Innovation Basecamp 2026

4th February 2026 – Park Plaza, London

Energy Innovation Basecamp

EIP163 – How can we advance the development of real-time load flow solvers to power the electricity grids of the future

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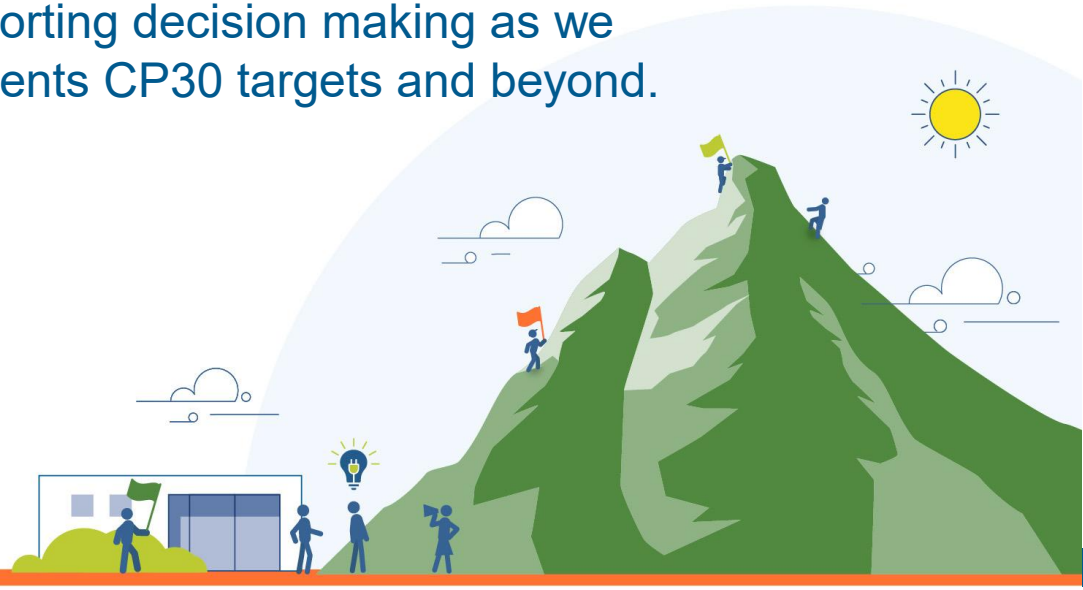
Introduction

National Energy System Operator (NESO)

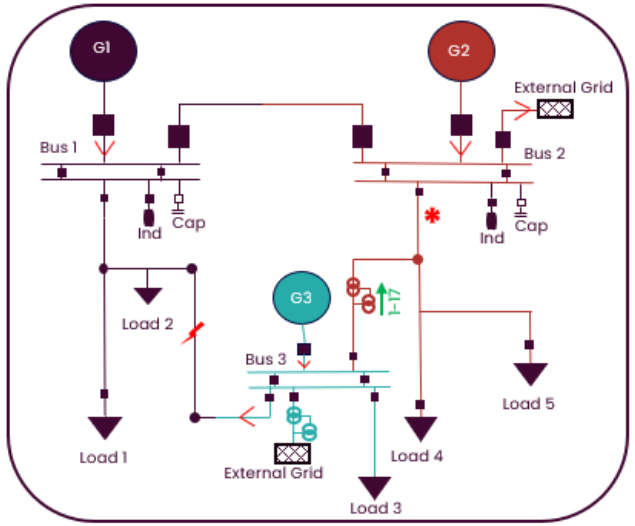
- NESO is responsible for planning and delivering the energy of today and the future.
- We operates the GB electricity system and have a gas planning role.
- Within this, the Network Control Programme is working to enhance the Electricity National Control Centre (ENCC) situational awareness tooling, supporting decision making as we transition towards a zero-carbon grid meeting the Governments CP30 targets and beyond.



Background Information

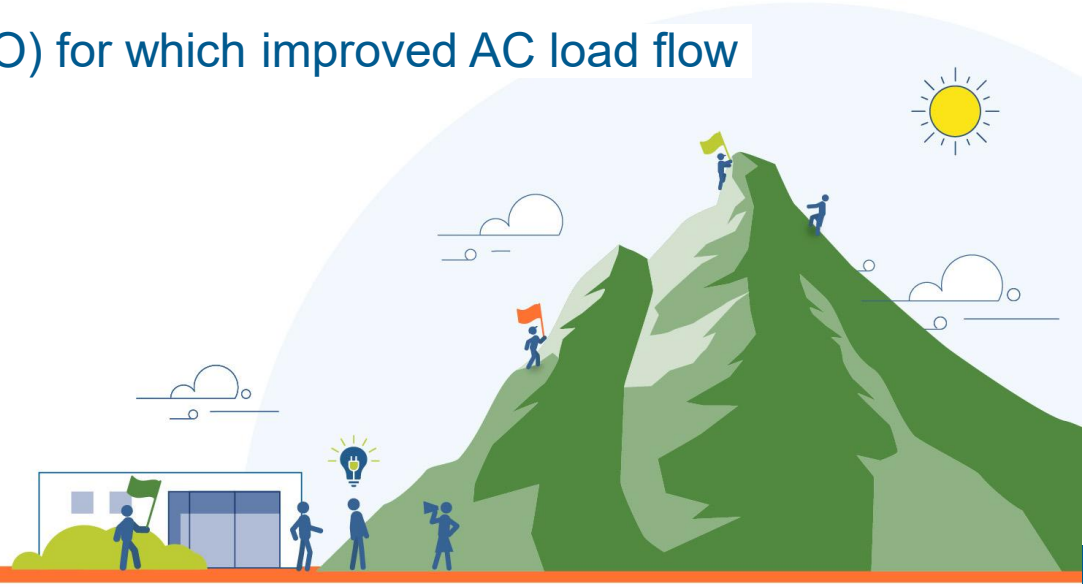
- Changing generation profile increasing grid congestion, increasing balancing costs
- Fluctuating generation and demand requires additional scenarios to be modelled

- Reliably routing power around congested asset requires topology switching.
- Operators reconfigure to manage challenges based on experience and knowledge.
- Analysis of large number of options in near real-time is limited by complexity of power flow analysis



What are the Problems?

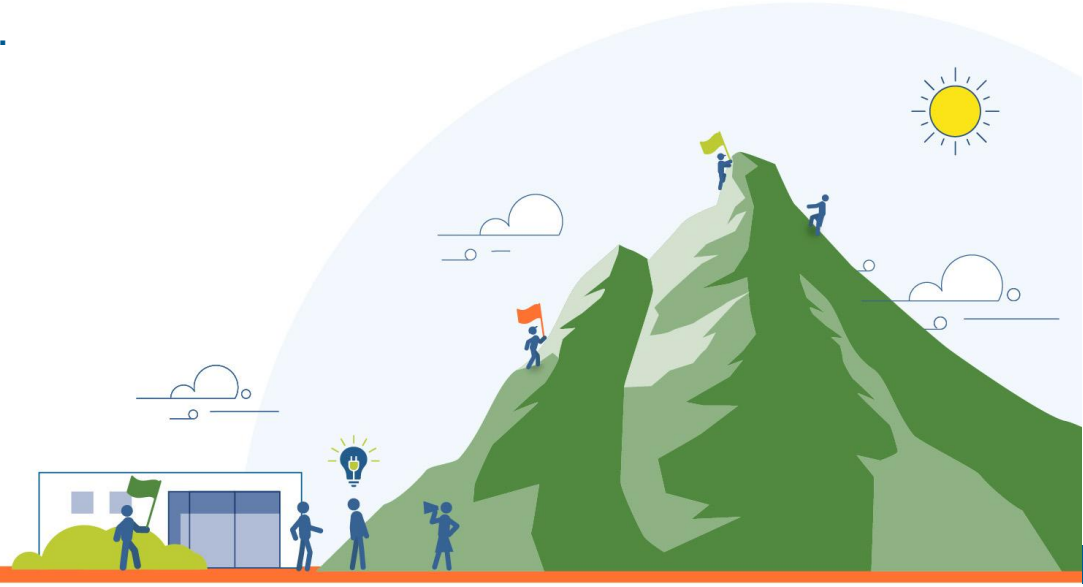
- DC solvers are current used with AC post-validation to alleviate thermal constraints.
- This does not allow for optimisation of voltage or stability issues.
- Increasing demand and generation fluctuation mean more scenarios need to be analysed to ensure the GB electricity system is secure
- While DC load solvers are quick, future analysis requires fast AC analysis tools
- NESO wants to automate network topology optimisation (NTO) for which improved AC load flow solvers will be critical.



Our Expectations

What are we looking for?

- We are looking for new methods and techniques to improve the speed in which AC load flow solvers can function.
- Solution must have potential to work with network planning tools (e.g. Powerfactory), either in their existing format, or through future development to those tools.
- Solution could work with SCADA Power Analysis tools
- Can be delivered either as research, or as a tested product.



IMPORTANT

It is important for all innovators to note that we are looking for plans rather than just ideas as solutions.

Key Contacts:

- **For further information / Clarity:**
- This builds on the NIA funded report into Network Topology Optimisation (NIA2_NESO087) which highlights the speed of AC Load Flow Solvers as a key area to advance in order to achieve automation of Network Topology Optimisation.
- Please email innovation@neso.energy if you require further clarifications including Basecamp - EIP163 in the subject line

- **ANY QUESTIONS?**

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