Virtual Energy System

Powered by ESO

CrowdFlex

Dozie Nnabuife

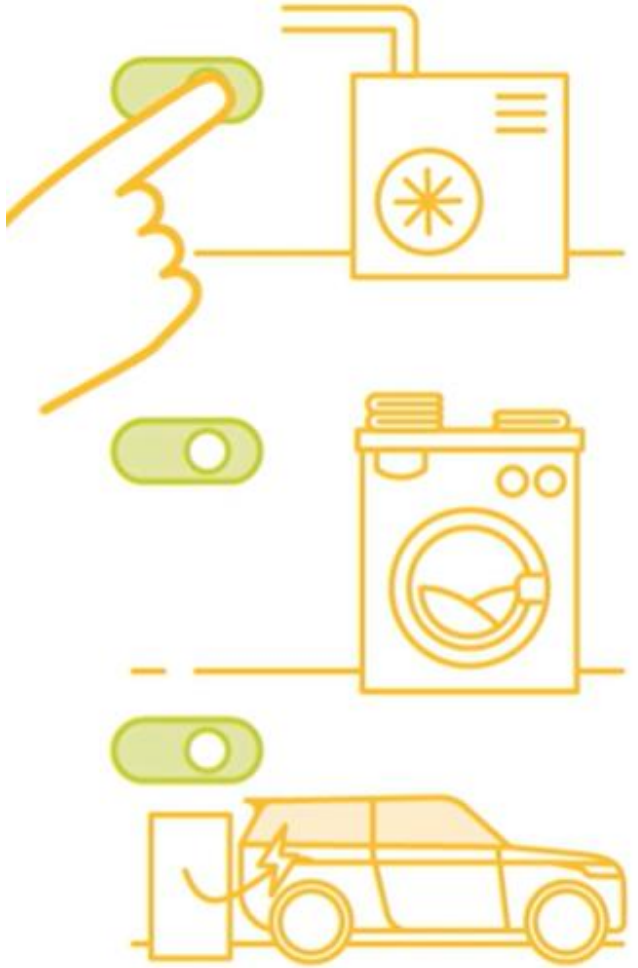
Use Case Manager

Virtual Energy System

ESO

CrowdFlex - Domestic Flexibility in Grid Operations

- **Huge opportunity** to establish domestic flexibility as a reliable energy and grid management resource
- **Aligning** ESO and DNO requirements
- **Identifying** the technology capability, **understanding** the statistical nature
- **Enable consumers** to act as a new source of flexibility
- **Reshaping demand** to match supply more closely
- Right time data models to help manage grid effectively
- An example of **Virtual Energy System** in action



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Challenges and Drivers

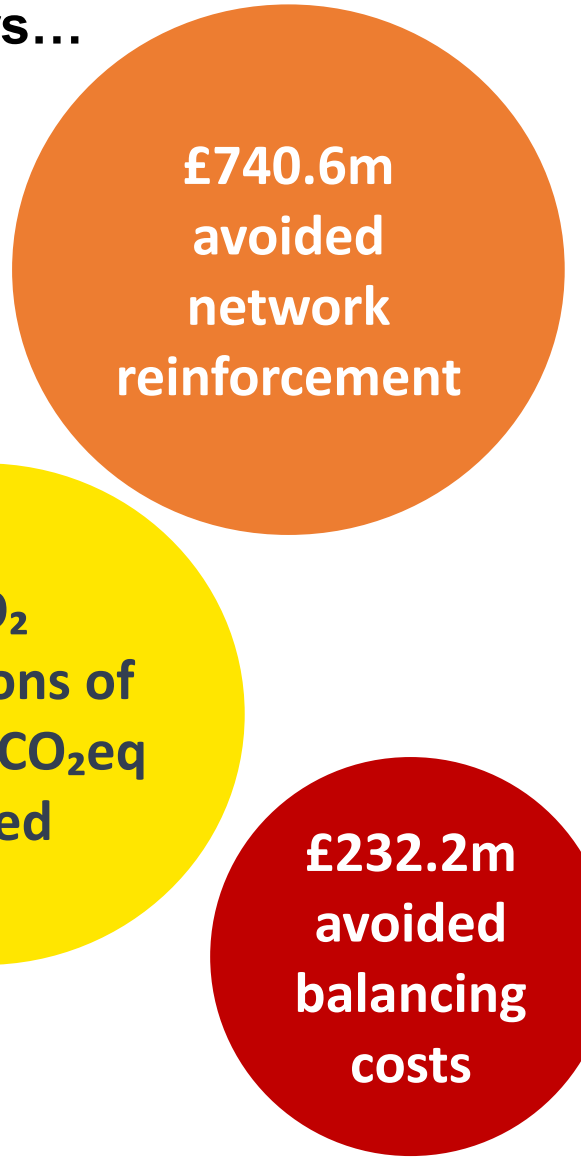
We need a smart, flexible and reliable energy system

- **Non-dispatchable** renewable generation increasing
- **Increasing demand**: electric vehicles and heat pumps
- Flexibility must shift from **supply-side to demand-side**

Opportunities and Benefits

- **Largely untapped**, potentially large flexibility resource
- **Exploring stochastic nature** of domestic flexibility services
- **Optimised** grid coordination
- **Reduced stress** across network
- Help develop **go-to-market strategies** for flexibility service providers
- Lower cost and lower **carbon system operation**
- Reduce capacity and network **investment costs**

Over next 10 years…



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Beta Phase Components

Modelling:

- Virtual Energy System Use Case
- Inherently statistical - perfect for modelling – and ESO has limited sight of this demand
- Tests interconnectedness and interoperability

Trialling:

- Data for the models
- Useful insights for the development of domestic flexibility
- How can maximum value be extracted from domestic flexibility?

Beta Model / Trial Relationship

Gaps in model will inform research questions in trial

Reliable <u>model</u> of domestic demand & flexibility

Two Models:
Domestic Demand
Domestic Flexibility

Large-scale <u>trials</u> of domestic flexibility

Two distinct trials:
Utilisations and
Availability payments

Results of trial will be used to train the model

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Find out more:

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