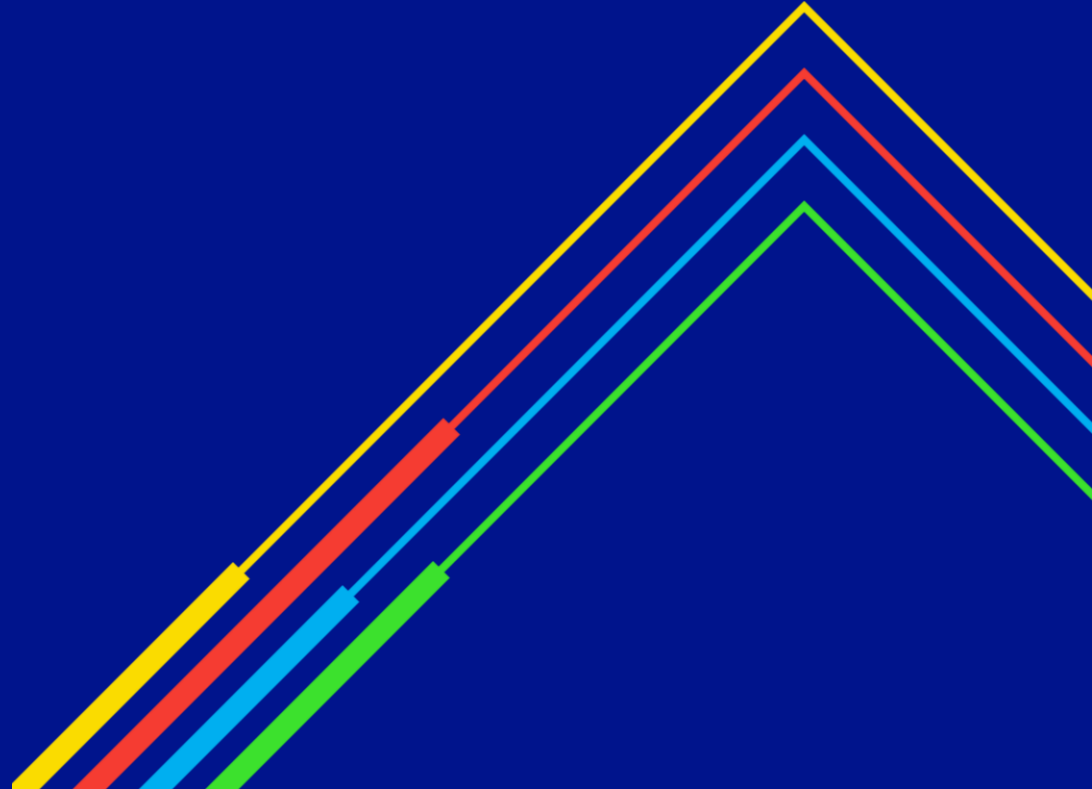


Annual Customer Forum- Brexit

London, UK

Tuesday 12th March 2019

nationalgrid
Interconnectors

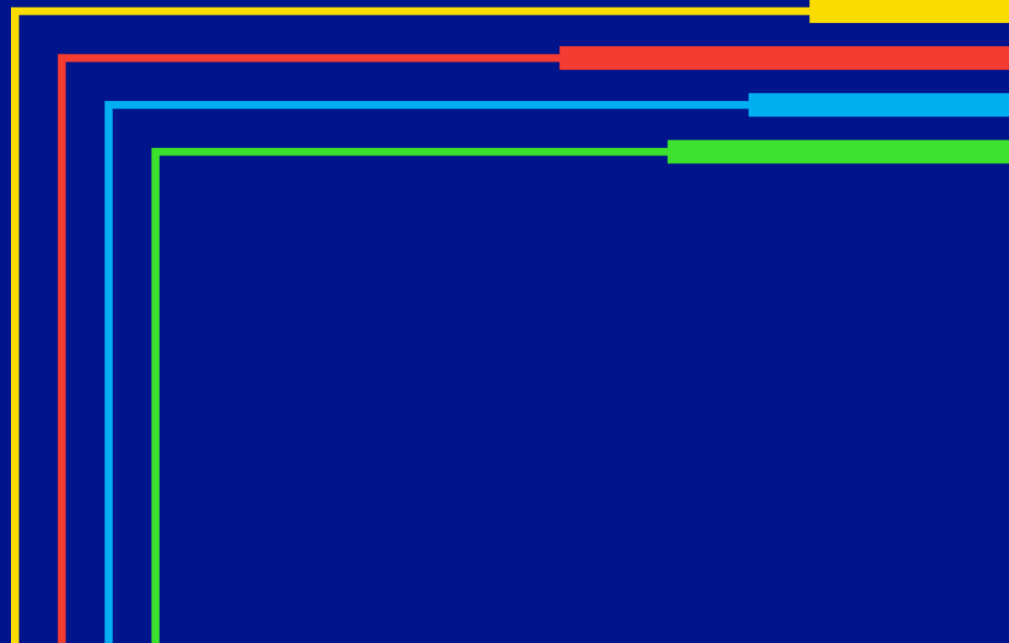


Agenda

Timings	Agenda items	Speakers
09:30 - 10:00	Welcome and Refreshments	
10:00 - 10:15	Introduction and confidence in the future	Asheya Patten
10:15 – 12:00	Brexit: <ul style="list-style-type: none"> What is not changing? (Mike Denny) Brexit (Mark Duffield) Brexit Access Rules Update (Vince Hammond) System Update (Dan Beaven) 	Mike Denny, Mark Duffield, Vince Hammond, Dan Beaven
12:00 – 12:45	LUNCH	
12:45 – 13:15	<ul style="list-style-type: none"> Customer Impact - what do you need to do? 	Mike Denny
13:15 – 13:45	<ul style="list-style-type: none"> Migration to RNP/JAO 	Anthony Eng
13:45 – 14:15	BREAK	
14.15 - 14:45	<ul style="list-style-type: none"> Nemo link update (Nick Pittarello) IFA2 (Diane Green) 	Nick Pittarello, Diane Green
14:45 – 15:00	<ul style="list-style-type: none"> Closing Remarks and summary Q&A 	Asheya Patten
15:00 onwards	Networking drinks and refreshments	

Introduction and confidence in the future

Asheya Patten



Key











IFA Interconnector

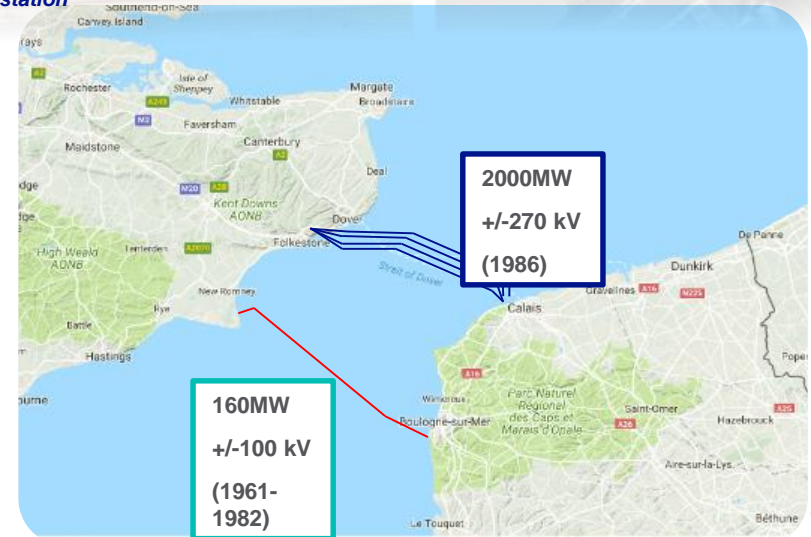
- Refurbishment completed in parallel with RTE – carrying out similar refurbishment works with aligned availability and extended lifetime aims
- Improved availability bringing it us line with current technology interconnectors
- Systems and assets being upgraded in parallel – providing an overall improved user experience



Sellindge IFA Substation

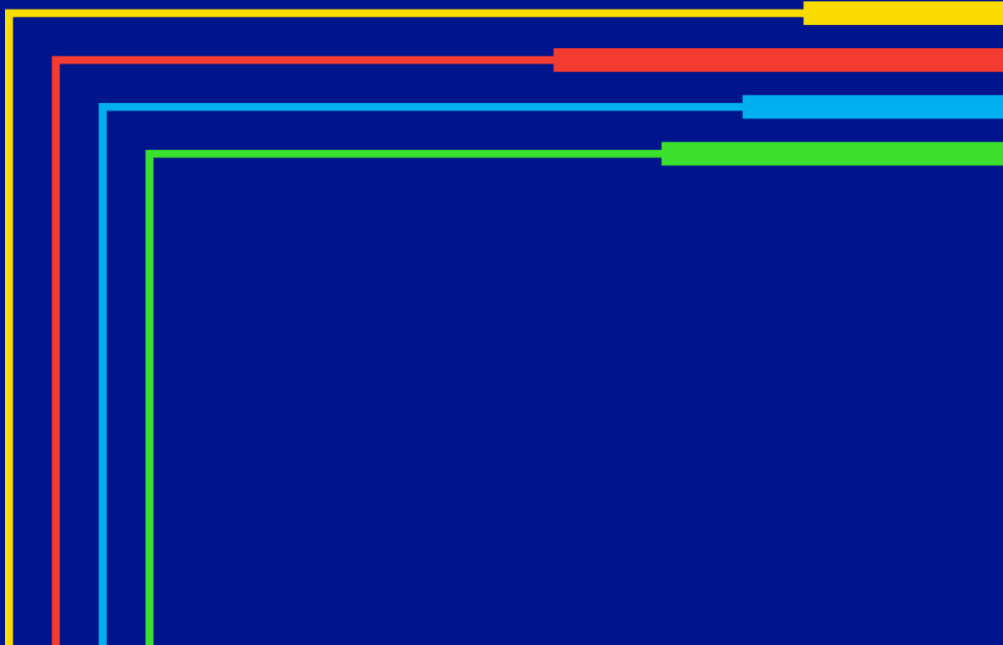


Les Mandarins IFA Substation



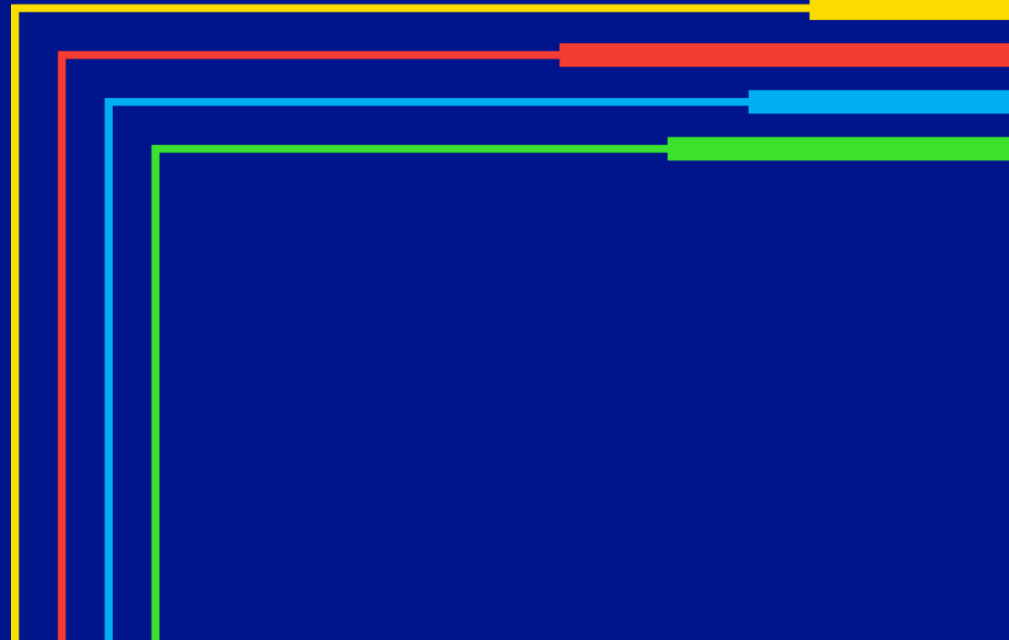
Brexit

Mike Denny, Mark Duffield,
Vince Hammond, Dan Beaven



What is not changing?

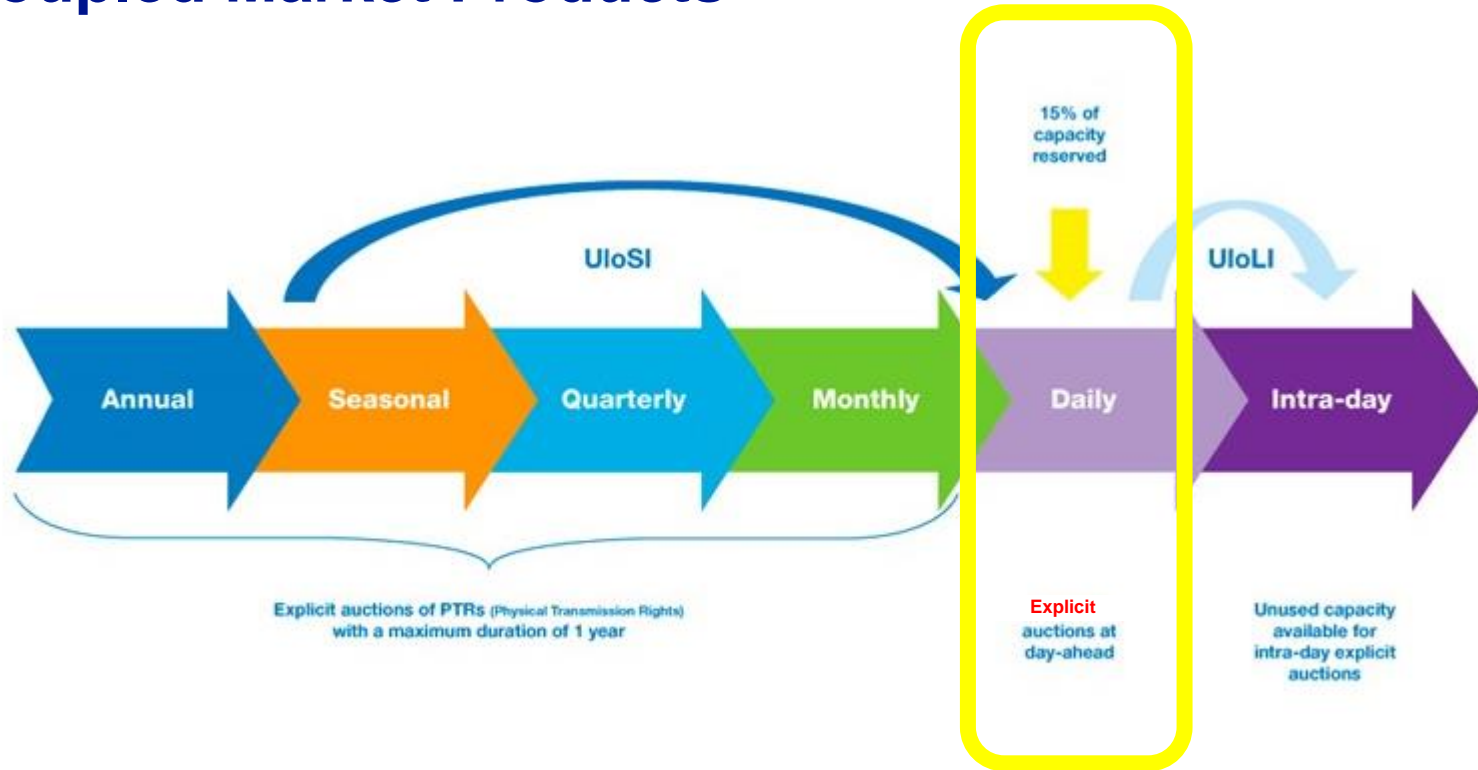
Mike Denny



Current Products



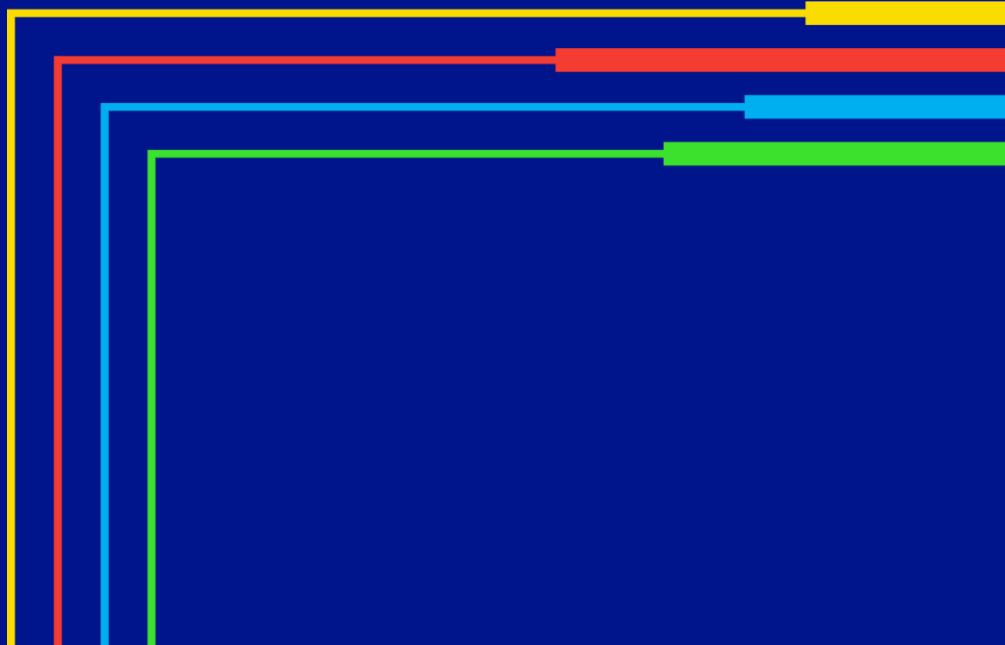
De-coupled Market Products



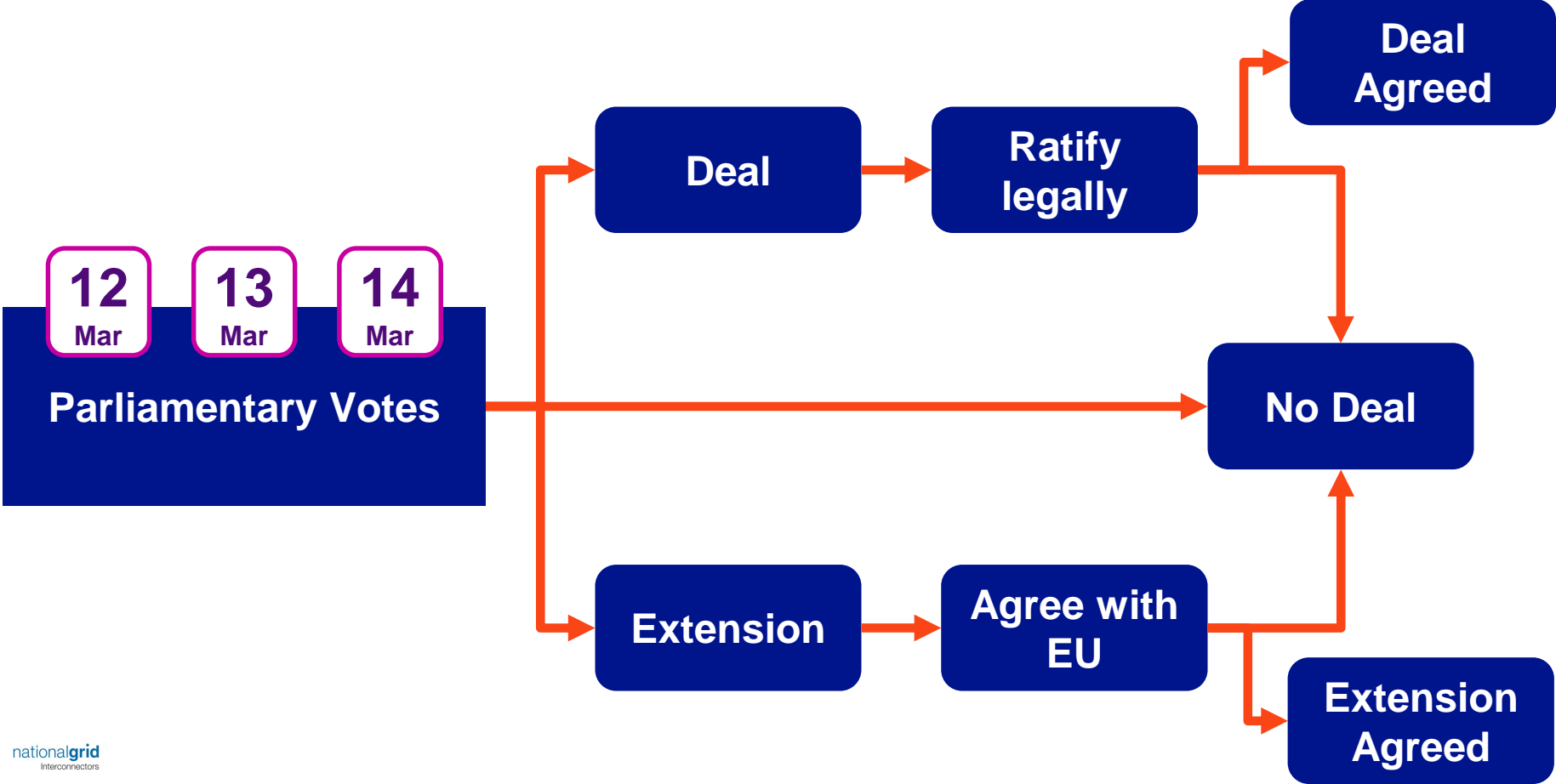
Brexit

Mark Duffield

nationalgrid
Interconnectors



The Politics of Brexit



What could happen – Deal

- **Business as Usual** between 29 March 2019 and 31 December 2020
 - UK Government and the EU will have agreed the form of the Transitional Arrangements
 - The UK will remain in the Internal Energy Market during transition
 - UK continues to implement new IEM systems – e.g. SAP/RNP, TERRE
- Substantive negotiations have yet to begin on what might happen beyond the end of the transition period

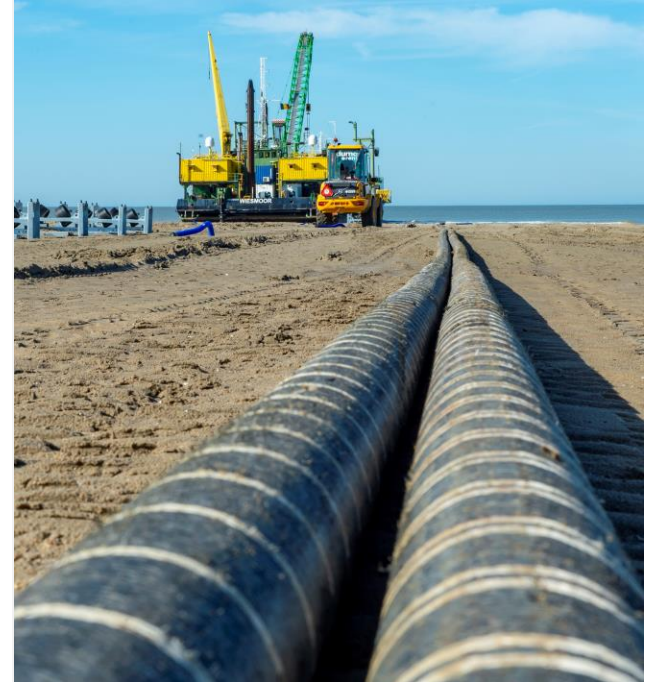
What could happen – No Deal

- Important to note that the UK government's objective is, still, to agree a Deal
- Until the Deal is legally certain, National Grid are developing contingency arrangements for our interconnectors
 - To ensure continuity of trade in the event that the UK and EU do not reach a Deal
 - They are genuine contingency arrangements, they are not planned to be implemented but they work if they are required

Key Outcomes – No Deal

Highly Confident in the ongoing operation of Interconnectors

- Our internal analysis, backed up by two separate external legal views has stated that there is no legal right for the interconnectors to be simply “switched off” post Brexit
- We are progressing changes to the commercial framework to reflect the realities of a “No Deal” Brexit



Key Highlights – No Deal

Access Rules

Changes to account for the loss of Day Ahead Market coupling – submitted to regulators, awaiting approval

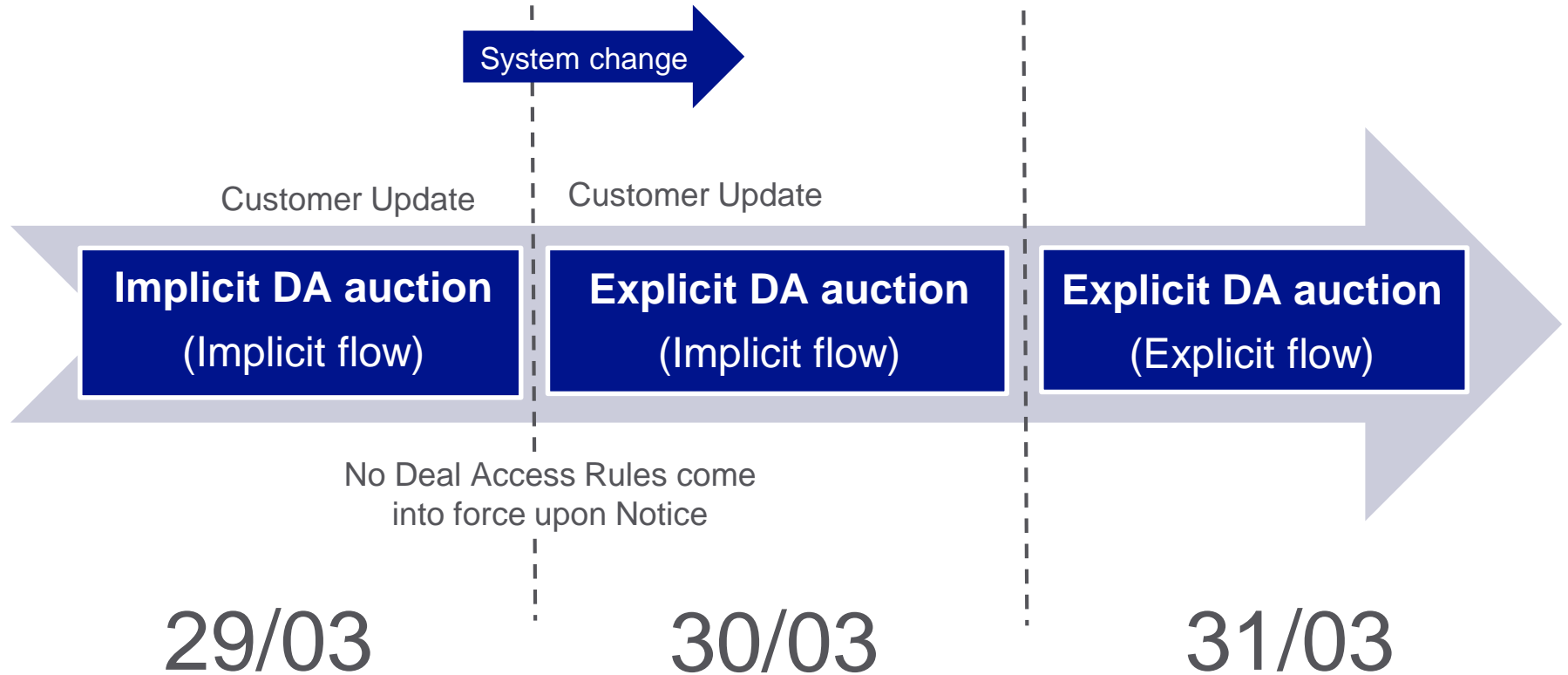
Auction Systems

Loss of day ahead implicit market coupling
Replaced by explicit day ahead auctions – project well progressed and on track for delivery

No Trade Tariffs

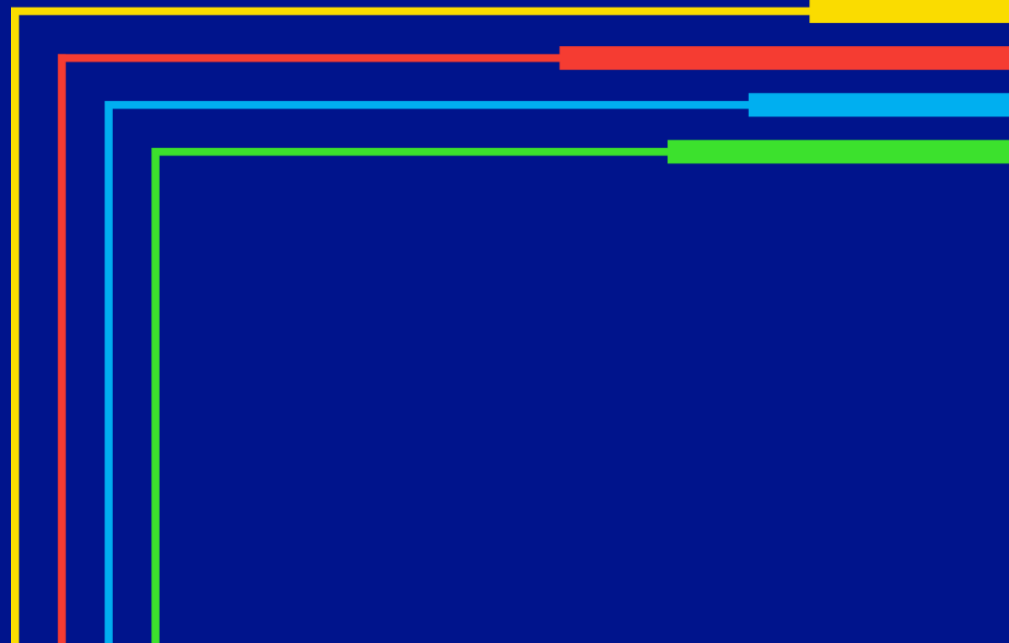
EU and UK WTO tariffs set at 0% for electricity

Cut Over to No Deal Operations



Access Rules Update

Vince Hammond



No Deal Access Rules Update

We have identified that an amended set of Access Rules would help to provide clarity in a No Deal.

- The main change is to clarify that Day Ahead capacity will be allocated via an Explicit auction.
- Clarification on the associated commercial process – UIOSI & Curtailment
- Following customer consultation these rules have now been submitted to the regulators for approval.

These contingency Rules enable operations to continue smoothly with minimum change should a No Deal occur. As the environment becomes known **we will seek to develop a set of enduring non- IEM rules in line with customer feedback.**

No Deal Access Rules Content:

Current Access Rules	No Deal Access Rules	Reason for change
Implicit Day Ahead auction	Explicit Day Ahead auction 09:40 – 10:00 (CET)	GB will no longer have access to Market Coupling
UIOSI remuneration = DA Market Spread	UIOSI remuneration = DA Auction Clearing price	A single DA market spread may not be available
Curtailment compensation = DA Market spread	Curtailment compensation = Initial price paid	As above. In certain curtailment scenarios the DA auction may not be held
Bank Guarantees are accepted from EU and Swiss banks only	No change	Bank guarantees are accepted from UK banks if they also have branches in the EU

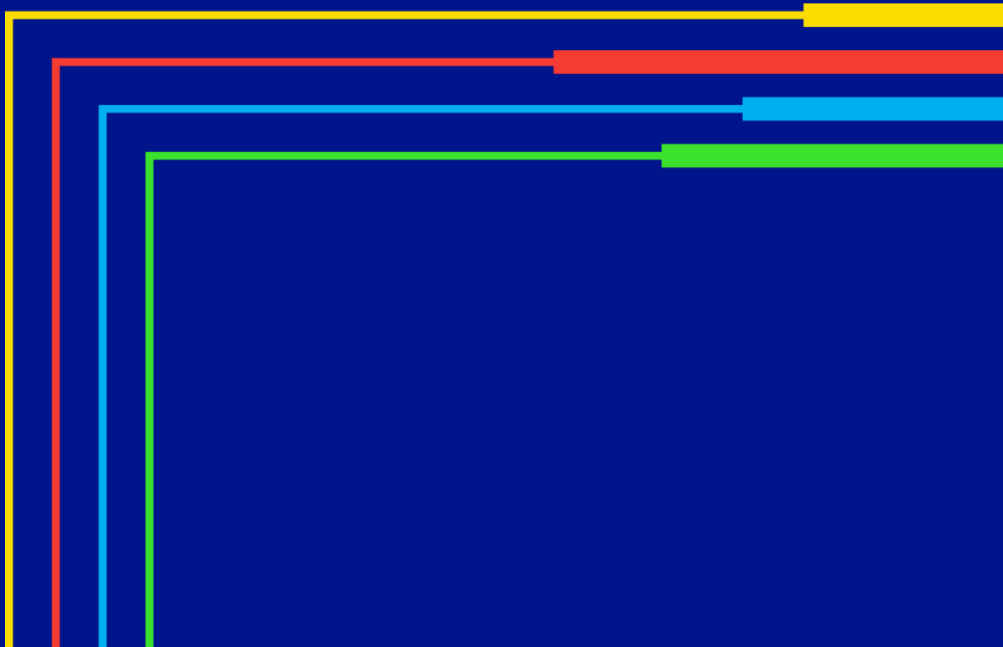
Terms/definitions/legislation references to European Regulations are also removed/replaced.

In a No Deal scenario, we expect these Access Rules to come into force after 00:00hrs (CET) on 30/03.

System Update

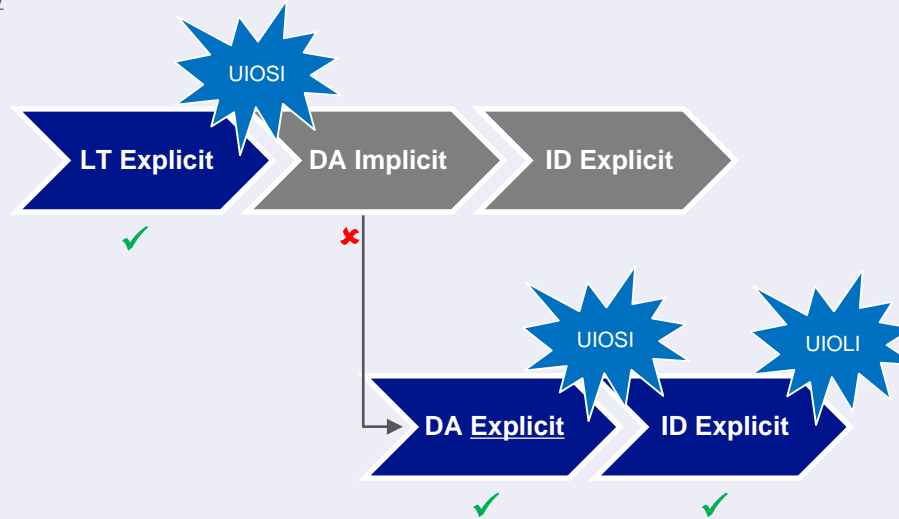
Dan Beaven

nationalgrid
Interconnectors



No Deal Planning

Auction Summary



- Access to the IEM is lost, impacting our [implicit] participation in MRC
- There's no impact to our explicit product
- Since GB joined MRC in 2014, we've had fall-back procedures in place on CMS
- These fall-back procedures will be enacted, which have been updated to reflect the No Deal Access Rules (V13)
- However, we've never fully de-coupled from MRC, so we need to ensure we robustly test the system & processes

CMS System Changes

- We've adopted the principle of minimising changes for our Customers, ensuring that the Customer is central to our decision making and impacts are limited
- Process wise, we've only made changes to the timing of the process itself (as in a de-coupling scenario, the fall-back would have been used after the implicit DA auction)
- The process steps themselves remains the same
- The main changes have been to the algorithms in the system, to ensure that Curtailment Compensation & UIOSI Revenue is calculated in line with the No Deal Access Rules (V13)

	Currently	Proposed under no-deal
Context	Access rules V12 (IEM participation)	Access Rules V13 (no IEM participation)
Auctions	DA auctions are Implicit	DA Auctions are Explicit
Capacity Curtailment	DAMS – Day Ahead Market Spread	IPP – Initial Price Paid
UIOSI	DAMS – Day Ahead Market Spread	Day Ahead Explicit Auction Clearing Price
DAFD (11am CET)	After DAFD No Curtailment	After DAFD No Curtailment despite DA explicit nominations possible until 2pm

Highlighted – Algorithm based

Highlighted – Process based

Process Timings

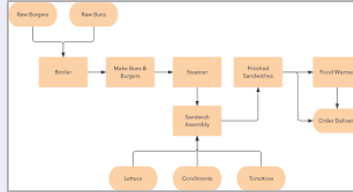
Process Step	Timing (CET)	
Opening of LT Nomination Window	16.30 (for D-2)	
Closing of LT Nomination Window	9.30	
Daily OTC Calculated	9.34	
LT UIOSI Applied & Auction Spec Submitted	9.36	
Daily Bids Open	9.40	<i>Explicit DA Auction Times</i>
Daily Bids Close	10.00	
Preliminary Results	10.05	<div> <div></div> <div><i>Explicit DA Capacity <u>is</u> firm</i></div> <div></div> </div>
Final Results	10.15	
Evaluate UIOSI Compensations	10.20	
Results Submitted	10.25	
DAFD	11.00	<i>Explicit DA Nom Window</i>
Explicit Day Ahead Nomination Window Open	12.05	
Explicit Day Ahead Nomination Window Closes	14.00	
Opening of LT Nomination Window	16.30 (for D-2)	

Training / Process Familiarisation

- We are conducting a three-phased approach towards training:



**YouTube
Video**



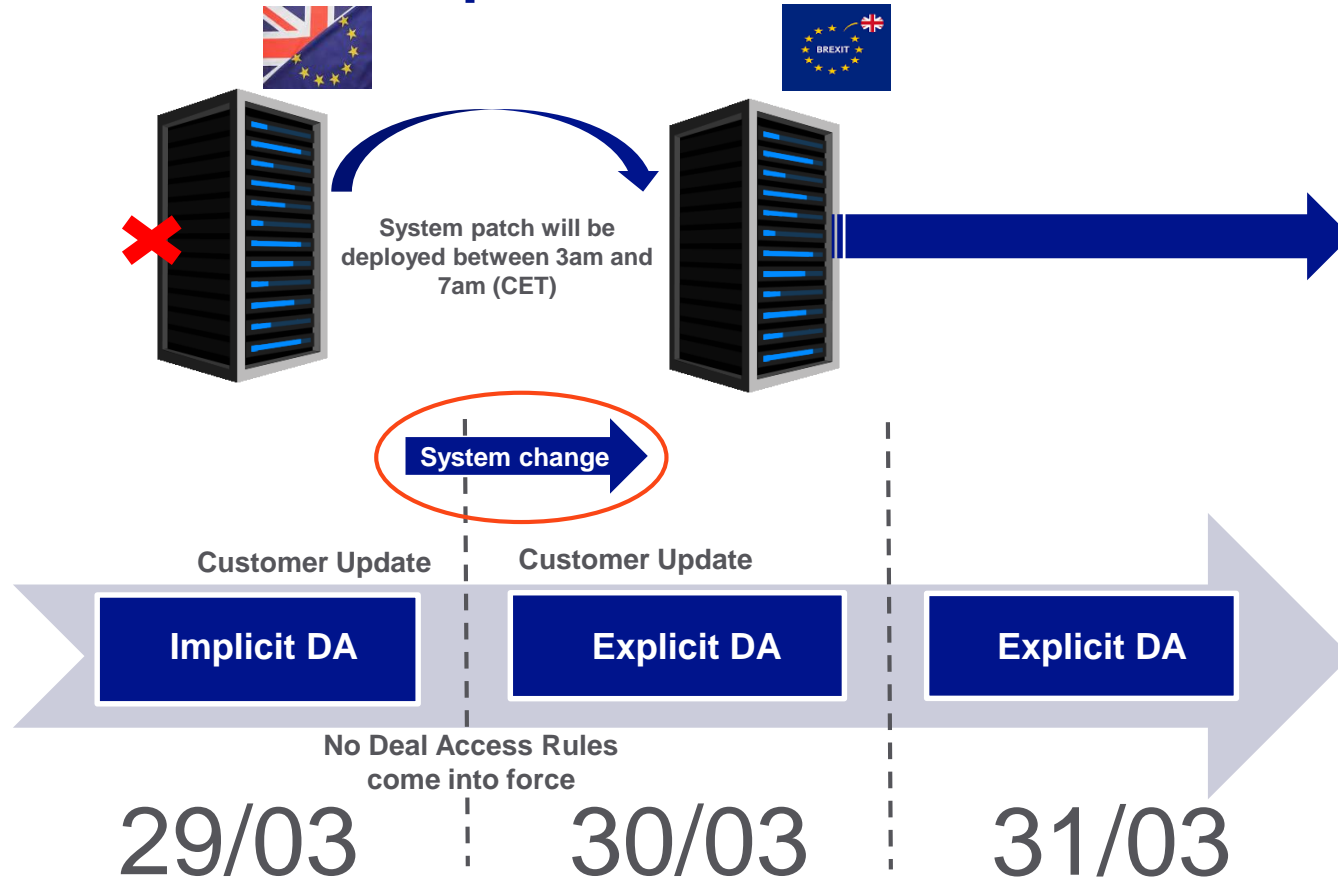
**Updated FAQ
doc**



**Open Test
Environment**

- Test environment available from 11th March, 24/7 a days, in order to test the DA Explicit functionality
- x2 test accounts will be shared with you
- Any bugs or issues, please email the DAMAS Helpdesk
- The DAMAS helpdesk are on hand, via their normal email address (ifa.helpdesk@unicorn.eu) , 24/7, for support
- We'll leave the test environment open from 11th March until 30th April

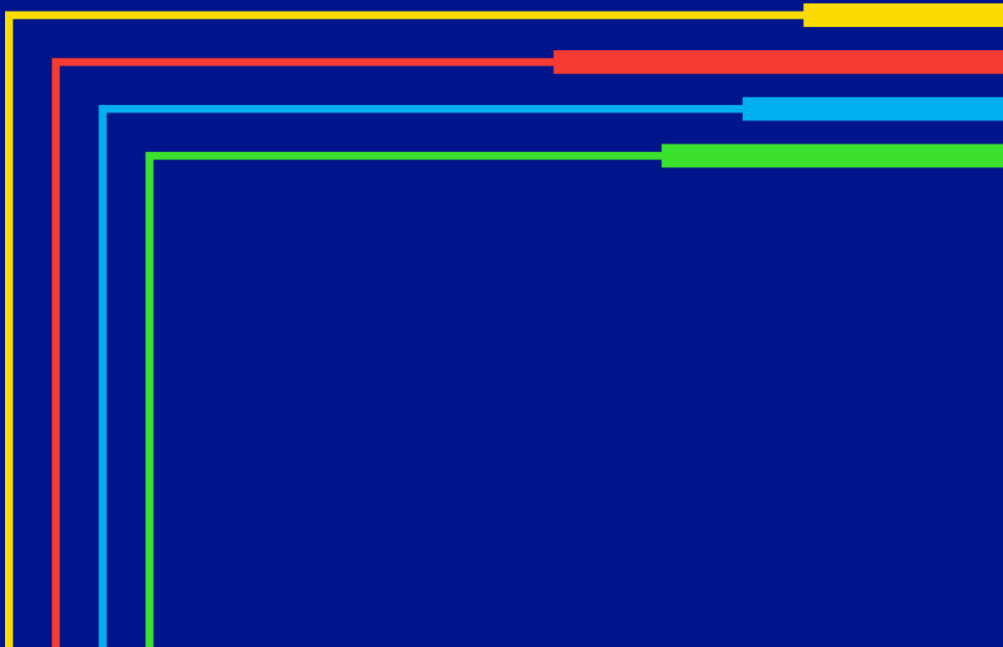
Cut Over to No Deal Operations



Summary

Mark Duffield

nationalgrid
Interconnectors



Wrap up

We are prepared for any Brexit outcome

- **Deal-** BAU operations through the transition period
- **Extension-** BAU operations until new exit date/ through following transition period if a deal is agreed
- **No Deal-** Contingency arrangements are implemented to promote continued operations

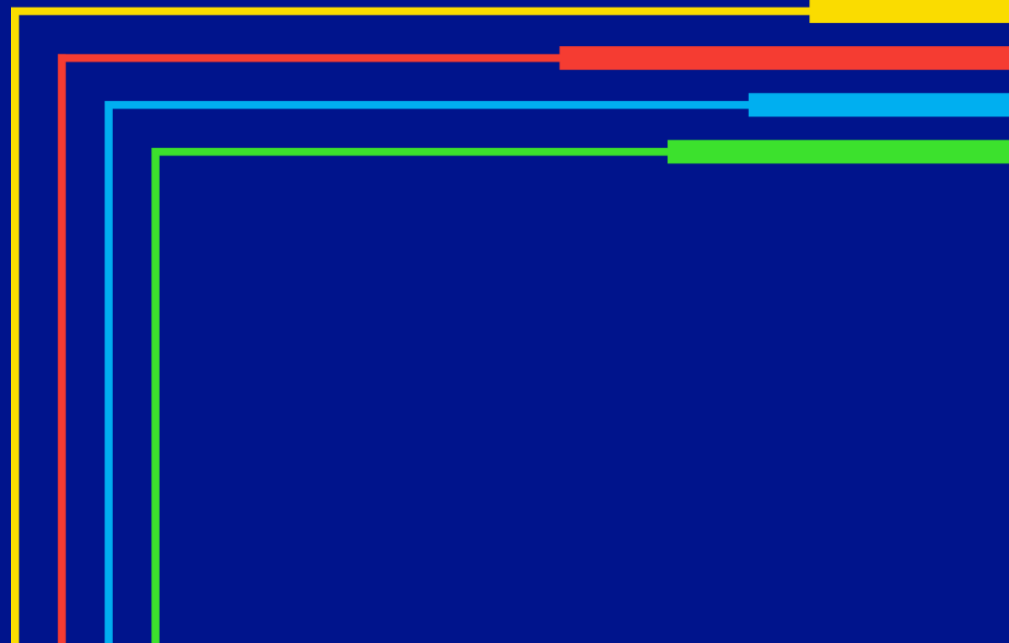
Access Rules

- Access Rules V13 will come into affect in a No Deal
- Main changes apply to DA auction, UIOSI and Curtailment.
- Clarification on Bank Guarantees

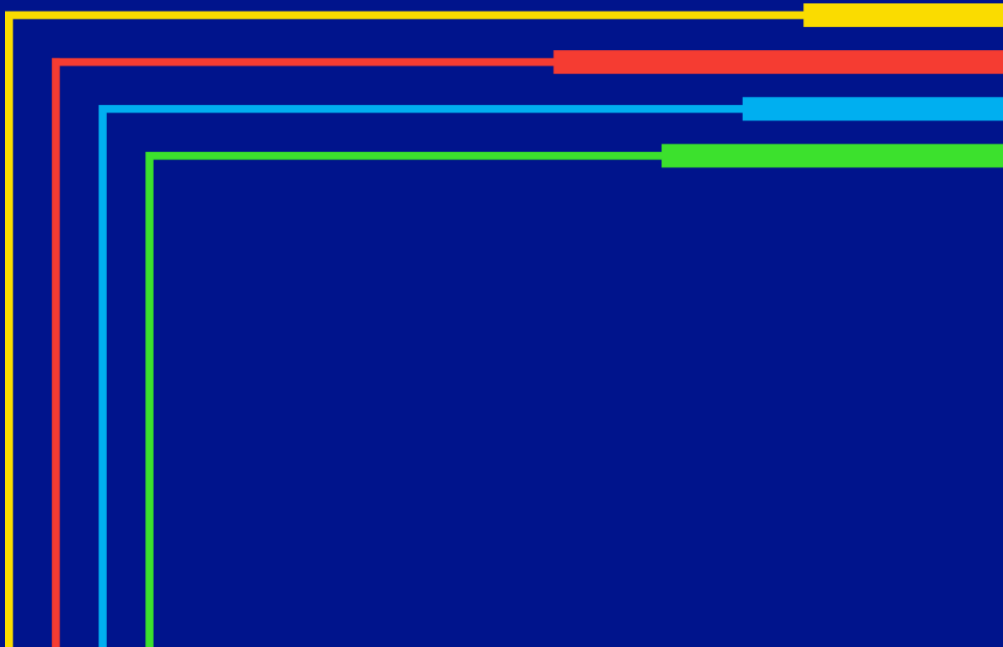
Auction systems

- No Deal- Explicit Day Ahead auctions via DAMAS
- The system change will take place overnight, ready for the first explicit auction on 30/03
- Explicit Day Ahead training is currently available on CMS

Question and Answers

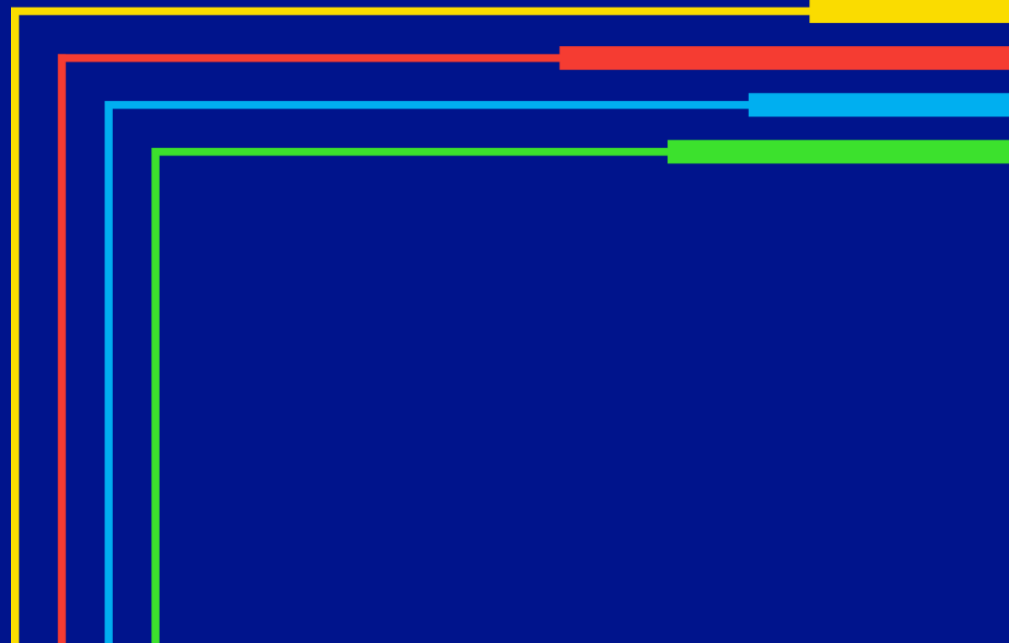


Lunch



Customer Support

Mike Denny



Customer support through Brexit

The Customer Team will continue to be your main point of contact throughout any Brexit scenario.

Internally we are set up to ensure that queries continue to be resolved smoothly and efficiently even in a No deal.

Individuals across the business have been identified as No Deal process leads.

Should you have any Brexit related queries or issues please contact the Customer Team.

**In the first instance please contact:
ifa.customerenquiries@nationalgrid.com**

Brexit Management Leaders

Process leads for.....

Legal

No Deal Access Rules

CMS DA explicit auction

REMIT compliance

REMIT operational & Imbalance trading

Customer communications

Asset availability, maintenance & spares

Stakeholder communication

No Deal - Potential Customer Impacts

No Impact

- Explicit long term products
- Explicit intraday

Impact

- Day Ahead product (if exiting IEM)
 - Implicit auctions no longer via the power exchange
 - Explicit Day Ahead auctions to be held in DAMAS
 - Change in invoicing, your monthly invoice will include Day Ahead explicit capacity

What do you need to do?

Use DAMAS test environment

- Day Ahead Explicit Auction in DAMAS
- Test environment open from 11th March until 30th April 2019
- Raise queries through DAMAS helpdesk or the Customer Team

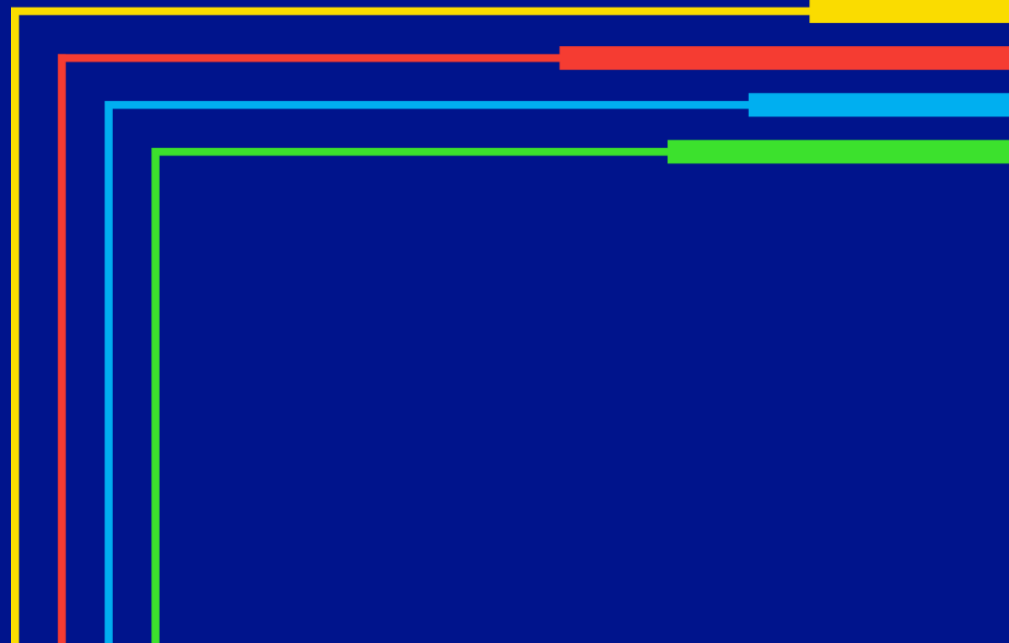
Review Collateral

- Monthly Invoicing
- If you buy the day ahead product ensure collateral covers 1 month of Day Ahead explicit auctions

What are we going to do for you?

- We will keep you informed
 - Email regarding Brexit no deal preparations (28/02/19)
 - Customer Forum (12/03/19)
 - Emails in the run up to Brexit on any key changes
 - 29th March 11:00pm Email from DAMAS confirming the way forward following a decision
 - No deal scenario – cut over updates on DAMAS to cover explicit day ahead auctions and timings
- Customer Team are available

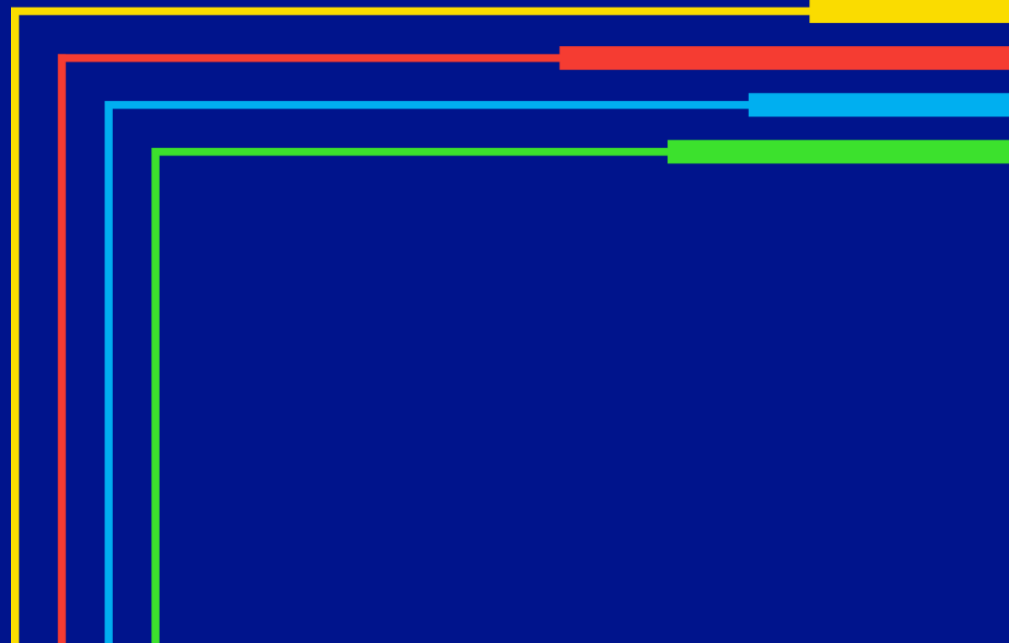
Question and Answers



Migration to RNP/SAP

Anthony Eng

nationalgrid
Interconnectors





Rte

March 12th, LONDON

BREXIT FORUM

Migration to RNP/SAP

nationalgrid
Interconnectors



Rte

Forward Capacity Allocations (FCA)

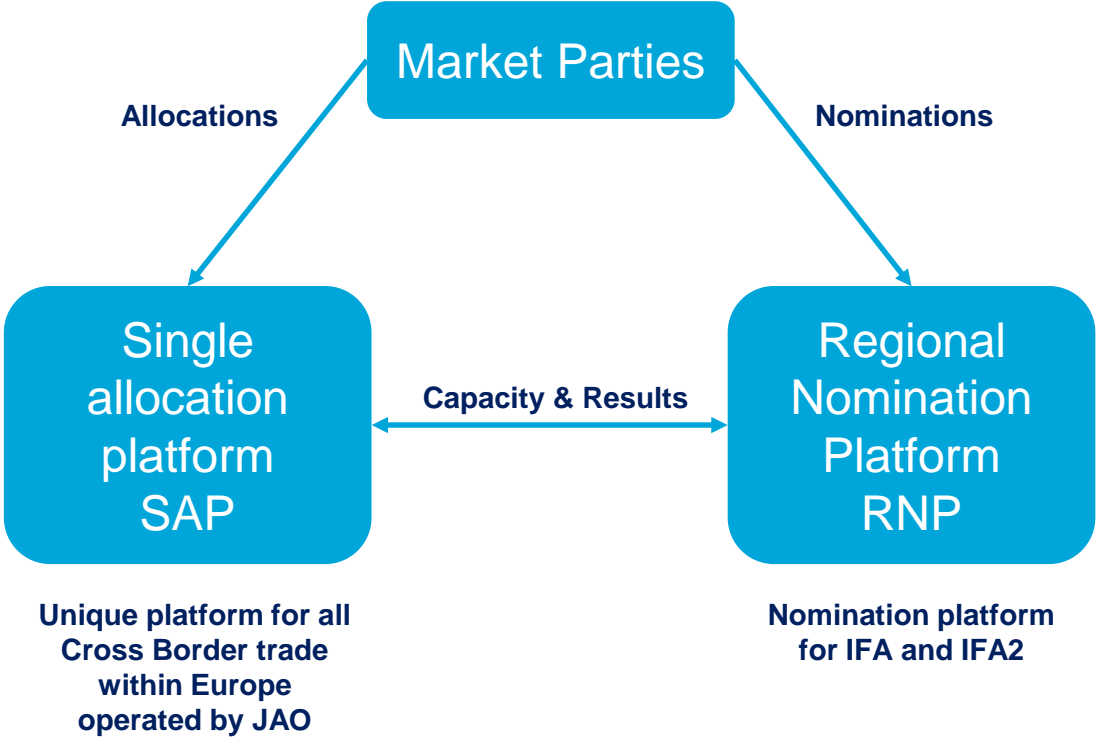
- Following FCA requirements, all TSO must standardize long term allocation rules and move to a Single Allocation Platform (SAP).
- SAP is operated by the Joint Allocation Office (JAO) and will manage allocation, curtailment, settlement, invoice, and credit cover...
- JAO will be selling Physical Transmission Rights (PTRs) in explicit auctions consistent with the FCA Guidelines

IEM
Compliant

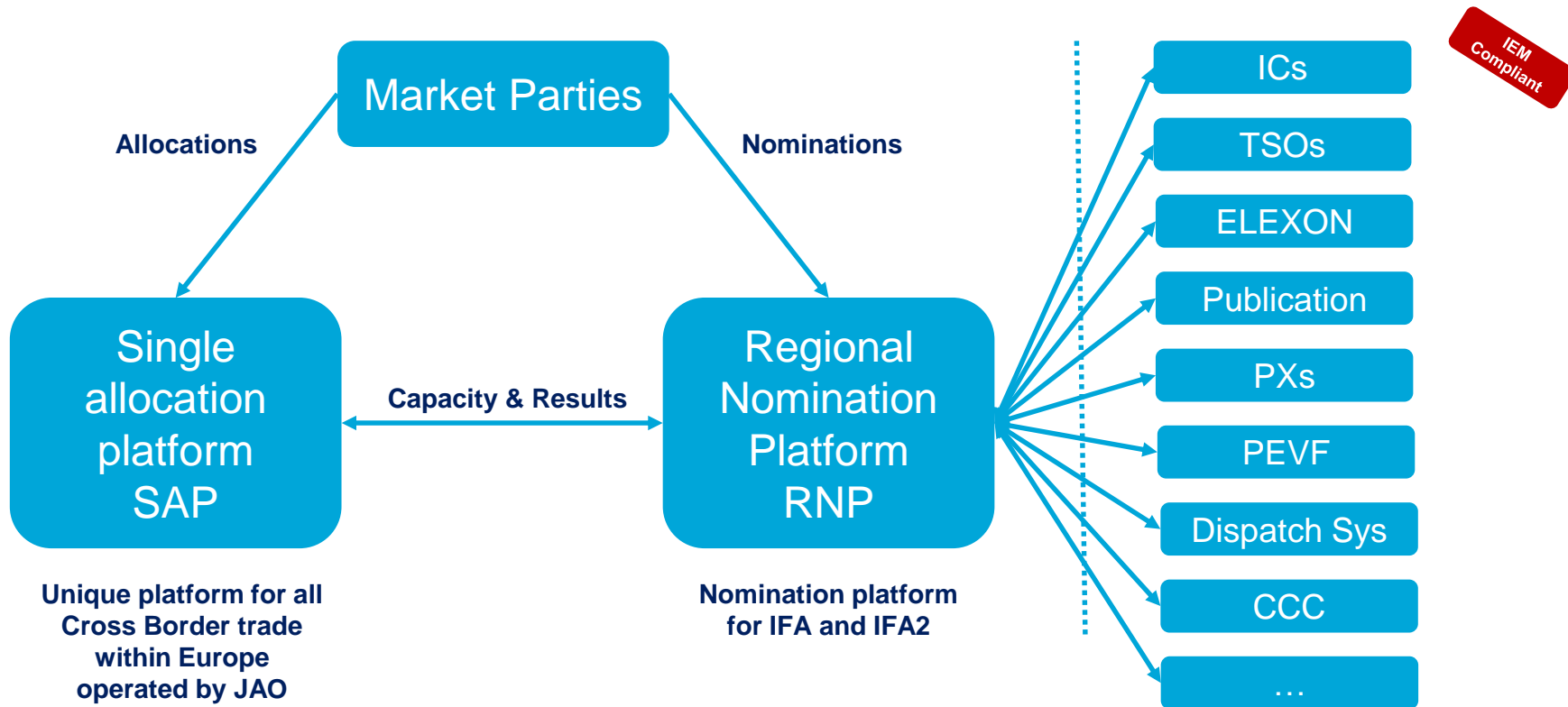
Nomination

- SAP does not manage the capacity management or the nomination process.
- National Grid, RTE, Britnéd and Nemolink have worked together to develop the Regional Nomination Platform (RNP) in order to cover this capacity management and nomination services

2 systems / 2 targets



2 systems / 2 targets



Regional joint initiative with the following objectives :

- Replace current existing tools (DAMAS-IFA)
- Developed by Unicorn who is the current DAMAS-IFA vendor
- Have a simple and single interface for Market parties to nominate on HVDC cables for IFA & IFA2.
- Flexible and adaptable tool for upcoming changes
- Open to new interconnectors (IFA2, etc...)
- Easy to use : 2 ways to connect to RNP : Webservice or GUI

Advantages of RNP



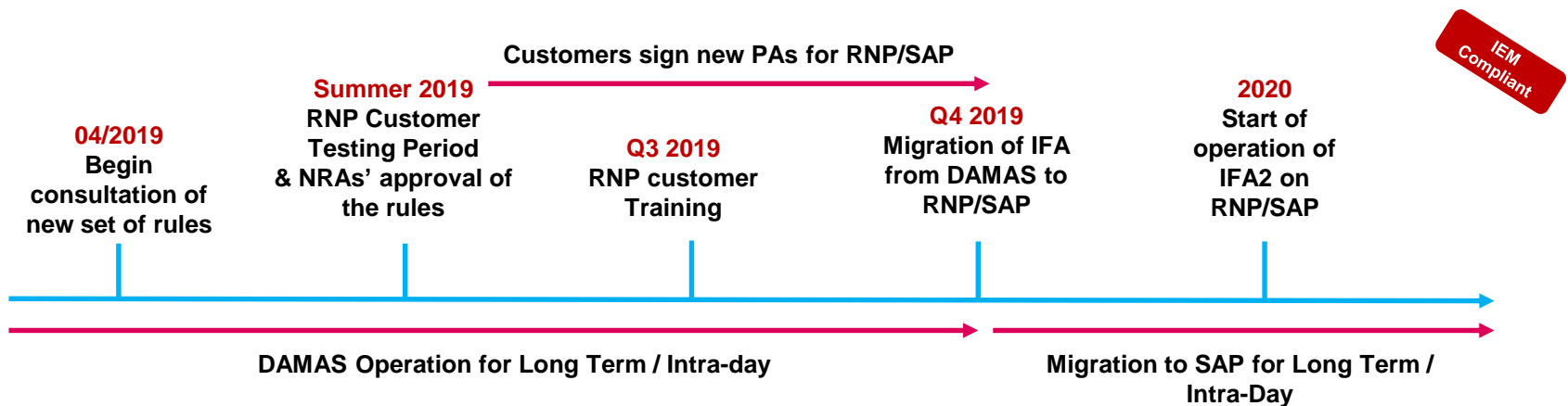
- 1 RNP is compliant with European grid code.
- 2 Single migration for Market parties as the switch from DAMAS-IFA to RNP/SAP will be done simultaneously.
- 3 Single interfaces for Market parties for IFA & IFA2
- 4 RNP will simplify the migration to incoming European Projects (such as XBID or TERRE,...).

New Contractual framework



- Historically, IFA Access Rules have governed the allocation of rights to use the Interconnector by explicit auction across all timescales.
- For the switch to RNP/SAP, the IFA Access Rules have been amended as IFA will not act as an Allocation Platform anymore. In addition, IFA has also made changes to reflect the evolving contractual framework whereby some documents will be governed under the Joint Allocation Office Participation Agreement and some documents will be governed under the Nomination Participation Agreement.
 1. Allocation Rules for Intraday Capacity Allocation on IFA Interconnector
 2. Day Ahead and Intraday Nomination Rules for IFA Interconnector

- These rules were consulted already in 2018 (23rd April – 21st May), however due to some additional changes in the set of rules, IFA would like to propose a **second consultation in April 2019**.



Next steps : Practical Aspects for Market Participants

Contractual basis

- Review the new set of rules
- Signature of a new Participation Agreement for JAO
- Signature of a new Participation Agreement for RNP

IT system changes

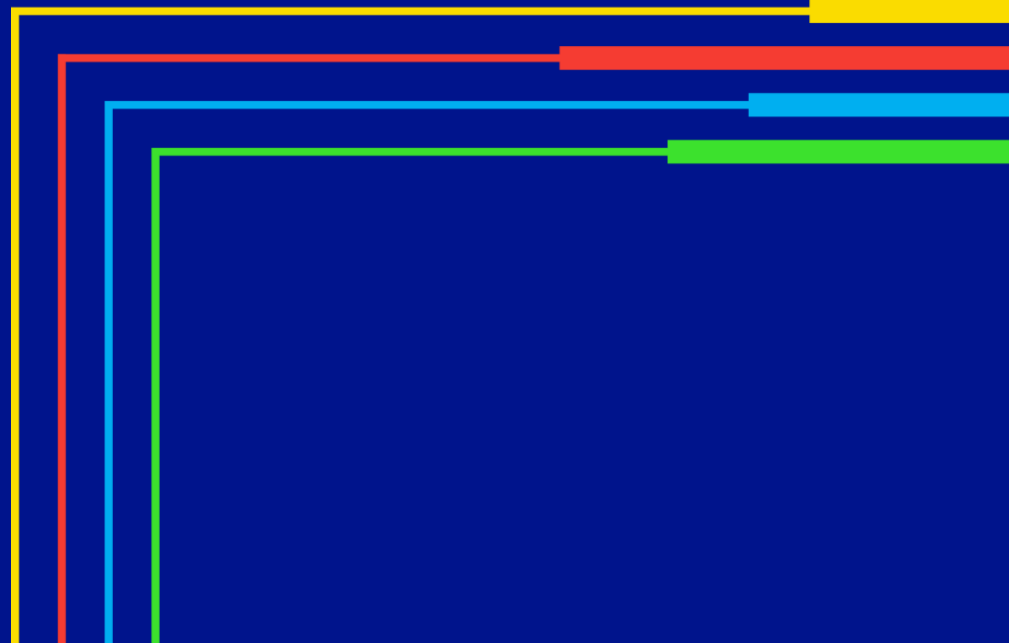
- Participation of the RNP training
- Connectivity test & System testing

No Deal BREXIT contingency scenario

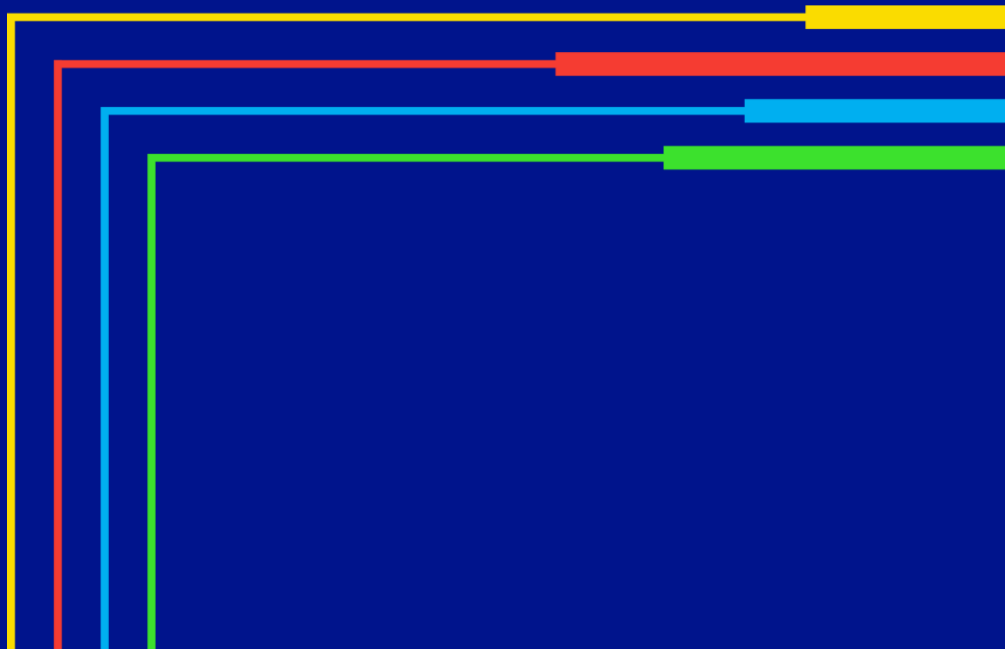
In Case of No Deal BREXIT, IFA will still migrate to RNP/JAO

- Contractual framework:
 - A new set of rules No Deal Brexit but RNP/SAP compliant would be drafted and consulted.
 - Participation agreement need to be signed by Market parties.
 - JAO will act as a service provider not as the SAP Operator (Like current arrangement on FR-CH).
- Timeline Impact:
 - The planning timeline may be impacted but we are committed to the migration being completed.
- Day ahead explicit allocation:
 - In case of No Deal Brexit, GB will be out of IEM & the fall back will be day ahead explicit in DAMAS. IFA would like to move the day ahead explicit auction to SAP at the same time as the migration to RNP/SAP.

Question and Answers



Break





Nemo Link Live

Nick Pittarello

Client Relationship Manager

12th March 2019



nemolink

Nemo Link in numbers

€600m

INVESTMENT

4

YEARS IN
CONSTRUCTION

2

CONVERTOR
STATIONS

80

MILES OF SUBSEA
CABLES

3.5m

MAN HOURS

0

LOST TIME
INJURIES

1st

ELECTRICITY
INTERCONNECTOR
TO THE UK IN 7YRS

1m

HOMES POWERED

nemolink

About Nemo Link



1000MW Monopole Interconnector



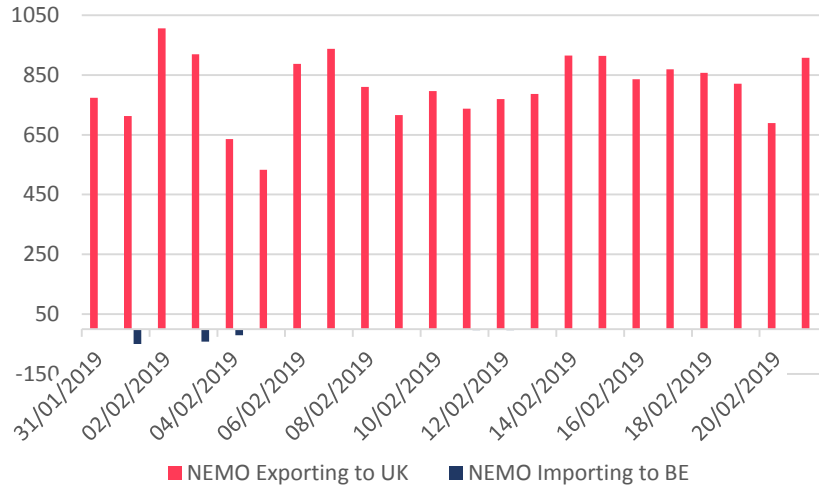
Physical Transmission Rights



Transmission Loss Factor 2.6%

Nemo Link Flows and Day Ahead Spreads

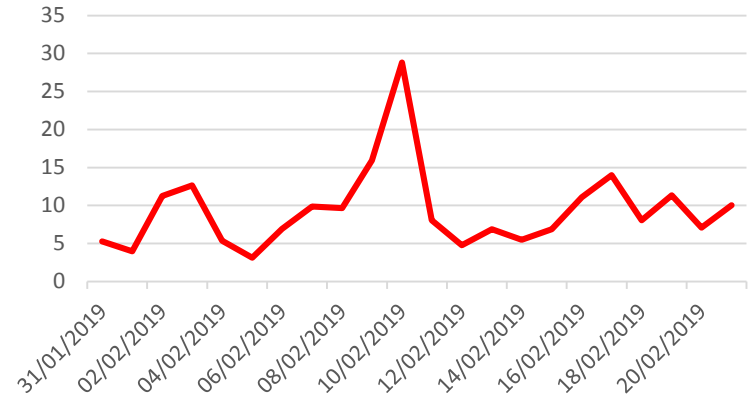
Average daily Nemo flows (MW)



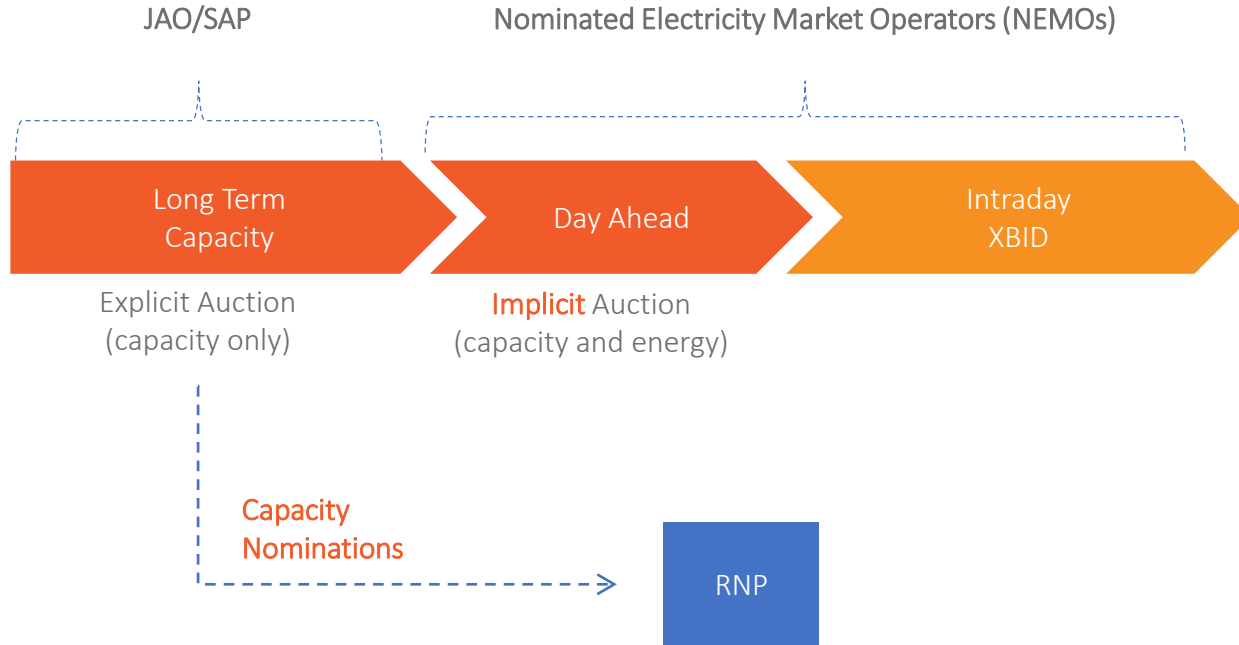
- Flows overwhelmingly BE -> GB direction
- Average daily spreads between €3 and €28/MWh

- Nemo Link began commercial operation on 31st January 2019
- Day Ahead implicit only until April 2019

Average Spread UK - BE (€/ MWh)



“Deal” Trading Framework



Nemo Link Initial Products in 2019

Q1

IMPLICIT DAY
AHEAD ONLY

Q2

ROLLING
MONTHLY

Q3 2019

Q3

ROLLING
MONTHLY

Q4 2019

Q4

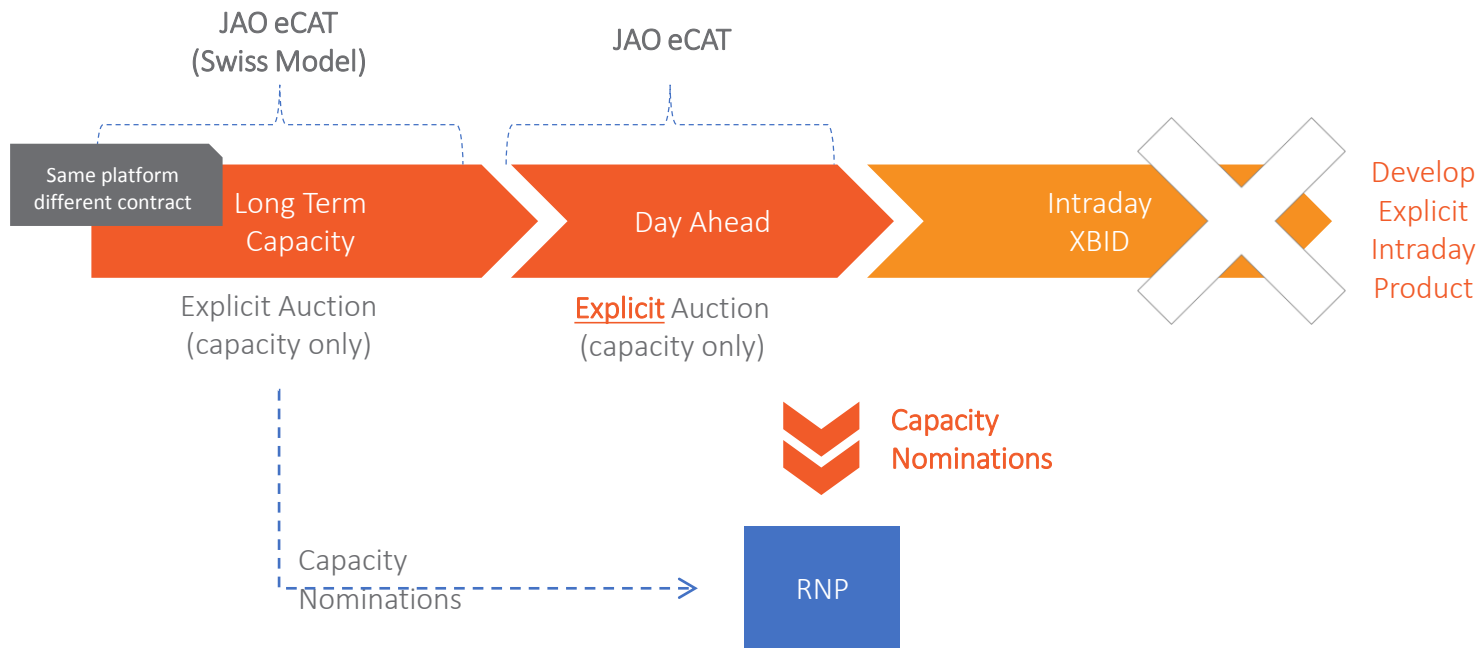
ROLLING
MONTHLY

Q1 2020

**Annual
2020**

nemolink

“No Deal” Trading Framework



Timeline (assuming 29th March Brexit Day)

20/02/19

Explicit
DA
Registra-
tion
launched
by JAO

16/03/19

JAO Dry-
run and
testing

29/03/19

Last Daily
implicit
auction
for 30/03
delivery

30/03/19

1st
explicit
DA run
for 31/03

31/03/19

Delay
01/04
quarterly
and
monthly
Auctions

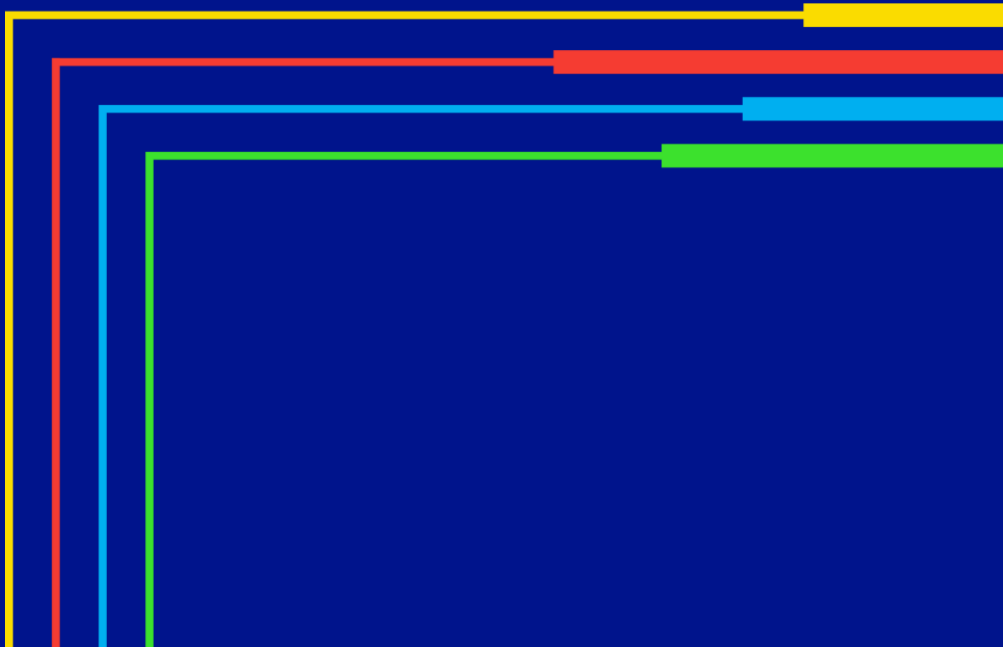


nemolink

IFA2 Update

Diane Green

nationalgrid
Interconnectors



IFA2 – Project Overview

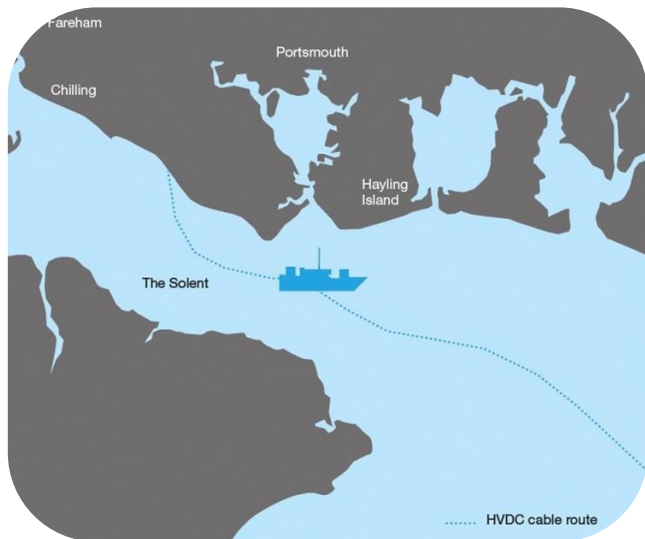
Diane Green



Technical characteristics

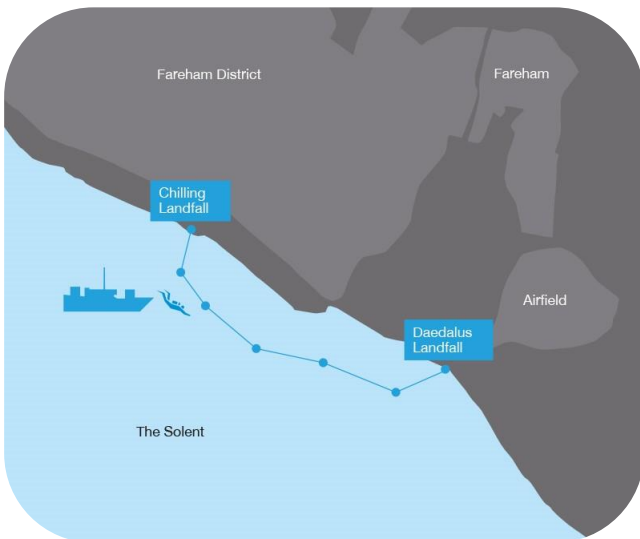
GB / France	Chilling 400kV (GB) Tourbe 400kv (FR)
Distance	235km subsea DC route
Technology	VSC Converter XLPE Cable
Capacity	1GW
Project costs	c£800m 50/50 shared
Go-live	Planned go-live October 2020





DC
235km

208 km Offshore
25 km Onshore (FR)
2 km Onshore (GB)
320kV



AC
10km

2 x 2 km Onshore
6 km Offshore

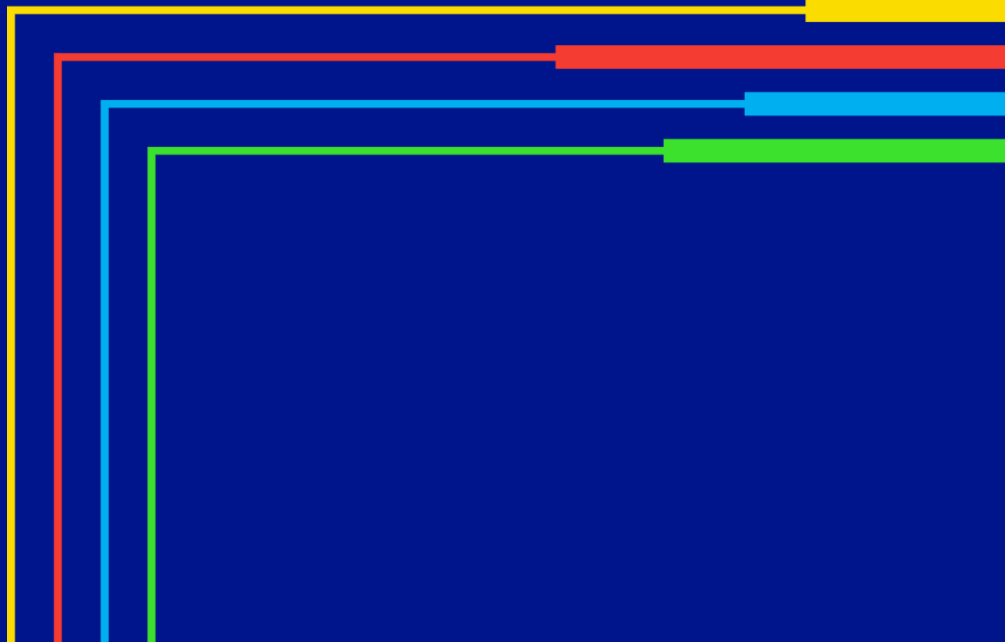


Indicative timeline

2015	EC identifies IFA2 as key infrastructure project
2015 - 2016	Planning consents (GB and France)
2017	Project contracts signed
2017 – 2019 Construction phase	Converters
	DC Cables (subsea and land)
	AC Cables (Chilling to Daedalus)
Q1 2020	Commissioning
Q2 / Q3 2020	Trial Operations
Q4 2020	Commercial Operation

Closing Remarks & Summary

Asheya Patten





**KEEP
CALM
AND
TRADE
ON**

Final Question and Answers

