

# Battery Storage

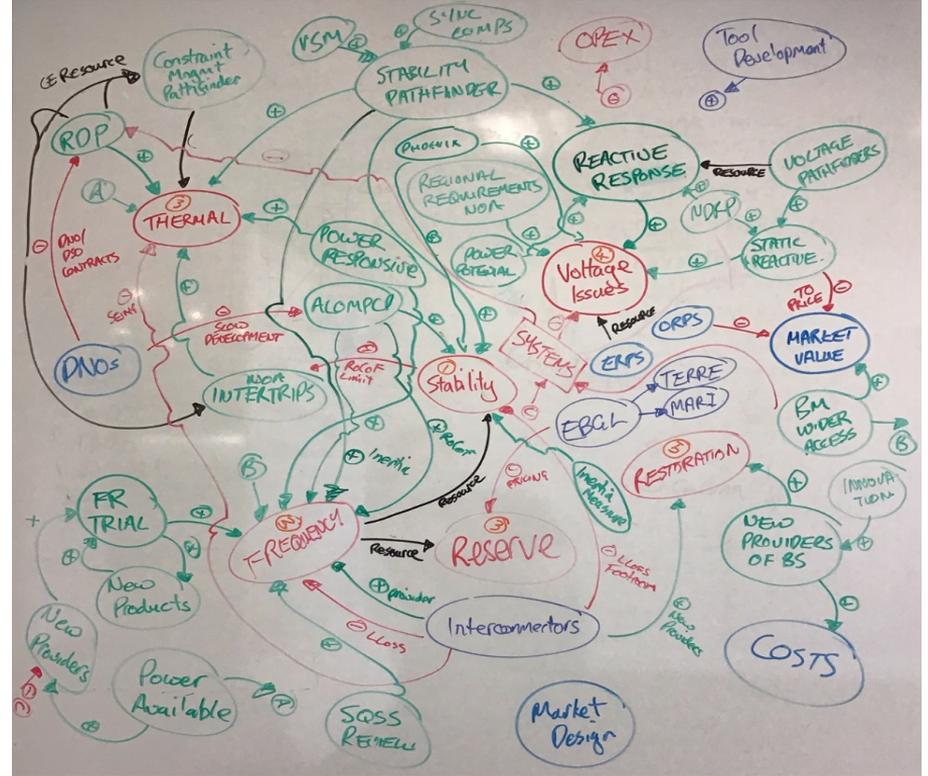
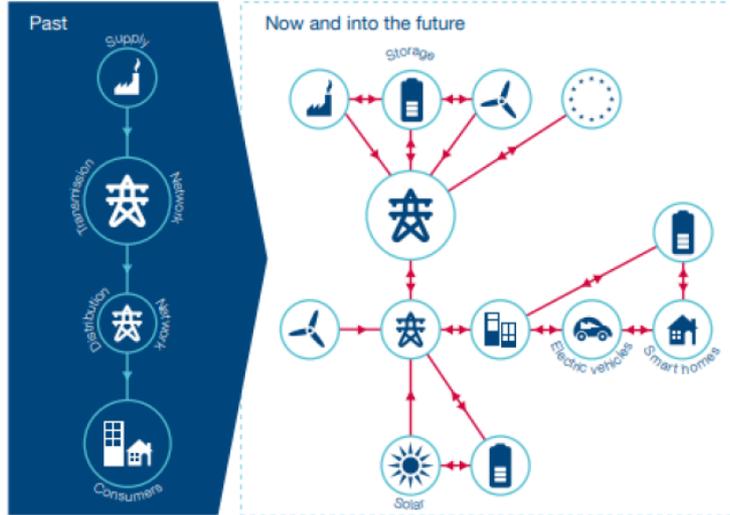
## National Grid Electricity System Operator (NGESO)

Oliver Garfield

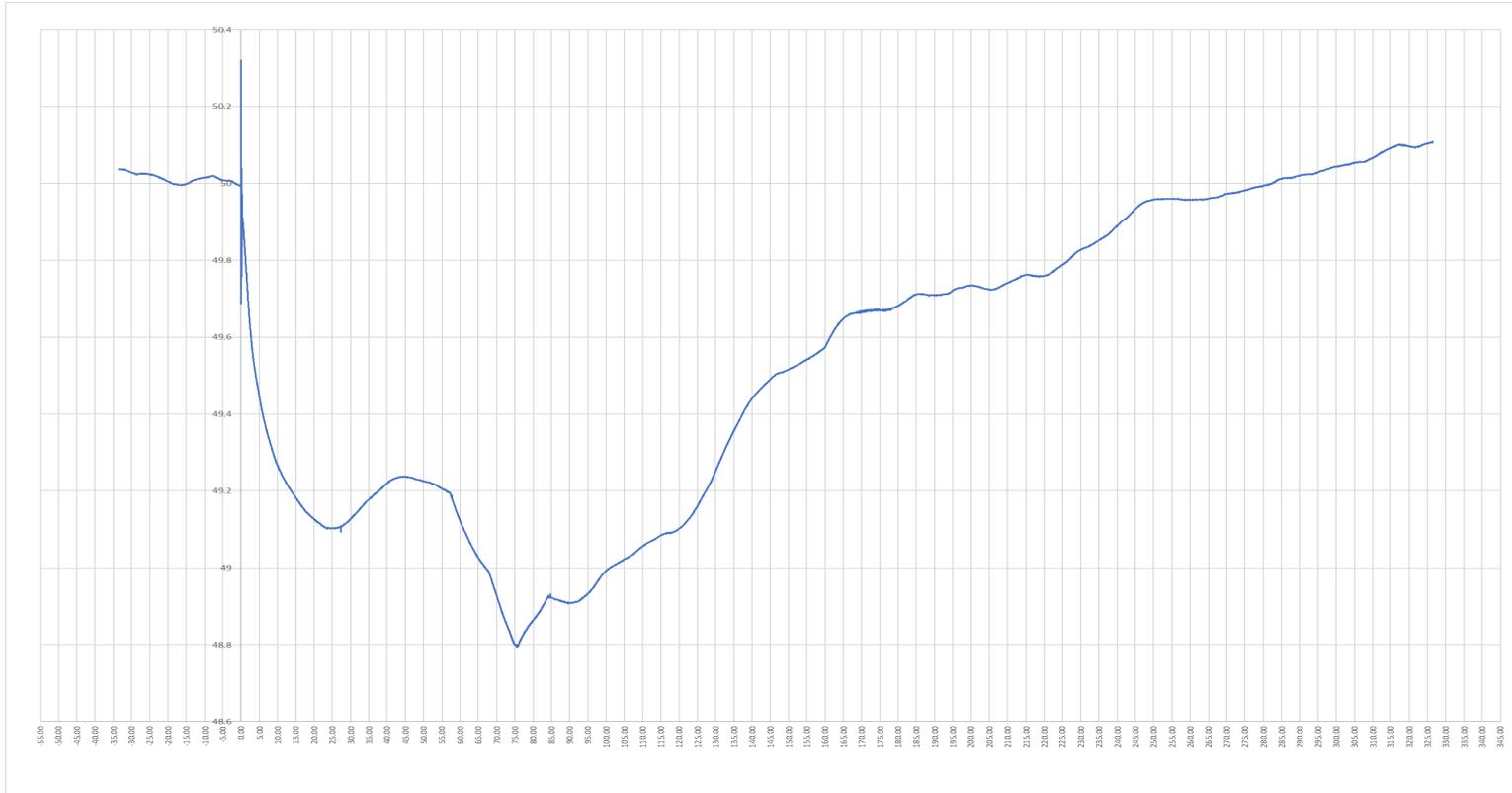
Richard Hanson

29<sup>th</sup> October 2019

# NGESO Vs Mainland Europe



# Frequency Deviations



# Zero Carbon Operation 2025

*NGESO ambition that, by 2025 we will have transformed the operation of the electricity system such that we can operate it safely and securely at zero carbon whenever there is sufficient renewable generation online and available to meet the total national load.*

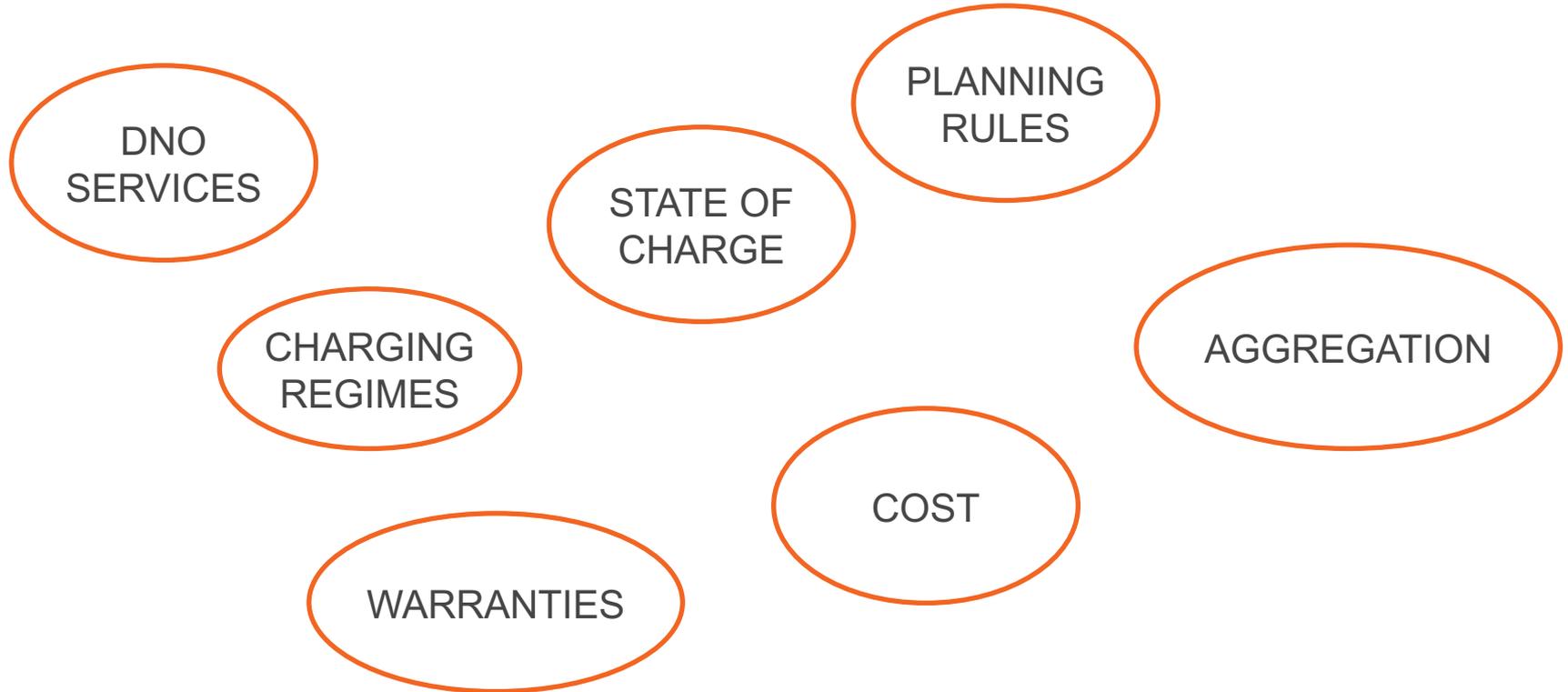
# Enhanced Frequency Response (EFR)

Summer 2016 – 201MW EFR tenders awarded to energy storage. £65.95m

Introduced energy storage assets into the Frequency Response Markets

Shaping our Future Frequency Response products.

# Storage Growth



# Real-time Operational Challenges

Management of State of Charge

Aggregated units (several assets operating as one larger unit)

Accurate data submissions

# Thank you

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A photograph of high-voltage electrical equipment, including insulators and cables, set against a bright yellow background. The equipment consists of several vertical insulator strings with metal components and cables connected to them. The background is a solid, vibrant yellow.

nationalgridESO