



System Operability Framework

Pre-Assessment Webinar, May 2016



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Industry Changes in 2016

10GW of solar PV installed in the UK

Impact of EU energy efficiency measures

New enhanced frequency response

Demand side response and turn up

Coal plant closure by 2025

Developments in storage technology



Planning in an Uncertain World

Electricity

Electricity and Gas



Network Options Assessment



Electricity Ten Year Statement



System Operability Framework



Summer Outlook



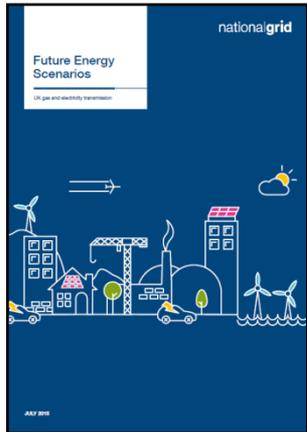
Winter Outlook

Gas

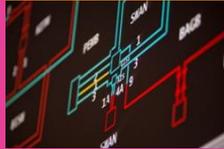


Gas Ten Year Statement

SOF and the Future of Energy



Operating Standards



A secure and operable system

- Maintain an operable system within frequency and voltage limits
- Minimise system constraints
- Facilitate the energy market

Operational Challenges



Future system operation

- Faster ramping and profile following
- Reductions in inertia and strength
- Frequency and voltage challenges
- Protection system event detection

System Requirements



Identify additional capability required

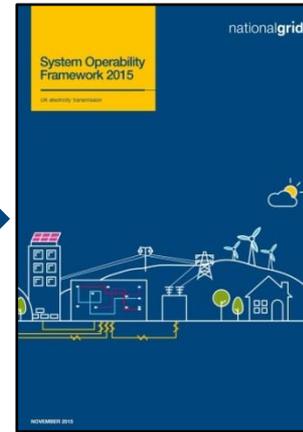
- Faster frequency response needed
- Dynamic voltage control required
- Coordinate across system boundaries
- New protection technical needs

Solutions and Opportunities

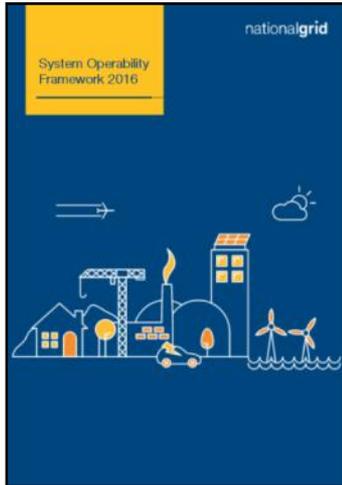


Operational tools of tomorrow

- Flexible and low load operation of plant and networks
- Opportunities for demand side Participation
- Enhanced system control capabilities



Feedback for SOF 2016



Easier to Understand

Key messages suitable for a non-technical audience

Robust Technical Analysis

Quality assessments with regional and probabilistic elements

Options Appraisal and Solutions Identification

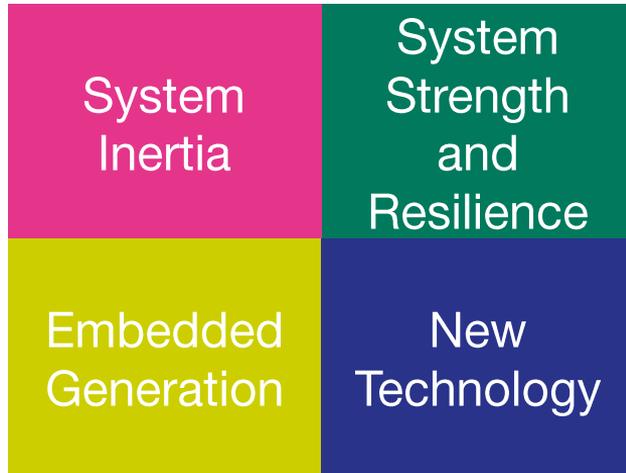
Identification of cost effective solutions with commercial insight



Assessment Topics

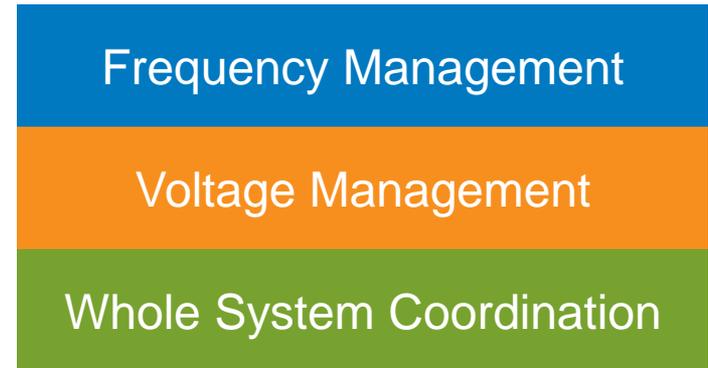
SOF 2015

System Properties?



Drivers/Solutions?

SOF 2016



- Normal Operation
- Post-Disturbance

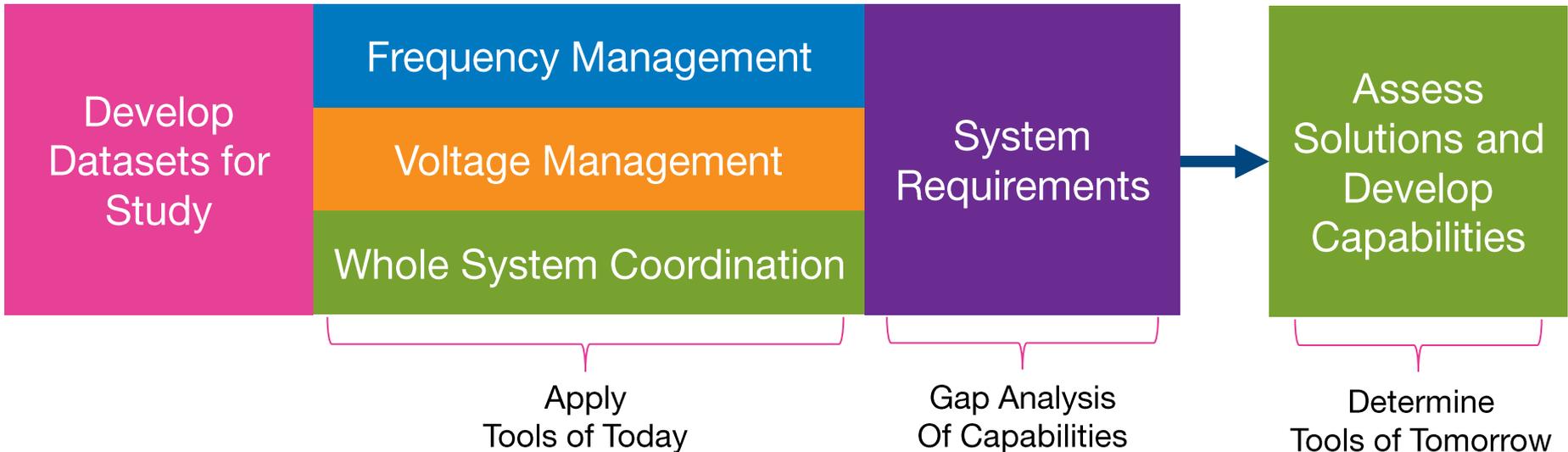
SOF 2016 Development

System Operability Framework

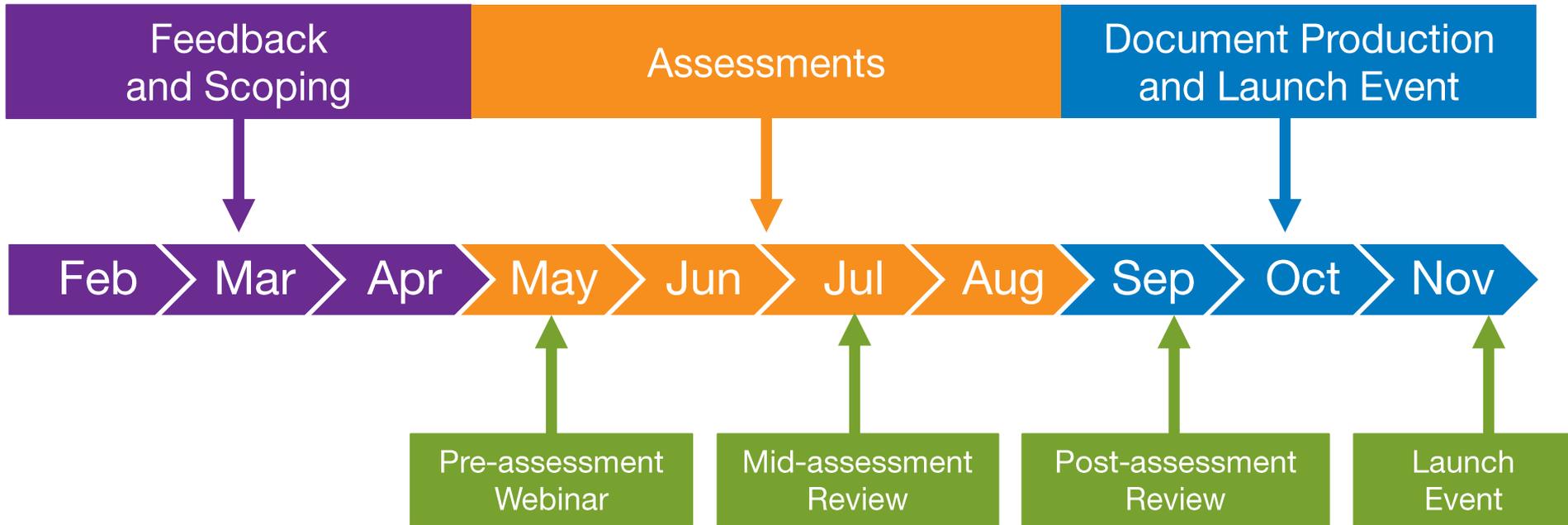
November 2016

Options Appraisal

Spring/Summer 2017



SOF 2016 Timeline



Continuing the Conversation

Thank you for listening.

If you have any further questions about our approach please submit them via chat and we will stay on the line to answer them.

This webinar and future material relating to SOF 2016 will be made available on our website:

www.nationalgrid.com/sof

Contact us via email: sof@nationalgrid.com

