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- The Webinar will start shortly
- Please make sure your microphone is muted and your camera is turned off
- Please submit any questions by going to <http://sli.do> and using the code at the top of each slide
- **Please note the webinar will be recorded**

Future of Reactive Power  
31<sup>st</sup> March 15:00 – 16:00

# Housekeeping

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We are using Sli.do for our Q&A session

- Please navigate to [www.slido.com](http://www.slido.com) and use the event code #FoRP at the top of each slide.

# Purpose of this Webinar

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- Introduce high level objectives, scope and plan for the Future of Reactive Power work
- Explain the key aspects to be covered in the scope of work
- Explain the industry engagement approach
- Introduce the plan for a market survey as the first step of market analysis
- Set out our next steps.
- Q&A session

# Agenda

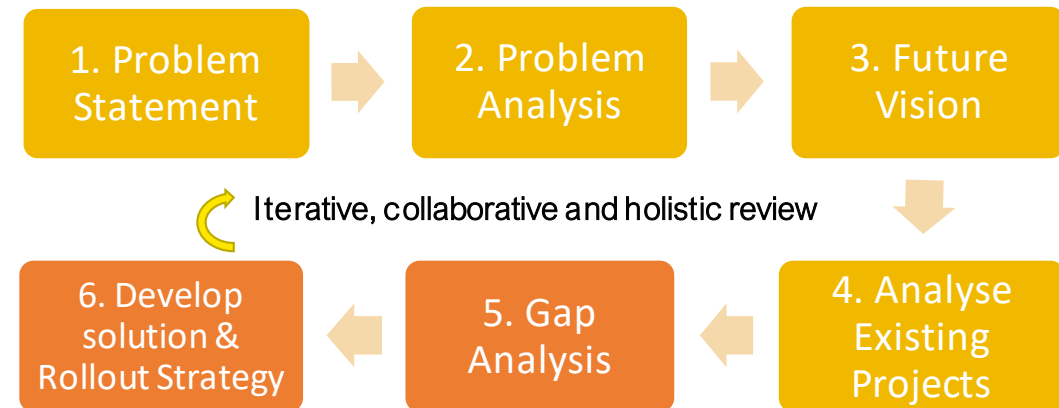
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	Presenter	Time
Key objectives, output, high level scope and plan	Yuting Dai	1500-1510
Focus Area – Operability need	David Gregory	1510-1515
Focus Area – Market access and viability	Eleanor Horn	1515-1520
Focus Area – Procurement strategy	Eleanor Horn	1520-1525
Focus area - Whole system and scalability	Jon McDonald	1525-1530
Engagement approach and Survey plan	Yingyi Wang	1530-1535
Question and Answer Session	All	1535-1600
Summary	Yuting Dai	1600

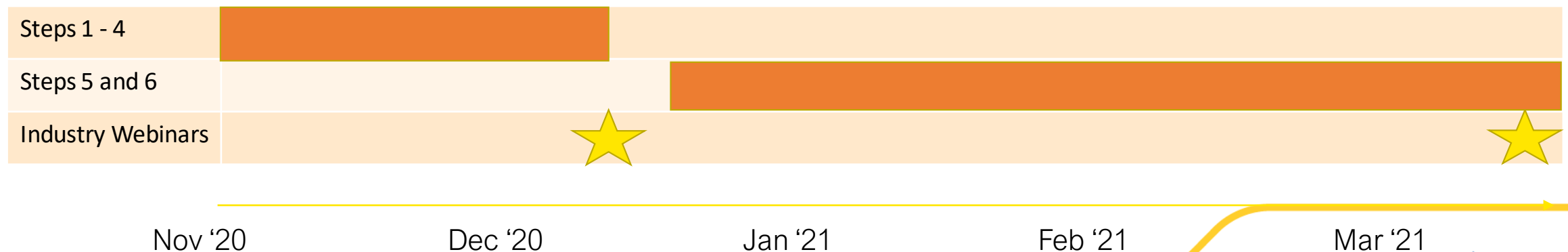
# The Future of Reactive Power work so far...

The Future of Reactive work takes a holistic approach to reviewing the ESO's Reactive Power services.

Since the webinar in December 2020 we have been working on Steps 5 and 6 to develop the scope of work for the remainder of 2021.



## Timeline of the Project so far



# Recapping the Identified Problems explained in the webinar (Dec 2020)

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## Problem 1: System Operability

Controlling voltage on the NETS (both “Dynamic” and “Static”) is becoming more challenging; there is an increasing risk to the ESO of breaching SQSS voltage compliance limits, now and in the future.

## Problem 2: Voltage Costs

Spend on voltage services has increased over the past few years and there is a risk it continues to increase in the future.

## Problem 3: Achieve ESO Ambition

The ESO has ambitions to deliver Competition Everywhere, Zero-Carbon System Operation and Whole Systems Outcomes by 2025, we need our reactive power strategy to align with those ambitions

# Key Objectives

The Future of Reactive Power work will explore potential solutions which could enable the ESO to meet the following objectives.

**A solution should enable us to:**

- Access **more reactive power (MVar)** in the right locations to maintain system voltage security
- Incentivise **more cost-effective solutions**
- Drive down the overall reactive cost to **maximise consumer benefits**
- Develop routes to procure reactive power from **more participants** to stimulate **greater competition**

# Our Focus Areas

Reactive power reform provides unique challenges. There is currently no competitive market mechanism for reactive power procurement and requirements are very locational so a need in one area cannot be met by an available provider in a different area. We want to design and explore a market based solution to test whether a market based solution could effectively meet future reactive power needs.

**Technical Analysis:**  
Identification of  
System Needs

**Market Analysis:**  
Market Readiness  
and Technical &  
Commercial Viability

**Commercial  
Analysis:**  
Procurement  
Strategy

Stakeholder Engagement & Co-creation with Industry

Whole Systems Approach

Scalability for different locations

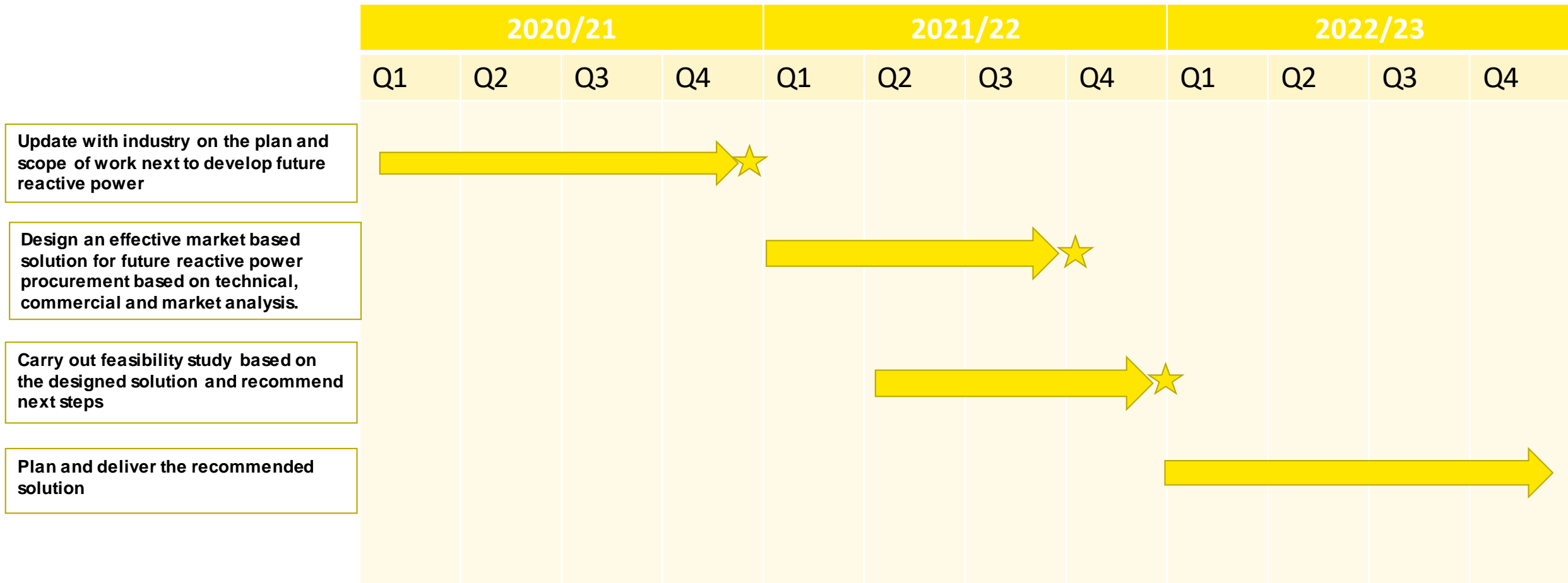
## Output:

1. A design of a proposed market based solution for reactive power procurement supported by technical, market and economic analysis.
2. A recommendation on how to proceed with the design of the market based solution and how it can be further progressed e.g. through a trial before implementation



# High level timeline plan

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**Note:** The deliverables and timelines are also depending on the output from analysis of market design and findings from existing strategic projects, to be regularly reviewed.

# Technical Analysis

## Identification of Operability Needs

The scope of work will aim to address the following areas:

- Requirement analysis will focus on reactive power only; whether and how to combine with inertia and Short Circuit Level (SCL) requirements will be explored through stability phase 3 project
- The requirement analysis will look at whether we should procure both static and dynamic reactive power, or just static
- The requirement analysis methodology will be developed to cover all locations
  - Current requirements analysis focuses on accessing reactive power from BM participants in specific areas/locations
- How the requirement analysis is coordinated with NOA analysis will be explored
  - Pathfinders are addressing long term system need
  - Market addresses short term day-to-day requirements (e.g., outages, demand variations, etc.)
- How requirement could be impacted by effectiveness from different locations

# Market Analysis

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## Market Readiness and Technical & Commercial Viability

The scope of this focus area will be to identify the answers for the questions below:

What is the potential size of the market?

MVAr capability:

- Asset location
- Voltage Level of Connection
- Technology Type
- Method of MVAr production (i.e. Statcom, SVC etc.)
- MVAr provision with/without MW
- Provision with/without SCL or inertia services

What are the technical routes to participation?

Technical Route:

**Blockers e.g.**

- Local network MVAr range restrictions.
- Potential conflicts of MVAr injection and absorption with your asset management.

**Enablers e.g.**

- Enhanced network data sharing

What are the commercial routes to participation?

Commercial Route:

**Blockers e.g.**

- Potential conflicts of reactive power provision with day to day commercial optimisation.

**Enablers e.g.**

- Contractual arrangement for accessing market

# Commercial Analysis Procurement Strategy

The scope of work will aim to explore topics as below:

What is the optimal procurement balance between multi-year contracts and shorter term markets?

For different locations / areas, whether a standard approach or strategy could be applied or if any distinct procurement rules need to be considered?

What is the best price setting and payment mechanism to deliver deep, liquid and competitive markets?

What are the potential interactions between a new reactive power procurement route and existing obligations/reactive power procurement routes (e.g. ORPS)?



# Scalability and whole system approach

## Challenges

- Reactive power requirements are locational
- Some areas have very few providers so limited/no liquidity
- Ability for distribution connections to provide reactive services differs between DNOs
- Dynamic vs Static provision
- Network boundary transfers

## Considerations

- Will the market design or solutions be developed for one location be used for all locations?
- Is there a Stability requirement and do we procure both services together?
- Different competition level and market readiness
- Explore what restrictions or issues need to be resolved with DNOs to enable distribution connections to participate
- Work with DNOs to further explore options to manage network boundary transfers



# Market Survey

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## Purpose

- Explore the potential market size and market readiness
- Identify blockers and enablers of technical and commercial routes

## Content

[Qualtrics survey](#) which includes questions about:

- Experience with current reactive power procurement
- Voltage control assets information and technical capabilities
- Market Readiness and auction preference

## Plan

This survey will be sent via FoBS updates email and published on [ESO Future of Balancing Services webpage](#).

It will open for 4 weeks from 06/04/2021 to 04/05/2021.

Any queries, please contact: [.box.futureofbalancingservices@nationalgrideso.com](mailto:.box.futureofbalancingservices@nationalgrideso.com)

Responses summary and analysis will be shared with the whole market afterwards

# Summary

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## Thank you for your attendance and feedback

- Slido event is open until 9<sup>th</sup> April to receive any further questions and feedback
- FAQ documents will be published after webinar and updated in the future of balancing services webpage :  
<https://www.nationalgrideso.com/research-publications/future-balancing-services>
- We will share detailed communication plan once confirmed and the next engagement activities
- Please make efforts to respond to our [market survey](#) to be opening at **6<sup>th</sup> April**
- Any thoughts, suggestion or feedback, please contact us via your account manager, or via our Future of Balancing Services email address: [box.futureofbalancingservices@nationalgrideso.com](mailto:box.futureofbalancingservices@nationalgrideso.com)