UK Government – Network Capacity Study

Customer	UK Government Department for Energy Security and Net Zero
Size of Project	£50k
Start date	June 2021
End date	March 2022

Background

The UK government has set a target of achieving net zero greenhouse gas emissions by 2050. Two significant aspects of this decarbonization strategy are the electrification of heating and transport (heat pumps and electric vehicles). Both of these will significantly increase electricity demand on our electricity networks.

EA Technology have recently completed a project for the UK Government to investigate lower cost innovative options for increasing capacity of the distribution network. The focus of this work being to find and evaluate alternatives to asset replacement that is able to meet the anticipated increase in electricity demand out to 2050.

Our Approach

EA Technology are actively working with the electricity networks in better understanding their existing and future capacity and the potential technologies or solutions available. One component of this is the Transform Model® which allows a techno-economic analysis of the various options available to network operators to ensure the grid has the capacity for the demands of the future in the most cost-effective way possible.

This project investigated a range of innovative solutions ranging from the use of existing network-assets, development of customer side energy storage and changes in design policies. This research was delivered through several stages:

- A comprehensive literature review of prior research and innovation projects
- Analysis and interpretation of demand profiles for the 2050 electricity grid
- Existing approaches to estimation of the LV network headroom
- Technical options for expansion of LV network capacity

Utilizing the findings from this literature review and analysis, the EA Technology Transform Model® was used to provide a quantified analysis of the different technical solutions available to understand which combinations of solutions would deliver the greatest benefit to energy consumers. This included highlighting the challenges around their deployment to ensure research and policy decisions could bring the greatest savings.

Client Benefits

EA Technology provided significant expertise in the area of network design, innovative technical solutions and impact analysis of their deployment. The project benefited from:

- Excellent inhouse understanding of the available solutions for extending network capacity.
- Experience of future energy scenario planning, including translating macro level scenarios to an understanding of load growth at the LV level.
- Understanding of network capacity assessment and justifying investment decisions in line with regulatory obligations.
- Experience of network modelling, changing customer demand and flexibility, as well as understanding of the costs of conventional network reinforcement.
- Thorough quality assurance procedures, developed through a long track-record of providing research

technology

Safer, Stronger, Smarter Networks

EA Technology LLC
400 Morris Ave
Suite 240
Denville NJ 07834 USA

(862) 261-2759
e sales@eatechnologyusa.com
www.eatechnology.com