IS Change Forum

30th April 2019

Poster Pack

The Park Plaza
Riverbank London

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Contents

1	RIIO-2 Strategy	4
2	Balancing Programme	6
3	ENC	10
4	API	17
5	Platform for Energy Forecasting	21
6	Platform for Ancillary Services	27

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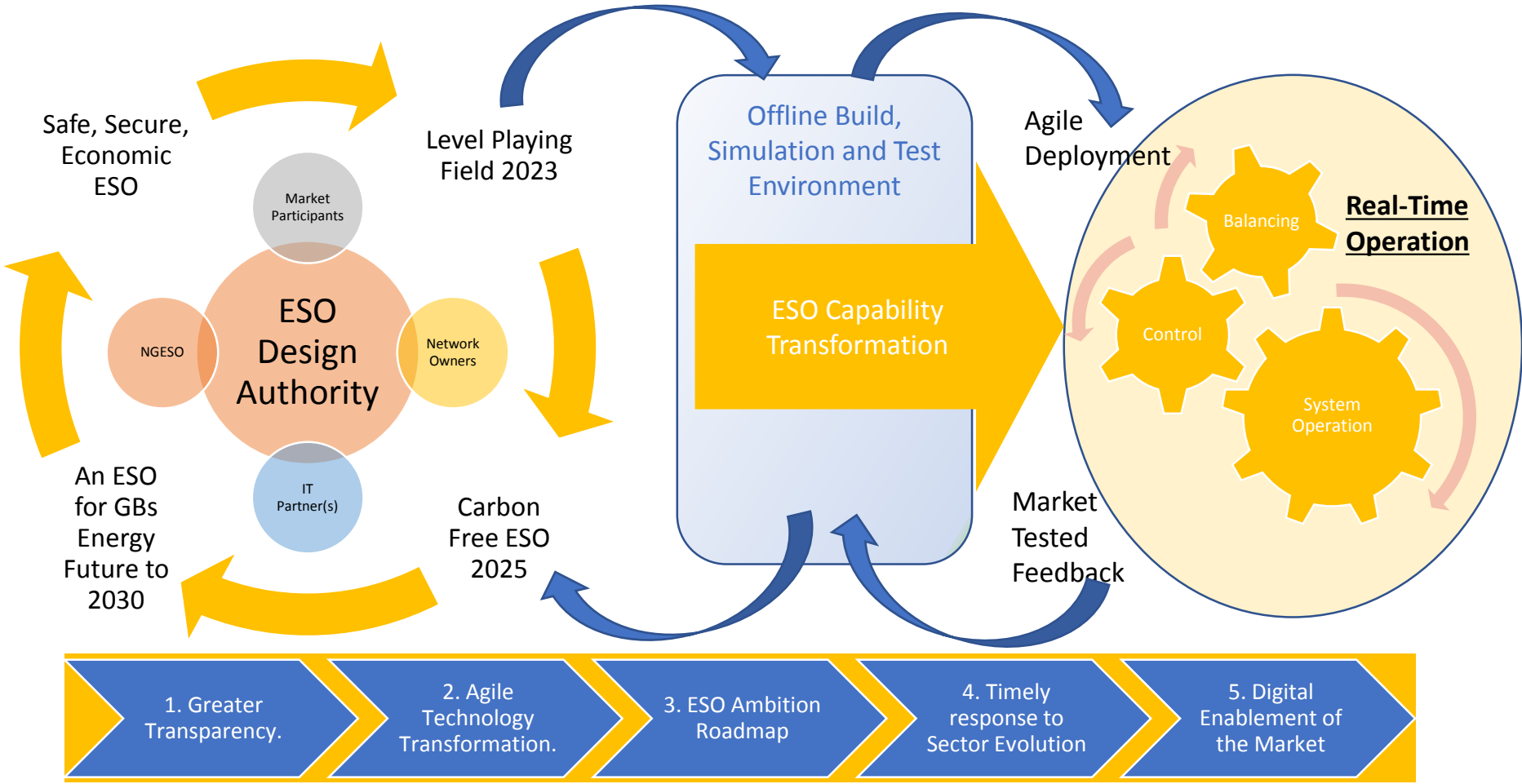
2	Balancing Programme	6
3	ENC	10
4	API	17
5	Platform for Energy Forecasting	21
6	Platform for Ancillary Services	27

Design Authority to Production



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1	RIIO-2 Strategy	4
2	Balancing Programme	6
3	ENC	10
4	API	17
5	Platform for Energy Forecasting	21
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Updated

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BM Life Extension Project

What we are doing:

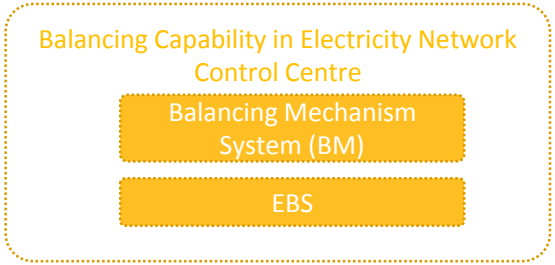
The existing hardware is at end of life

1st phase to enable future development

Minimal disruption to market participant

What we require from Market Participants:

Support in verification of connectivity to your systems



Hardware refresh required - identified though routine asset health maintenance

No visible changes for users or external parties

No changes to how BM interacts with other systems

Completed	Required work
New production configuration (ip addresses) communicated and tested with market	Verification through checking EDT /EDL continued operations

EDT / EDL Connectivity Checks Required

We need each EDT market participant to perform the following test:

1. Make a FTP connection from your production system(s) to the first IP address - using the supplied login details (these will be provided in a subsequent communication)
2. FTP a text file containing your company name, name of system sending the file, date and time of test. You will need to do this for all production systems
3. Repeat steps 1 and 2 for the second IP address
4. Once testing completed, please advise NGESO

NGESO has allocated a window from Wednesday 20 March until Friday 26 April 2019 for these tests to be conducted, but please consider conducting these earlier rather than later within the test window. This is to ensure that any failures can be investigated by your technical teams, corrected and retested before the 26th April deadline.

NGESO will be undertaking EDL connectivity checks during planned BM EDL outage windows from these alternate IP addresses. During these windows, NG will attempt to connect /disconnect to all EDL clients. Participants are not expected to do anything except to allow this connection to occur.

The EDL test windows are proposed as follows. During these periods, EDL connectivity will be disabled from the current production BM system
Thu 11th April 2019 – Checks with Primary System
Thu 25th April 2019 – Checks with Secondary System (during the planned BM outage)
Thu 9th May 2019 – Contingency Final verification window only

In between the above test windows, NGESO will plan to work with you to resolve any issues discovered.

EBS Update

- EBS is being used as a part of a hybrid set of balancing systems within Control. It provides the plan schedule for a period 8 hours before real time
- NGESO have reached a contractual agreement with our supplier and EBS will remain a part of the Balancing Capability for the coming years
- EBS will be updated alongside BM to meet the needs of the Wider Access and TERRE requirements. This will be delivered as a combined solution
- To support the operating model required to deliver TERRE and Wider Access, EBS will move to scheduling up to four hours before real time
- NGESO have set up a Future Balancing Programme to address the emerging regulatory changes (MARI etc) and to determine appropriate tools, capabilities and operating model to support the increasing level of market driven change.

Contents

1	RIIO-2 Strategy	4
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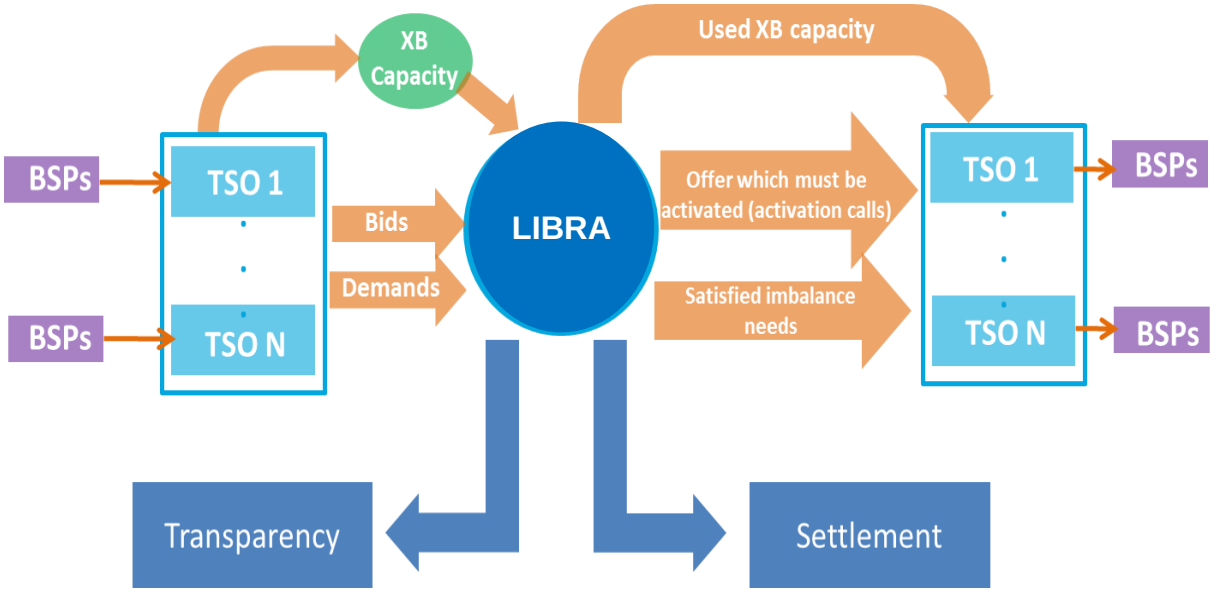
Pan- EU Balancing Platform: LIBRA

- *Exchange of RR Product*
- *Developed by Project TERRE*



- **TSO-TSO Model-** BSPs participate via their TSO
- **Marginal Pricing (pay- as-clear)** – One price (unless borders are congested)
- **Replacement Reserve Product**
  - Scheduled Activation
  - 30min Full Activation Time
  - 15min Blocks
- **One auction per hour –** 4 blocks cleared per auction

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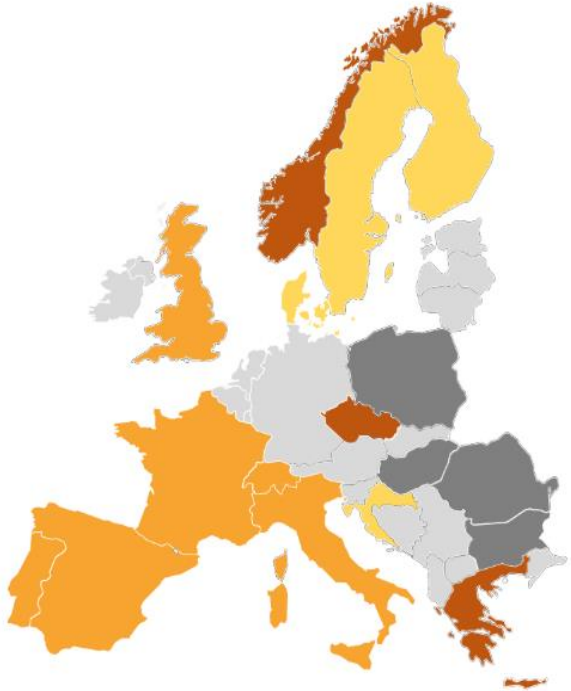
TERRE – Participating Countries



Full Members	Observers	Interest	Non-members
GB	Greece	Croatia	Bulgaria
France	Czech Republic	Denmark	Poland
Italy	Norway	Finland	Romania
Portugal		Sweden	
Spain			
Switzerland			

Hungary have withdrawn as a non member

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What does TERRE mean for GB?

For ESO

- New balancing auction (similar to Day Ahead arrangements), taking place after gate-closure
- additional process for submitting offers to TERRE in parallel with Balancing Mechanism processes.
- An additional tool to conduct coarse energy balancing actions etc using 15 min blocks of energy.
- Access to additional flexibility such as “non-BM” units and across borders for energy balancing.
- Estimated reduction in balancing costs of €13 million for GB

For Market Participants

- New international market for GB market participants to compete in. Increased liquidity and opportunities to offer flexibility.
- Opportunity to compete in two markets in parallel.
- Introduction of new pay-as-clear pricing approach in parallel with pay-as-bid BM arrangements
- Removal of barriers to entry for “non-BM participants” and small embedded generation sources.

Wider Access to the Balancing Mechanism (BM)

Removing barriers to participating in the Balancing Mechanism

Improving existing routes to market (Aggregation via supplier)

Creating new routes to market (Independent aggregation)

Improving systems and processes

Access via Virtual Lead Party (VLP)

- New type of Market Participant
- Will be able to create secondary BMUs for individual or aggregated units
- Solely for the provision of Balancing services to the SO

Role of ELEXON as BSC administrator

ELEXON provides essential energy market infrastructure

Code Administration

- Industry rules management
- Trusted critical friend
- Dedicated customer support /training

Code Operation

- 24/7 settlement
- Design/change implementation
- Assurance services
- Dedicated customer support/ training

Policy Delivery Support

- Impartial, expert advice/guidance
- Market scanning
- Providing support to deliver policy outcomes

We administer the Balancing and Settlement Code – rules governing the 'meter to bank' process, including imbalance prices calculation every half hour.

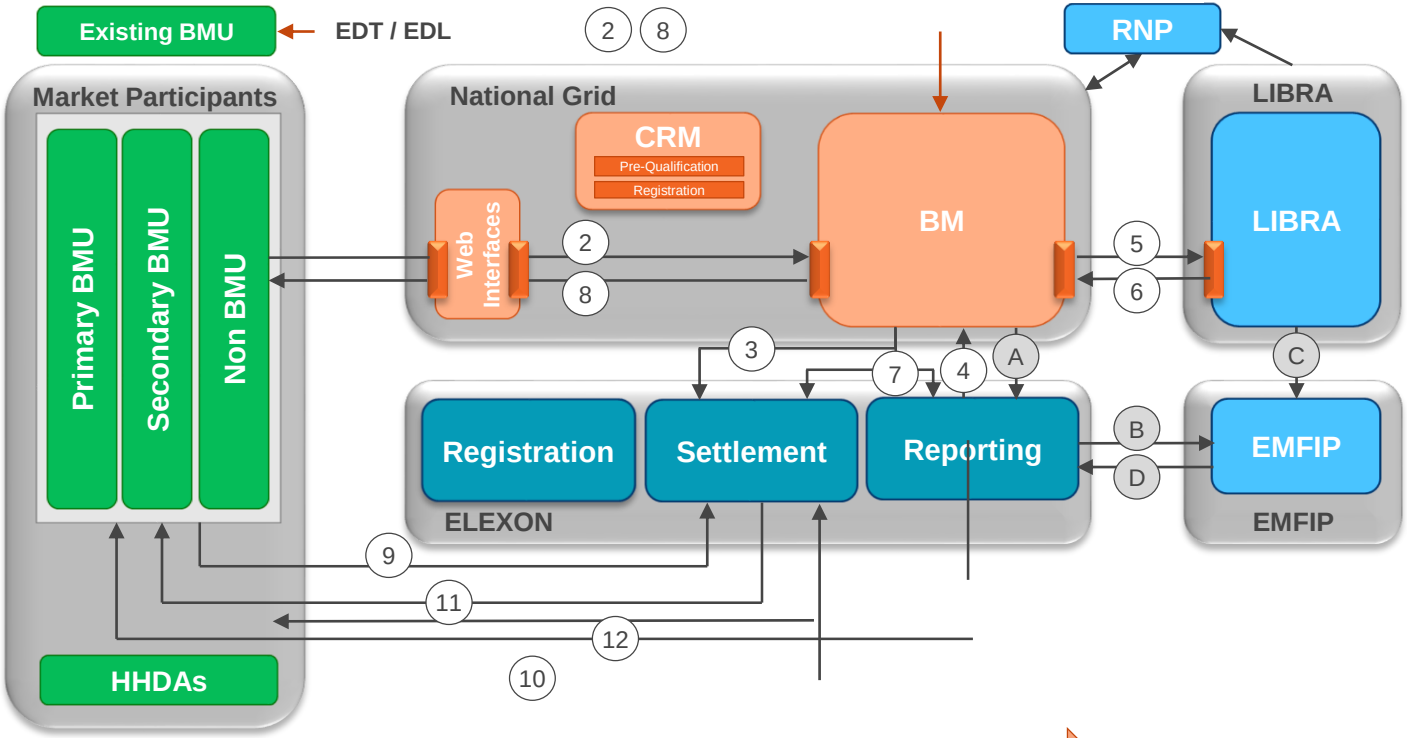
ELEXON – trusted, reliable independent market experts

We serve **462** market participants including:

We also calculate, collect & distribute payments to CfD generators and Capacity Market providers

E2E Market Testing (BMUs/NGESO/Libra/Elexon)

2. Bids > National Grid
3. Bids > ELEXON
4. GBP > EUR Rate
5. Bids > Libra
6. Auction Results > National Grid
7. Auction Results > ELEXON
8. Instructions > Mkt. Participants
9. Delivered Volumes > ELEXON
10. HH Metered Volumes > ELEXON
11. Metered Volumes > Mkt. Participants
12. Invoicing & Reporting



Market Connectivity Testing
2. Bids > National Grid
8. Instructions > Mkt. Participants
9. Delivered Volumes > ELEXON
10. HH Metered Volumes > ELEXON
11. Metered Volumes > Mkt. Participants

NG <> LIBRA Interoperability Testing
5. Bids > LIBRA
6. Auction Results > NG

NG <> ELEXON Interface Testing
3. Bids > ELEXON
4. GBP > EUR Rate
7. Auction Results > ELEXON

NG <> EMFIP ETR Testing
A. National Grid > ELEXON (Specific)
B. ELEXON > EMFIP (Specific)
C. National Grid > ELEXON (Standard)
D. ELEXON > EMFIP (Standard)

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Wider Access to the Balancing Mechanism

A New Energy Scenario

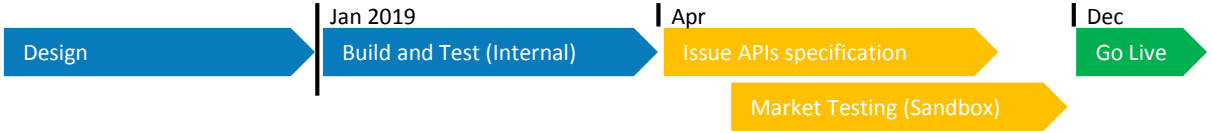
- A changing energy system - **increased renewables, greater decentralisation, new energy mix, emerging technologies**, brings new challenges in balancing the GB electricity system

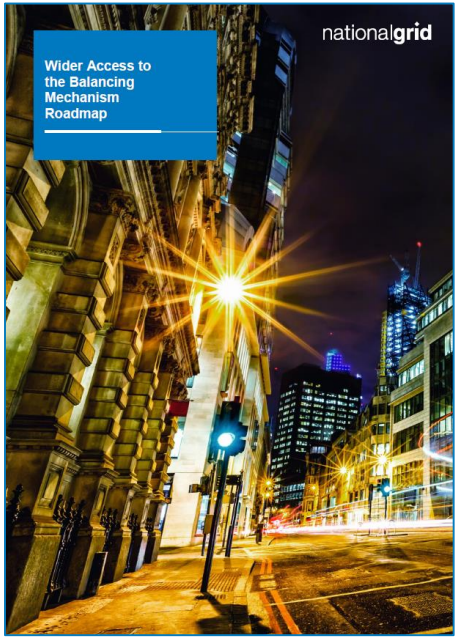
Enabling a Wider Access to the Balancing Mechanism

- NGESO has a key role to play in **facilitating the regulatory changes** by enabling the participation to the Balancing Mechanism entry for **small** and **aggregated units**:

1. **Improving existing routes to market**
2. **Creating new routes to market**
3. **Improving IT systems**

Delivery Timeline





Wider Access to the Balancing Mechanism Roadmap

* TERRE API and Metering is out of scope of the Wider Access Project

What? - High Level Solution Overview

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➢ How the IT systems will be improved?

- A **new set of API services** (Application Programming Interface) will be implemented to extend **EDT** (Electronic Data Transfer) and **EDL** (Electronic Dispatch Logging) through the Internet

➢ What NGESO and MPs will have to implement?

Owner	EDT	EDL	Health
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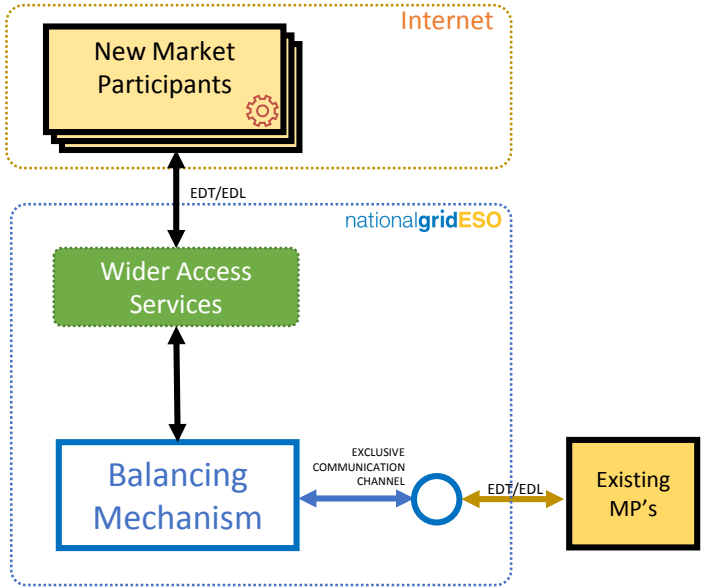
Market Participant	**1a**. ACK **1b.** Acc/Rej	**2a.** Ack/Acc/Rej of Redeclaration **3a.** NGESO Instruction	**5.** API's Health

(Ack - Acknowledgement, Acc – Acceptance; Rej – Rejection)

- (NGESO) A **set of interfaces** to **consume** the APIs exposed by new Market Participant
- (Market Participant) A **set of interfaces** to **consume** the APIs exposed by NGESO



How? - Market Participant Journey

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1 Prequalification[1]
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March [2]

MP's start the onboarding process - prequalification is fundamentally a self certification and initial check, before connection / testing

2 API Developer Portal
Apr

NGESO will share a user name and password with the MP to the API Developer Portal, please email: box.wideraccessapi@ to request access

3 Web Service Specification
SWAGGER
Apr

MP to understand the Swagger API Specification - detailing the REST APIs for EDT and EDL

4 NG Sandbox Connection
May

Market Testing **Phase 1:** MP will connect to their log in of the Sandbox environment, ready for testing

5 MP Front-End/API Dev
May

MP's to develop their front end and API's that connect into the NG infrastructure, according to the Swagger specification

6 NG API Platform Test
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Jul

Market Testing **Phase 2**: API Handshake (re-run a subset of SIT tests with testing mock-ups created for validation)

7 NG E2E and Reg Test
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Oct

Market Testing **Phase 3**: E2E integrated test and SOTS regression test (Type and BPIT tests)

8 API Consumption Go Live
Dec

Go-Live - MP consuming the API and start interacting with NGESO

[1] **Software providers** will not go though prequalification but will require alternative **Business validation**
[2] **All** dates are from **then onwards**

MP Independent Activity

NG Facilitated Activity

Contents

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3	ENC	10
4	API	17
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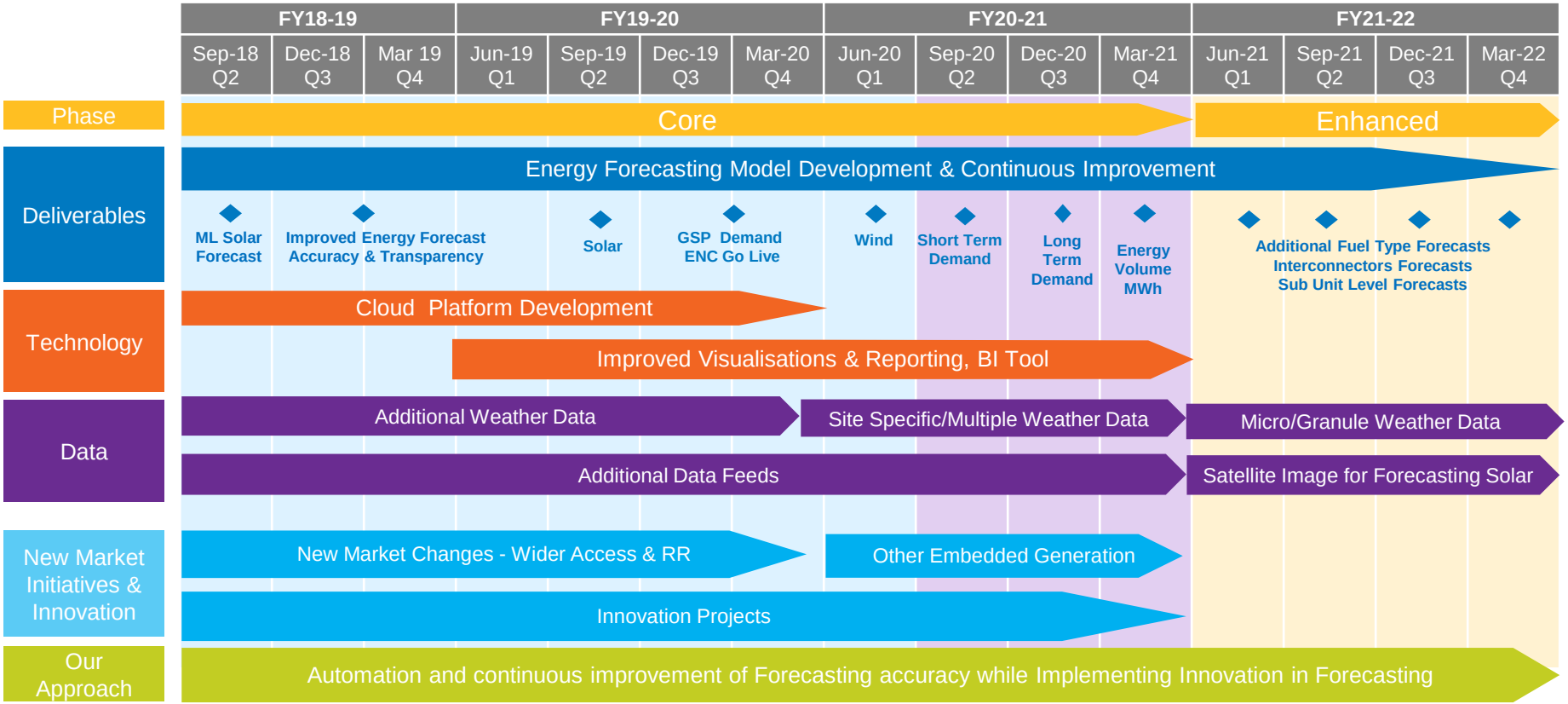
6	Platform for Ancillary Services	27

Energy Forecasting Strategic Project – Roadmap



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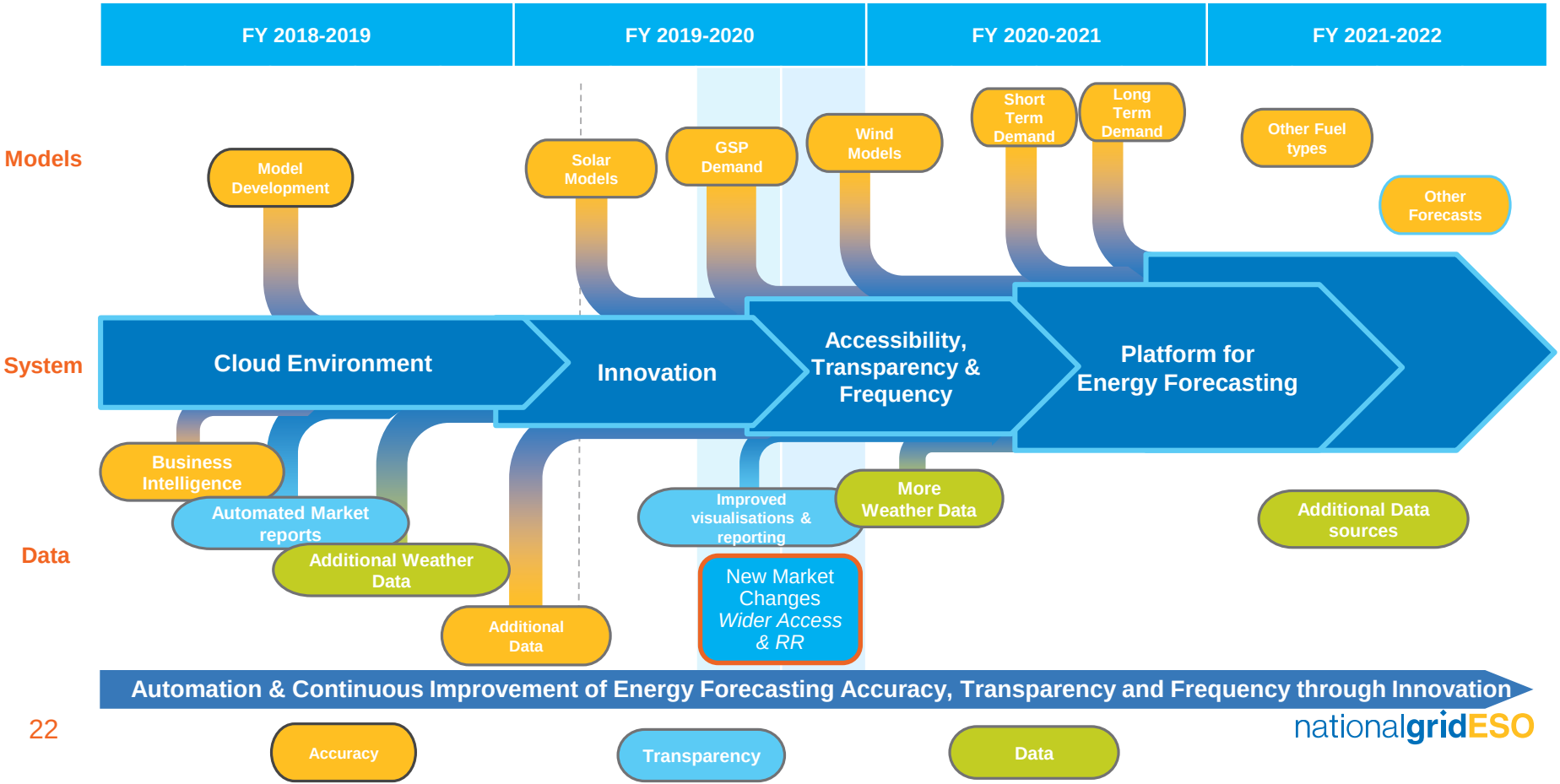
Platform for Energy Forecasting - Roadmap



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Energy Forecasting has delivered value to consumers

VALUE TO CONSUMERS

ACCURACY

Accurate forecasts will allow market participants to better adjust their generation/consumption positions ahead of real time.

FREQUENCY

More frequent forecasts will allow market participants to better adjust their positions closer to real time.

TRANSPARENCY

Easy to understand and more accessible forecasting data will lead to more efficient markets and potentially remove barriers to entry.

DELIVERABLES DURING 2018/19

- IMPROVED ON BOTH SO FORWARD PLAN FORECASTING METRICS TO DRIVE ACCURACY:
  - DA DEMAND **(9%)**
  - DA WIND BMU FORECASTS **(4%)**
- FIRST MACHINE LEARNING MODEL (PV FORECASTING)
- IMPROVED & INCREASED WEATHER FORECAST DATA
  ADDITIONAL DATA FEEDS – ELECTRALINK
- INITIATED THE ENERGY FORECASTING STRATEGY PROJECT TO DELIVER NEW FORECASTING CAPABILITIES AND SERVICES.
- MAKE ENERGY FORECASTS AND DEMAND DATA MORE ACCESSIBLE VIA A DEDICATED WEBSITE

Energy Forecasting has promised to deliver value to consumers

VALUE TO CONSUMERS

ACCURACY

Accurate forecasts will allow market participants to better adjust their generation/consumption positions ahead of real time.

FREQUENCY

More frequent forecasts will allow market participants to better adjust their positions closer to real time.

TRANSPARENCY

Easy to understand and more accessible forecasting data will lead to more efficient markets and potentially remove barriers to entry.

DELIVERABLES FOR 2019/20

- 2 METRICS TO DRIVE ACCURACY: DA DEMAND AND DA WIND BMU FORECASTS
- PUBLISH FORECASTING STRATEGY PROJECT ROADMAP
- PUBLISH HALF-HOURLY PHOTOVOLTAIC (PV) FORECASTS TO MARKET, 24 TIMES A DAY
- PUBLISH ADDITIONAL BMU WIND FORECASTS TO THE MARKET
- PUBLISH AN ADDITIONAL DAY-AHEAD DEMAND FORECAST UPDATE AT 12:00PM EVERY DAY
- MAKE ENERGY FORECASTS MORE ACCESSIBLE VIA A DEDICATED WEBSITE AND APPLICATIONS

We delivered on all promises made in the Forward Plan

Improve accuracy of our forecasts (1)

Mobilization of the Demand Forecast Modelling review

Deliverables

- Initiated the **Energy Forecasting Strategy Project** to deliver new forecasting capabilities and services.
- Project already delivered:
  - **PEF (Platform for energy forecasting**. First cloud platform to run forecasting models
  - **First machine learning** model (PV forecasting)
  - **Automation** of forecasting reports to the market

Improve accuracy of our forecasts (2)

Incremental improvements to our demand, wind and solar forecasts

Deliverables

- Positive step change in demand and wind **accuracy**
- **9%** improvement on DA demand accuracy
- 12% reduction in DA large demand forecasting errors
- **4%** improvement on Wind power forecast accuracy
- **33%** PV modelling error improvement with new ML model

Publications

Publication of wind generation and demand forecasts.

Deliverables

- **100%** publications went to market
- **99%** publications were on time
- Results achieved by implementing **Market publications automation**

Contents

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Platform for Ancillary Services - Roadmap

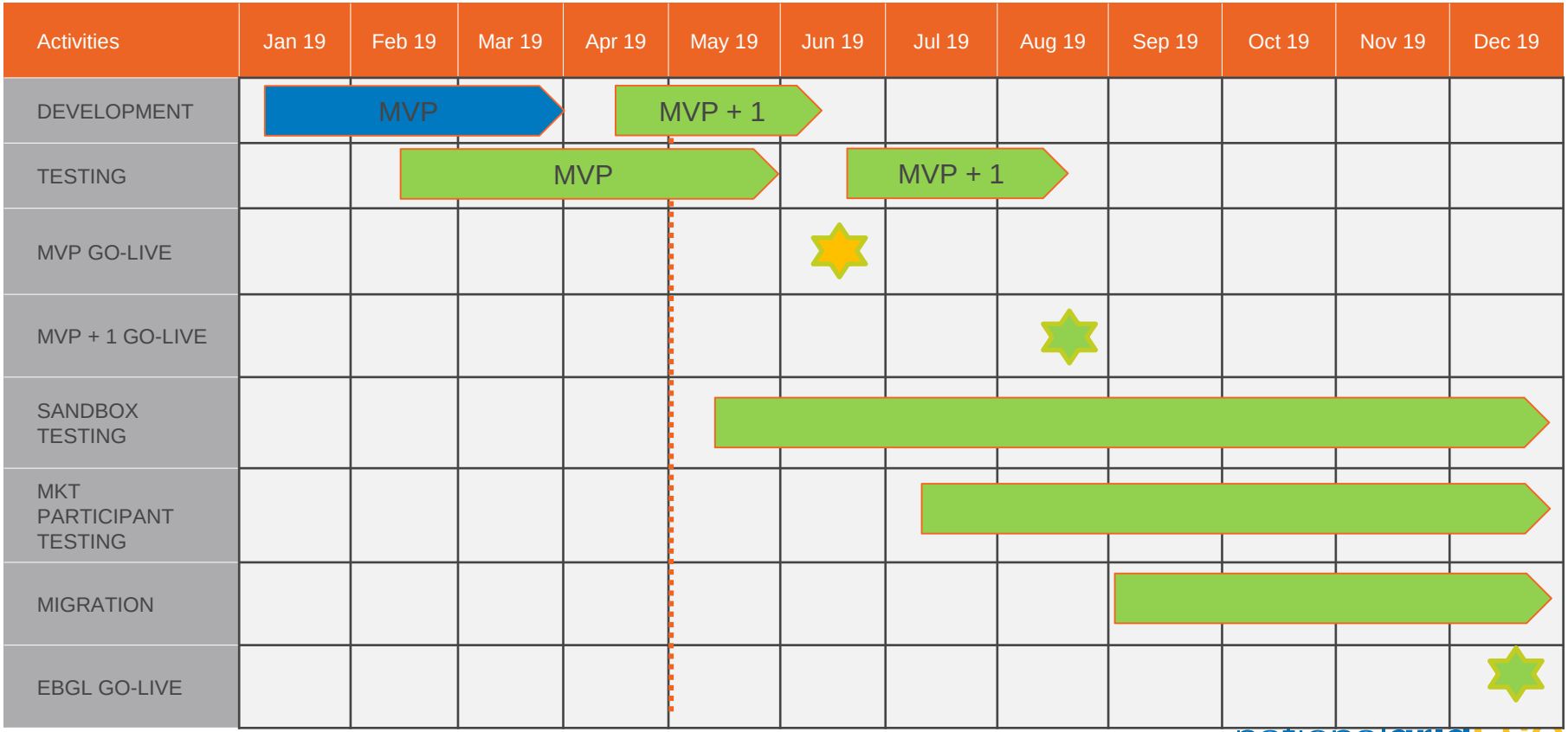
2019

Q2	Q3	Q4
	• Online Registration • Pre-Qualification • Tendering • Contract Award	• **EBGL** • Pre-Qualification • Transfers • Asset Mgmt • Optional Contracts • DNO Constraints
• PP – Reactive Power • NBM STOR MVP	• PP – Active Power • NBM STOR MVP + 1	• **EBGL** • Transfers • Asset Mgmt
		• STOR • Fast Reserve • Fast Frequency Response

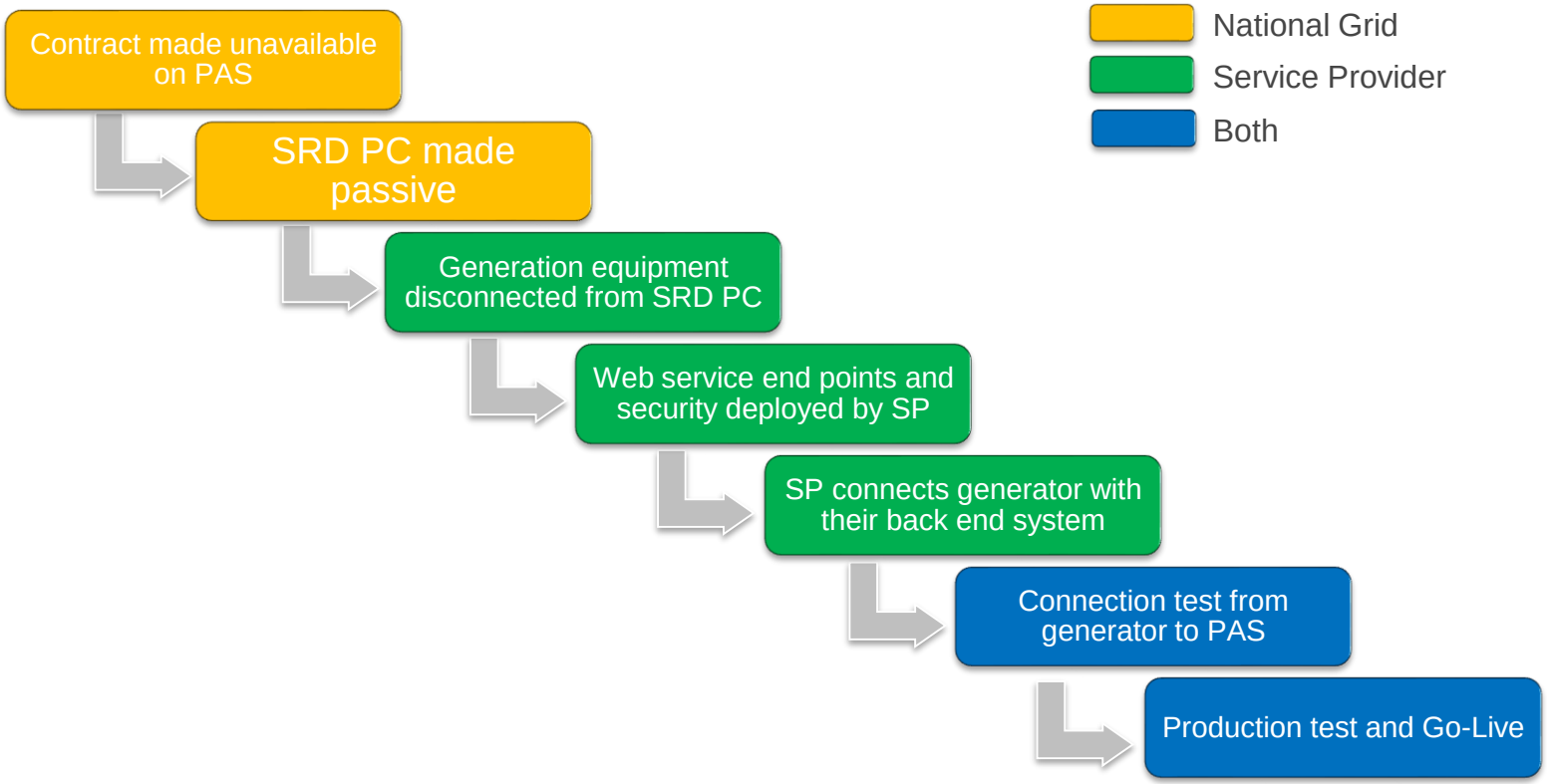
2020

Q1	Q2	Q3
• Declarations and Re-Declarations • Performance Dashboard	• P354 Compliant	
	• Service Flexibility • Demand Turn-up	
• Mandatory Frequency Response • Commercial Frequency Response	• Interconnector specific services • Default Reactive	• Pumped storage ancillary services • Black Start

STOR Implementation & Migration High Level Plan



STOR SRD Service Providers Migration to PAS Overview



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