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
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...

- £740.6m avoided network reinforcement
- CO₂ emissions of 5.91MtCO₂eq saved
- £232.2m avoided balancing costs

[Virtual Energy System Powered by ESO]
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 model of domestic demand & flexibility

Two Models:
Domestic Demand
Domestic Flexibility

Large-scale trials of domestic flexibility

Two distinct trials:
Utilisations and Availability payments

Results of trial will be used to train the model
Find out more:


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