

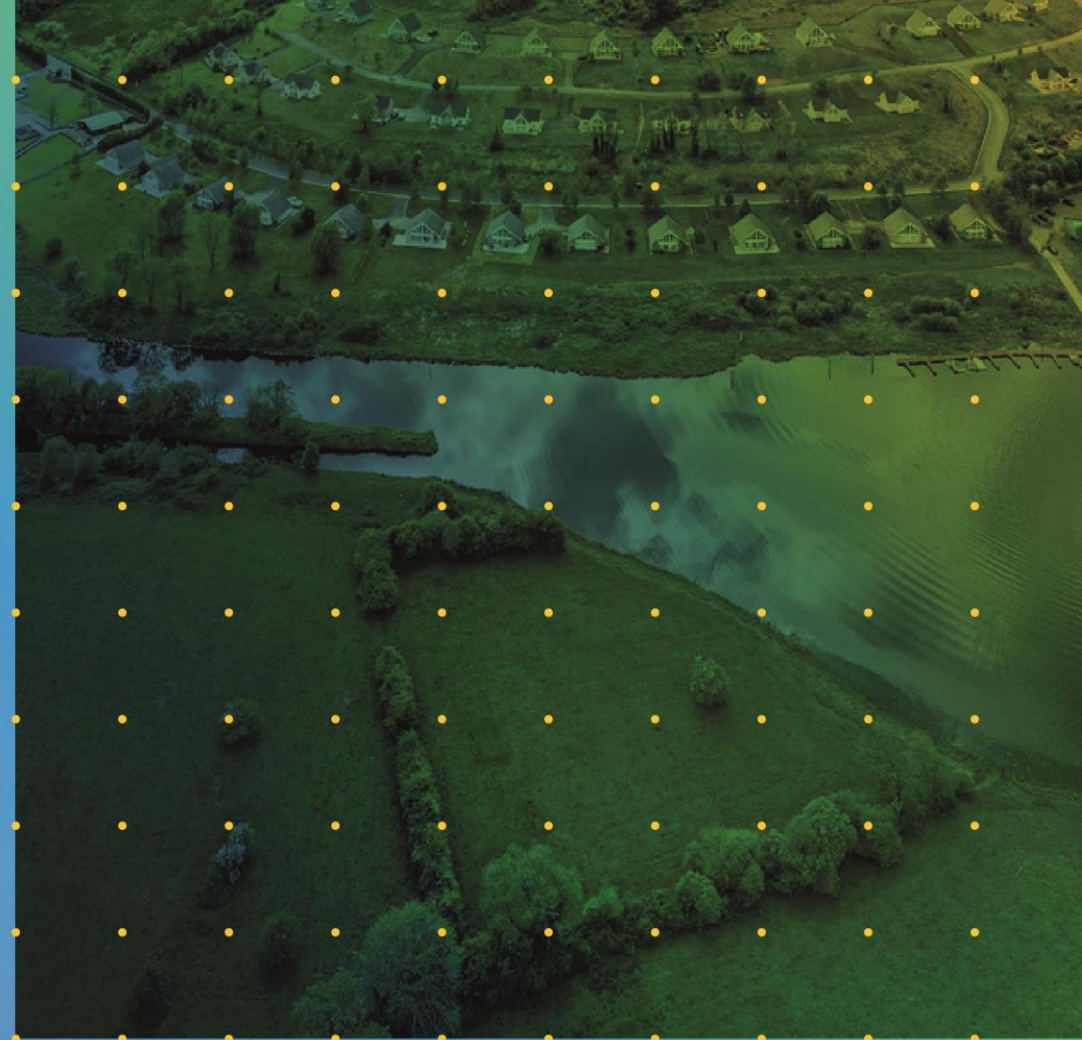


**NETWORKS**

# NATIONAL NETWORK LOCAL CONNECTIONS PROGRAMME

**Behind-the-Meter Infrastructure Strategy**

Document number: DOC-110823-HTU



# OVERARCHING · VISION · NORTH STAR

Our Vision

Ireland's climate action and net zero targets are met

Our Mission

*Our mission is to drive climate action by building the DSO's capability to cultivate customer participation and flexible, whole-of-energy-system solutions*

Our Enabler

*'Flexible system demand' is demand with the ability to respond to changing states of generation, demand, storage and network conditions. It is characterised by direct system operator actions, coupled with individual/collective customer behaviour*

How will we enable our purpose, vision and mission?

## Power System Requirements

A deep understanding and foresight of the impacts, characteristics and evolving needs, of a highly distributed, low-carbon electricity system. The technical expertise to develop innovative solutions to support growing customer demand and increasingly distributed generation, and storage

## Flexibility Market Design

Local and national markets for flexible demand, run by the DSO as a neutral market facilitator, offering a mix of long-term, day-ahead and intraday arrangements that afford all customers with opportunities to participate

## Retail Market Design

Setting the future direction for the smart meter-enabled retail market, with suppliers equipped and incentivised to harness available data to create dynamic, personalised tariffs for their customers. We will work closely with suppliers and the CRU to optimise retail market design, enabling synergies and efficiencies in operating flexibility and retail markets

## Customer

Creating the conditions for customers to participate in immersive, personalised experiences of flexible demand. Helping to drive education and the national conversation, about how we can all take control of our energy demand, and share in the benefits. Migrating products and services to third parties when appropriate to do so

## Smart Metering

Setting the future direction for smart meters, including use cases – such as harnessing smart meter data to (i) identify faults, and (ii) baseline, measure and validate flexibility services delivered by customers – the implementation of the next generation meter, and the development of an enduring solution for microgeneration

## Behind-the-Meter Infrastructure

Behind-the-meter infrastructure, including clear technology requirements and standards for data exchange and communication protocols, to ensure customers' homes, vehicles, solar panels and batteries are flexibility ready



Core Foundations

**Regulatory:** Mandates, authority, policy, alignment, codes, licences

**Legislative and Policy:** Climate Action Plan

**Stakeholder:** Voice of the stakeholder and citizen

# BEHIND · THE · METER · INFRASTRUCTURE · OVERVIEW

## OBJECTIVE

**Behind-the-meter infrastructure must proactively enable customers to participate in flexible demand**, by becoming responsive to evolving price and network condition signals. Clear and achievable behind-the-meter infrastructure requirements are needed to **harness the inherent flexibility of behind-the-meter distributed energy resources (DERs)**, including solar PV, home battery storage, smart EV chargers and energy management systems for domestic appliances.

To optimise the ability of behind-the-meter DERs to participate in flexible demand **an agreed infrastructure – including clear data exchange and communication protocols between customers / DERs, market participants and system operators – must be in place**. As set out in detail in ESB Networks' *Signals & Data Exchange Guidance for DER*, **several DER integration and control approaches have emerged** from recent and ongoing utility demonstration projects moving towards the introduction of standard requirements for DER controllability and interoperability, including the introduction of **inverter requirements around active and reactive power response** capability.

We believe the introduction of **industry-wide standards and protocols** is critical from early 2024 onwards to

- Enable consumer participation in flexible demand by introducing standard technological requirements
- Reduce potential barriers to entry by making requirements consistent, standard and universal
- protect against customers being locked out of flexible demand products due to non-flexible technologies
- Protect against avoidable network congestion as a result of high uptake of non-smart technologies.

## STRATEGIC PROPOSALS

- 1 INVERTER-INTERFACED PV / BATTERIES**  
Enabling quick and efficient PV uptake, and domestic customers' participation in flexibility products using their micro- and mini-generation
- 2 SMART EV CHARGING**  
Enabling domestic and commercial customers participate flexibility products and services, and avail of flexible connections.
- 3 SMART DOMESTIC ENERGY MANAGEMENT**  
Facilitating customers' ability to directly contract with suppliers and aggregators to participate in new flexible demand products and services.
- 4 TECHNOLOGICAL INTEGRATION**  
Design of the operational technology dispatch architecture integration with an Advanced Distribution Management System
- 5 FLEXIBILITY-READY CHARGERS**  
Technical specifications, communications protocols and standards needed to deliver flexibility-ready EV chargers and charge points
- 6 FLEXIBILITY-READY HOUSING**  
Delivering flexibility-ready social housing initially, with full Part L adoption to follow, ensuring economically vulnerable customers have access to all flexibility offerings.

## STRATEGIC PARAMETERS



### ARENAS

*Where will we be active?*

- **In-home gateway** and behind-the-meter infrastructure design addressing EV charging, PV and battery inverters, and interfacing with home energy management systems
- **Data exchange and communication protocols** between these DERs, market participants and system operators
- **DER integration and control approaches**
- **Smart inverter requirements** around active and reactive power response



### VEHICLES

*How will we get there?*

- Development of behind-the-meter infrastructure **technical architecture and standards governing the connection of behind-the-meter DER systems** (chargers, inverters, etc) with the Irish distribution system for adoption / approval by the CRU
- **Engagement with stakeholders** on proposals to support timely and efficient supply chain adoption of these standards
- Behind-the-meter **proofs of concept and pilots** as required to support the development, validation / testing and adoption of standards.



### DIFFERENTIATORS

*How will we stimulate the marketplace?*

- **Transparency and engagement with industry** in the development and finalisation of the behind-the-meter technical architecture and standards
- Use of **standard technological requirements, based on international and domestic developments** and trials to date

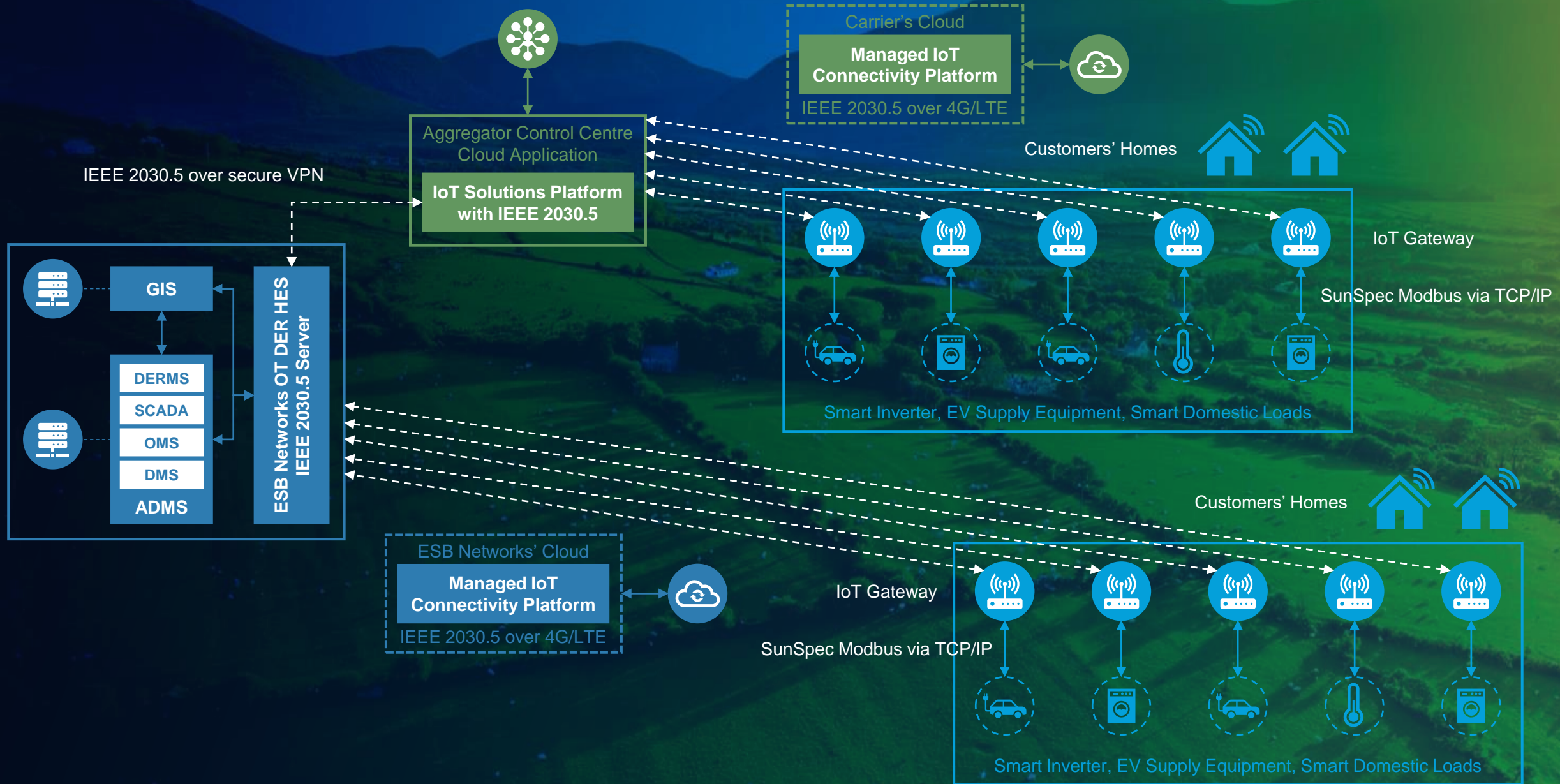


### ECONOMIC LOGIC

*How will this provide consumer value?*

- Exploring the most **cost-effective in-home gateway and behind-the-meter infrastructure solution** that mitigates potential delays in installing and commissioning
- **Driving cost reduction** by signalling & adoption of consistent standard requirements

# BEHIND · THE · METER · INFRASTRUCTURE · VISION



# STAGING - PLAN TO 2030

