by extension ESB Networks' Electrification Strategy

Technology
- In the home / on the network
- Correctly specified
- Reliable, safe, environmentally friendly, and Secure
- Easy to use
- Good support & maintenance



Process
- Regulations
- Simplification
- Built around the needs of the Customer

People
- Consultation
- Automation
- Price signal
- Choice
- Excellence of service
- Trust

Guiding principles to implementing CAP
….and by extension ESB Networks' Electrification Strategy

Technology
- In the home / on the network
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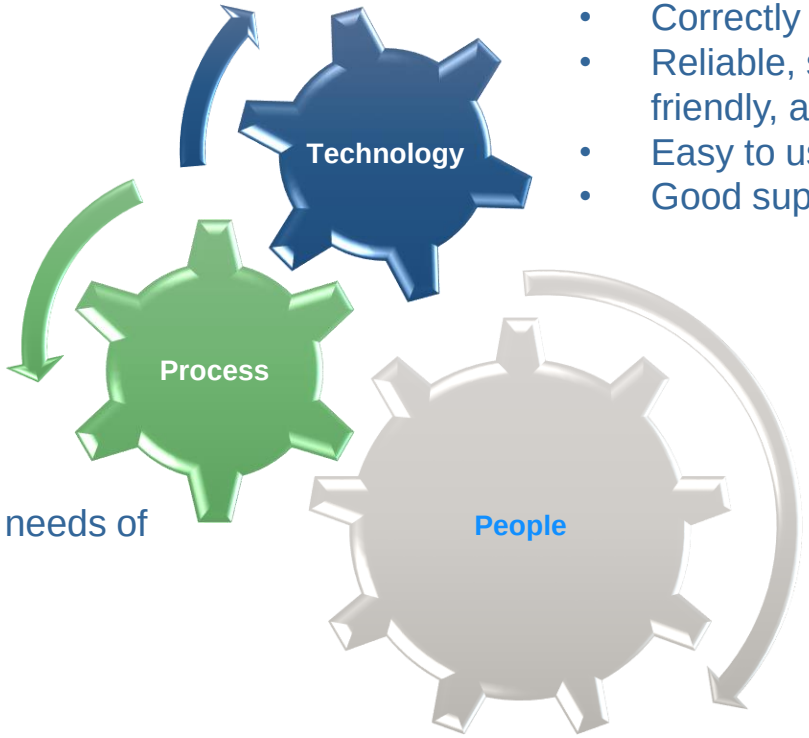

Process
- Regulations
- Simplification
- Built around the needs of the Customer

People
- Change management
- Organisation wide
- Cultural aspects & impact

Thank You

Appendix 1

ESB Networks - PR5 Innovation Topics

2021 - 2025

PR5 Submission: Future Customer Innovation Pillar

Proposed Project Area
Modelling and impact assessment of innovative microgeneration operational scenarios
Microgeneration curtailment trial at (a) high voltages and (b) high export levels
Trial of export limiting schemes
LV modelling to assess reinforcement requirements due to electrification and microgeneration
Using LV monitoring to optimise reinforcement on the LV network
Developing and trialling novel approaches to manage LV flexibility
Developing operational models for community energy/Peer to Peer
Investigating new use cases for Smart Meter data
+CityxChange (positive City Exchange) H2020 Project
Kiosk MV metering substation
Framework for the optimal coordination of Network Management Systems (NMS) and DER
Identification of network configurations for Active Network Management (ANM)
Flexibility access rights for customers - Trials of Active Network Management.
Congestion Management and Capacity Allocation using OMS

PR5 Submission: Climate Action Innovation Pillar

Proposed Project Area
Electrical Energy Storage (EES) - Long-term storage for firming of renewable energy
Supporting dense developments at low cost using new transformer technologies
Introduction of 1MVA Unit substation transformer with tap changer for voltage control
Investigate the use of low impedance 33kVA pole-mounted transformers
Trial of fused minipillars
Investigate the use of kW droop on charging to minimise voltage drop
Investigate the use of managed charging as contract option in certain connections
Consider use of > 244 and 230V
Wide Area Voltage Control – tighten MV voltage regulation to allow larger LV regulation
MV/LV unit substation for fast EV charging
Development of optimised LV design framework to enable a unified mobile application

PR5 Submission: Network Resilience Innovation Pillar

Proposed Project Area
Developing a digital capability for smart grid applications
Investigate climate adaptation approaches
Strengthening the resilience of future networks
Development of communications vision and control the use of ~400MHz smart grid spectrum
Network impact assessment of microgrids
Storm Resilience for overhead networks
Assess and monitor harmonic levels on LV distribution networks for low carbon technologies
Enabling reactive power system services from distributed generation (Nodal Controller)
Using Average Wind Speed Measurements to Increase Real Time Line Ratings Nationally