LOW CARBON CONTRACTS COMPANY

Electricity Settlements Company

# Autumn Conference 2019

**Dartmouth House, 37 Charles Street, London, W1J 5ED**

**14 November 2019**

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# Morning Agenda

| | | |
|---|---|---|
| **09:30 – 09:40** | **Welcome** | Regina Finn, Chair, LCCC |
| **09:40 – 10:30** | **'A year is a long time in EMR…'**<br>• AR3 results and the CfD portfolio<br>• CM Standstill and Restart<br>• CfD and CM costs | Neil McDermott, LCCC<br>Raj Saggu, LCCC<br>Patrick Bibby, LCCC<br>Asad Jamil, LCCC |
| **10.30 – 10.50** | **Third Party Costs for suppliers – the role of the CfD and CM levies and their impact on the supply market** | Dan Starman, Cornwall Insight |
| **10.50 – 11.15** | **Panel: Impact of third party costs on suppliers** | Dan Starman, Cornwall Insight<br>Bogi Hojgaard, LCCC<br>Gordon Edge, LCCC (Chair) |
| **11:15 – 11:30** | COFFEE | |
| **11:30 – 11:50** | **LCCC Dashboards – a new window onto our data** | Ulrich Arnheiter, LCCC<br>Andrew Miller, LCCC |
| **11:50 – 12:30** | **Data panel: How low can you go?**<br>The level of granularity to which it is possible and desirable to go with system and generator data | Dr Richard Dobson, Energy Systems Catapult<br>Stuart Noble, ScottishPower Renewables<br>Alex Coulton, LCCC (Chair) |
| **12:30 – 12:40** | **Afternoon forward look and LCCC/ESC engagement** | Ruth Herbert, LCCC |
| **12:40 – 13:30** | LUNCH | |

# Welcome

**Speaker: Regina Finn, Chair, LCCC**

# “A year is a long time in EMR..”

**Our Vision** is to be at the heart of the delivery of the UK's goal for secure, affordable and sustainable electricity.

**LCCC's Guiding Principle…**
is to **maintain investor confidence** in the CFD Scheme and **minimise costs to consumers**

## Our roles:

- **'CFD Counterparty' to Contracts for Difference** for low carbon electricity generation
- **'Settlement Body' under the Capacity Market scheme** to improve security of supply


Banks Renewables is investing £237m in the construction of three onshore wind farms. Once in operation they will generate over 418GWh of low carbon energy, powering more than 101,000 homes.

# Experts in scheme delivery

**Our Mission:**
is to implement and develop electricity market schemes, providing operational independence, expertise, insight and leadership.


Maximising added value to our stakeholders and consumers from our expertise and insights of scheme delivery

# 2019 Highlights

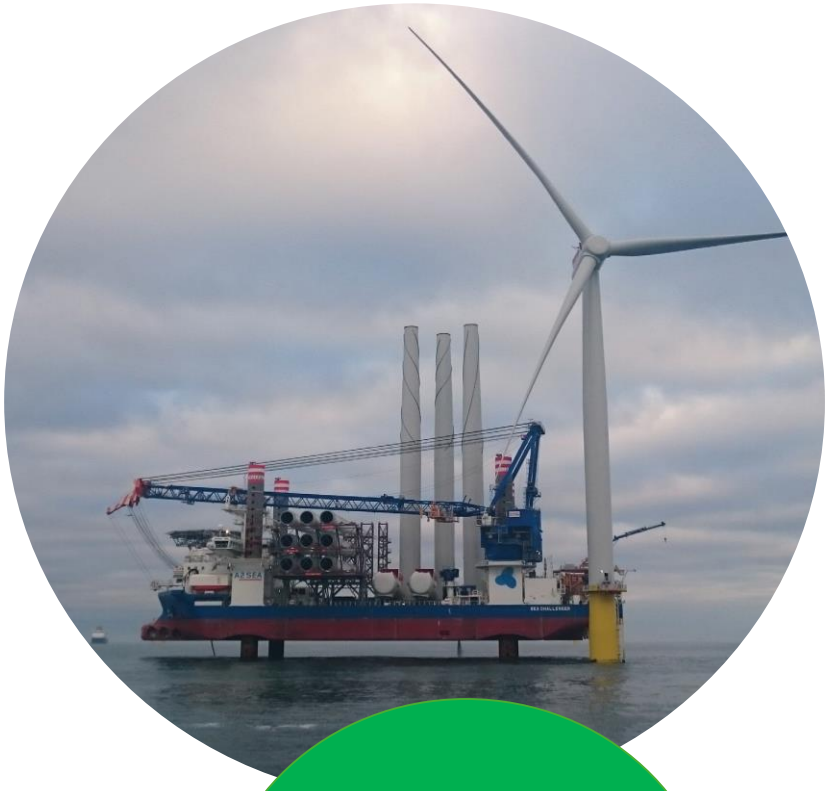
- **Delivery Excellence**
  - Successful review of Settlement Services
  - CM Standstill navigated
  - AR3 projects successfully brought into the portfolio
  - CM Restart underway
- **Centre of Expertise**
  - CfD Masterclasses and joint applicant portal
  - Scheme Dashboards launched
- **Trusted Advisor**
  - Contributed our expertise to Government across a number of policy workstreams e.g. CCUS

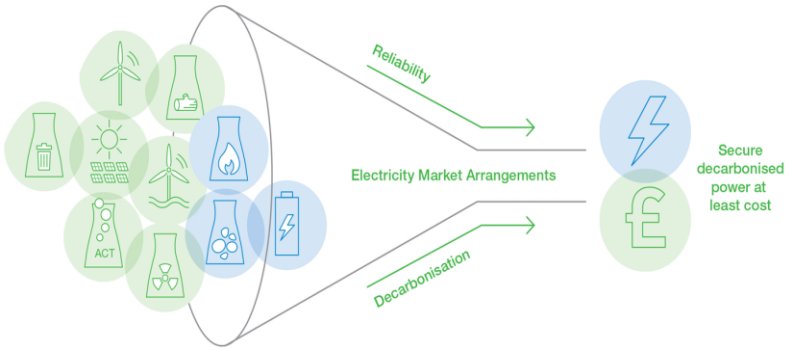
# AR3 results and the CfD portfolio

Speaker: Raj Saggu – Lead Scheme Manager

# Contracts for Difference

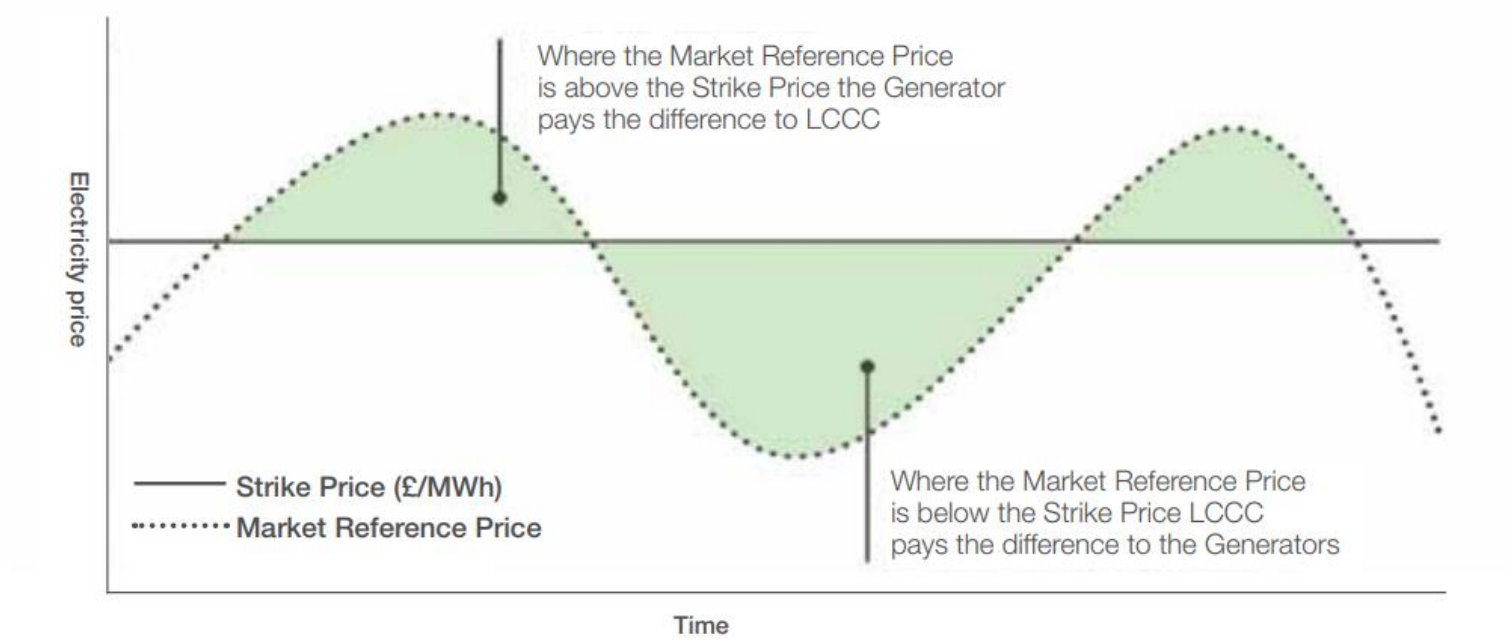
- Private-law contracts providing price certainty to low carbon generators
- CFDs are awarded in the early stages of project development
- Aimed at enabling projects to secure a lower cost of capital
- Competitive allocation rounds run by the EMR Delivery Body deliver increased value for money for consumers






LCCC signs and manages CFDs with 15+ year duration

# CfD – how it works




- Designed to de-risk investment and provide price certainty for generators
- Generators receive (or payback) a £/MWh value based on the difference between a wholesale market reference price and the strike price

**Strike price =** clearing value through the CfD auction process

**Market reference price =** traded wholesale market electricity price used as a reference for any top-up value to the generator

# CFDs expected to power around 22 million homes by the mid-2020s

“CFD projects are moving from initial milestones to construction and operation – this is a fundamental shift in the maturity of our business and the portfolio.”

**James Rushton**
Director of Scheme Delivery

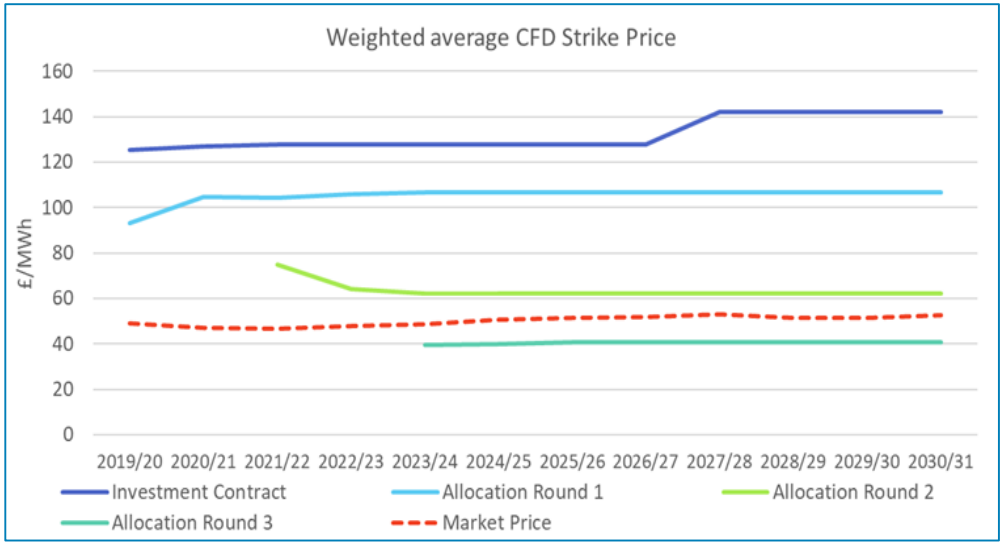
# AR3 a major step for the CfD Portfolio

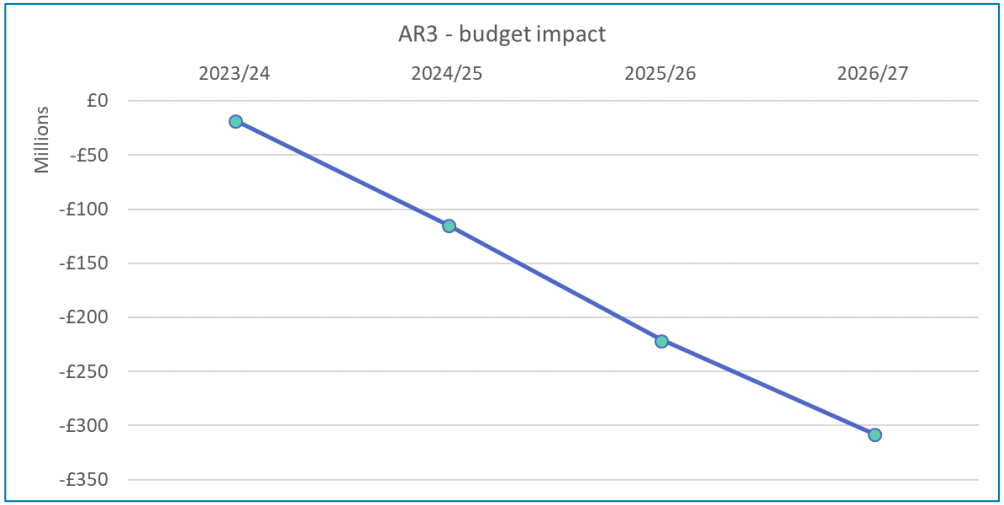
## Some Key points…….

- Strike Prices that mean projects are expected to be paying back to consumers
- Significant uplift in the amount of capacity in the portfolio
- Reinforces growth of offshore wind in the portfolio
- New locations for –
    I. Western Isles and Orkney (RIW)
    II. Offshore projects further out into the North Sea (c.130km)
- Demonstration project
    - Forthwind 12MW project
- Part-CfD/part-merchant, where projects have overall capacity greater than CfD capacity
    - Seagreen CfD for 454MW with total capacity circa. 1GW
- Dogger Bank (9 separate CfDs), world's largest offshore wind farm c.3.6GW in total utilising the world's largest wind turbines (12MW Haliade X)

# Step change in economics

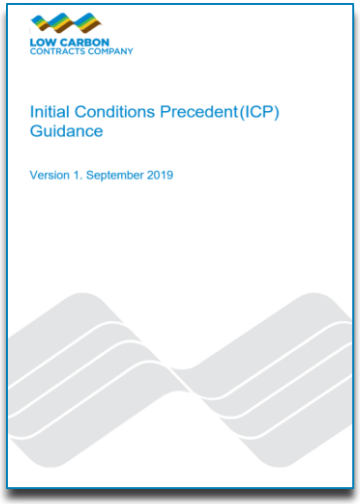
- Low strike prices c.£40/MWh (on avg. £17/MWh below AR2) expected to significantly benefit consumers
- Negative budget usage, up to -£307m in 2026/2027 on BEIS power price forecast
- 6GW capacity cap was limiting factor, not budget cap of £65m since strike prices << ref. prices set for AR3 by BEIS
- AR3 will increase renewable CfD capacity by 60%, 84% will be offshore wind



# Maintaining investor confidence

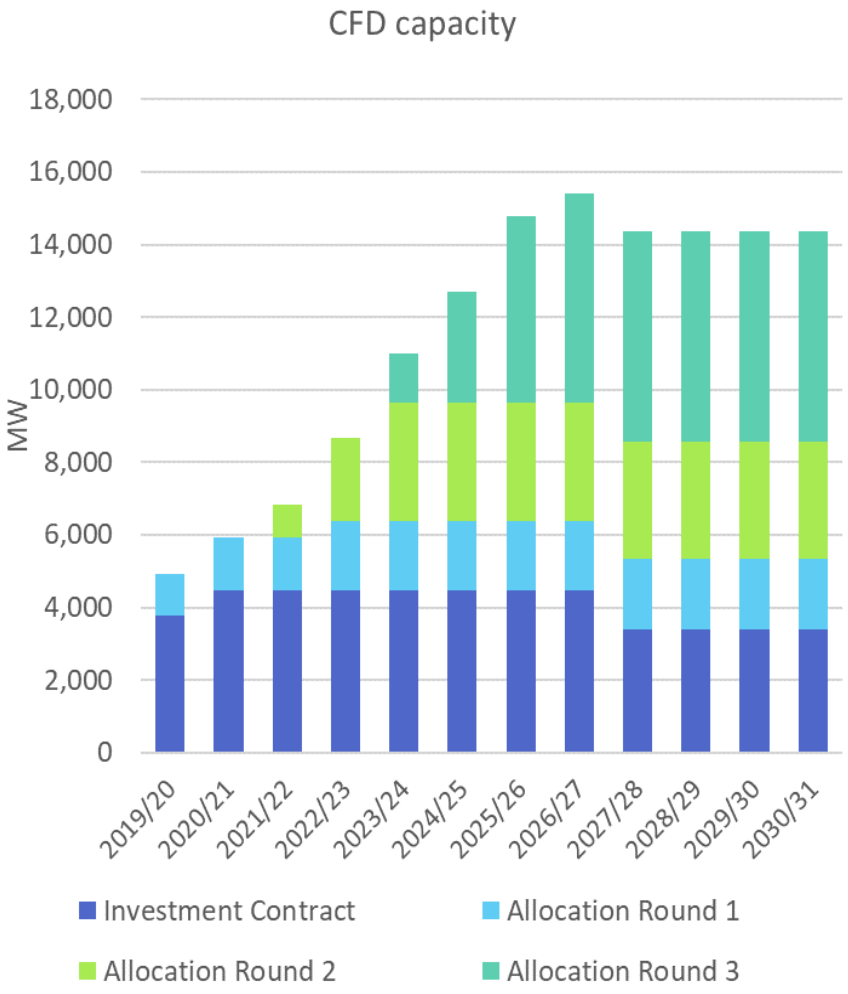
- All AR3 successful bidders signed their agreements
- Several Direct Agreements signed across the existing CfD portfolio, supporting significant investment  from new sources to flow into projects
- Improved ways of working and generator engagement through
  - CfD Guidance documents
  - AR3 Portal, FAQs
  - CfD workshops

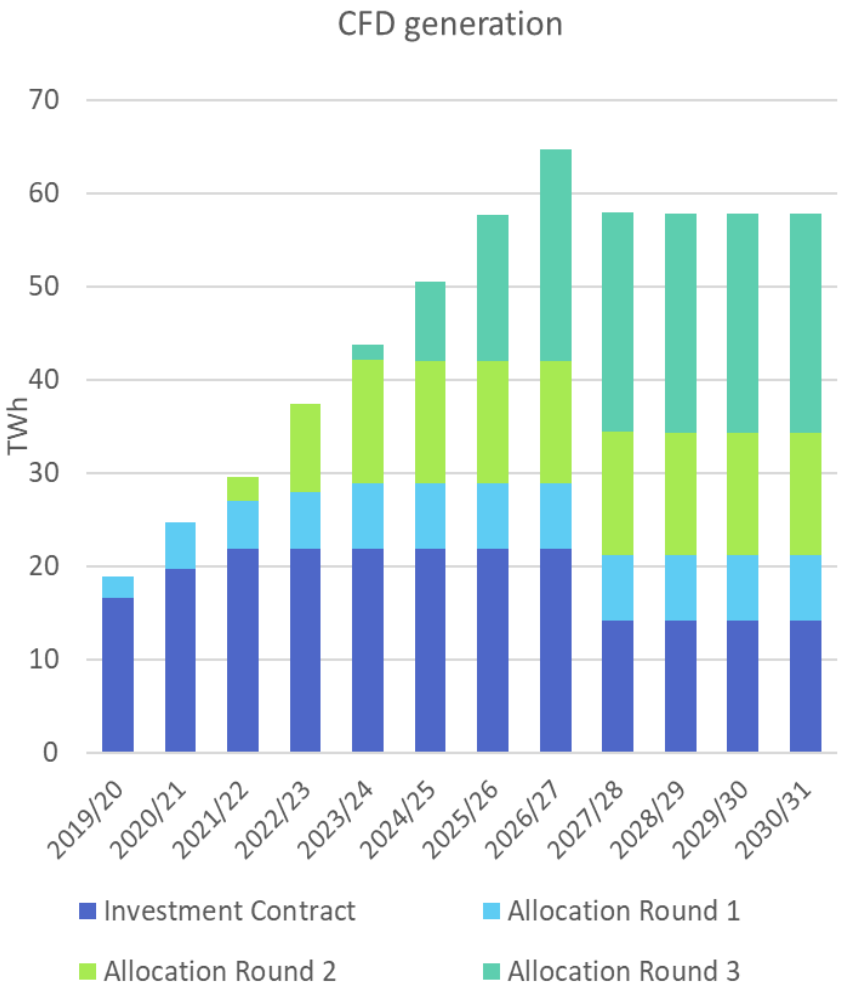




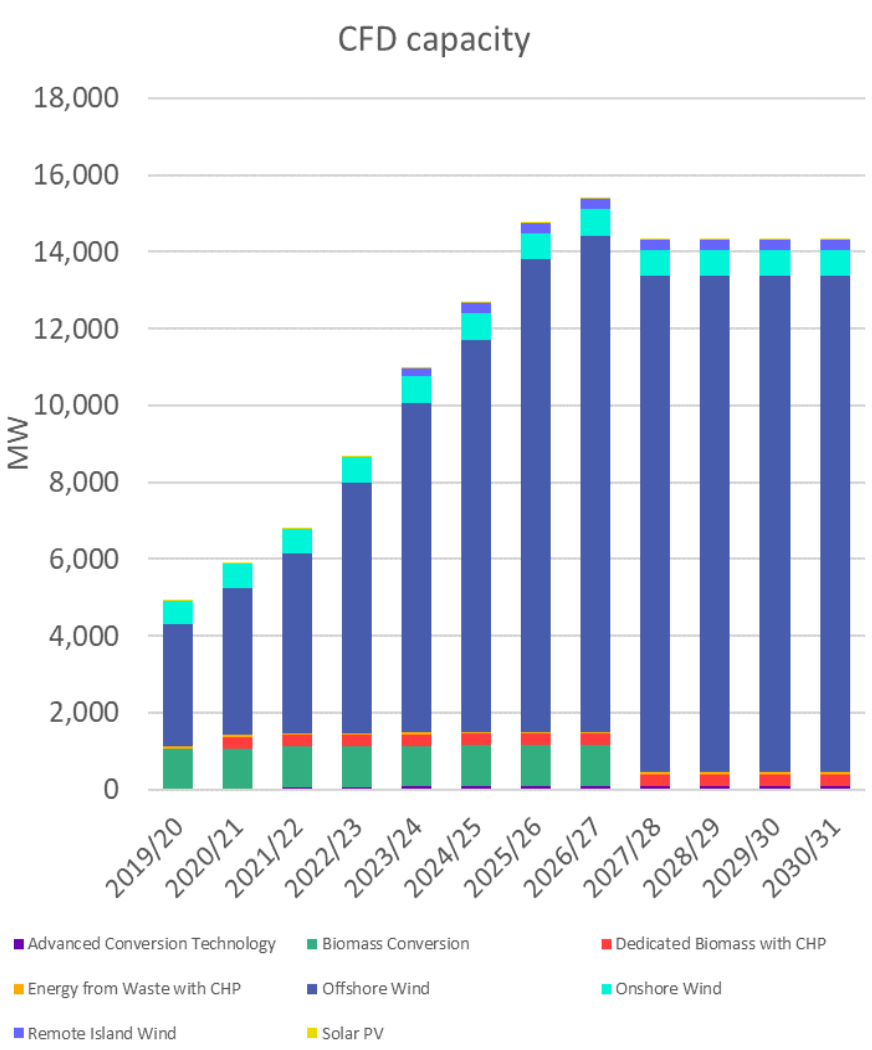
AR3 resource portal

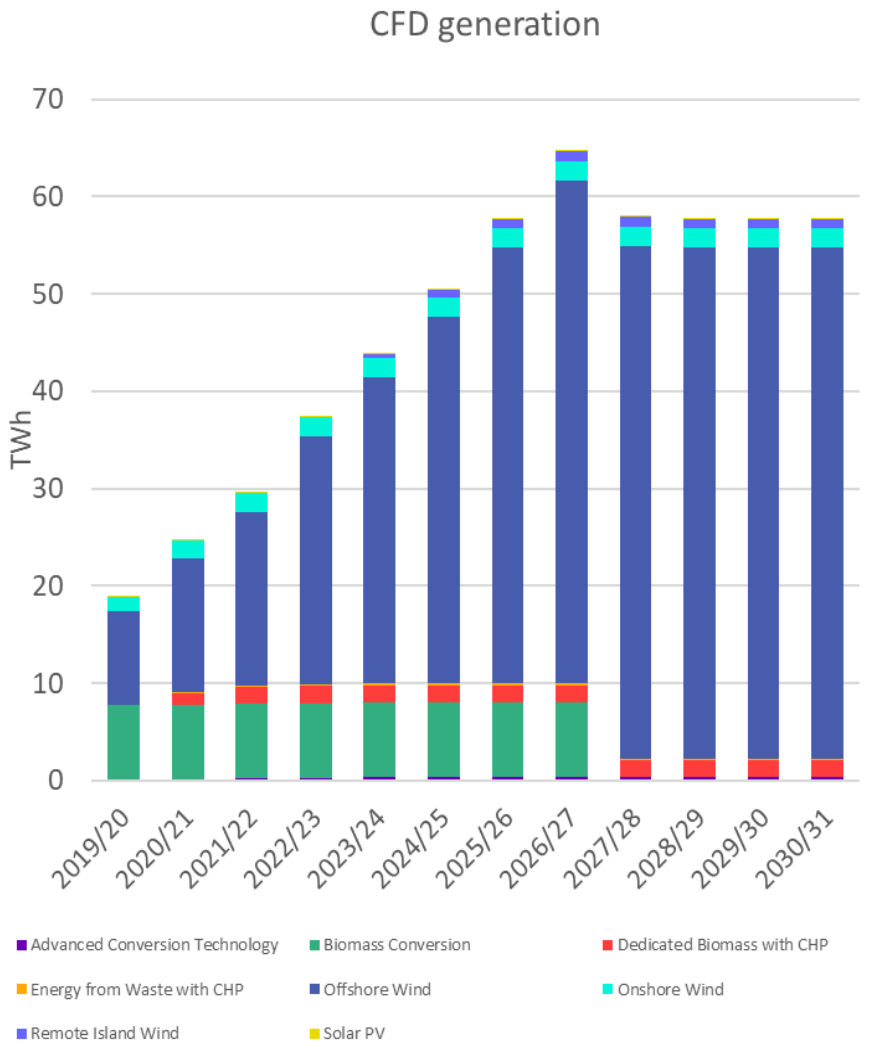
# Increased delivery, increased VfM per round



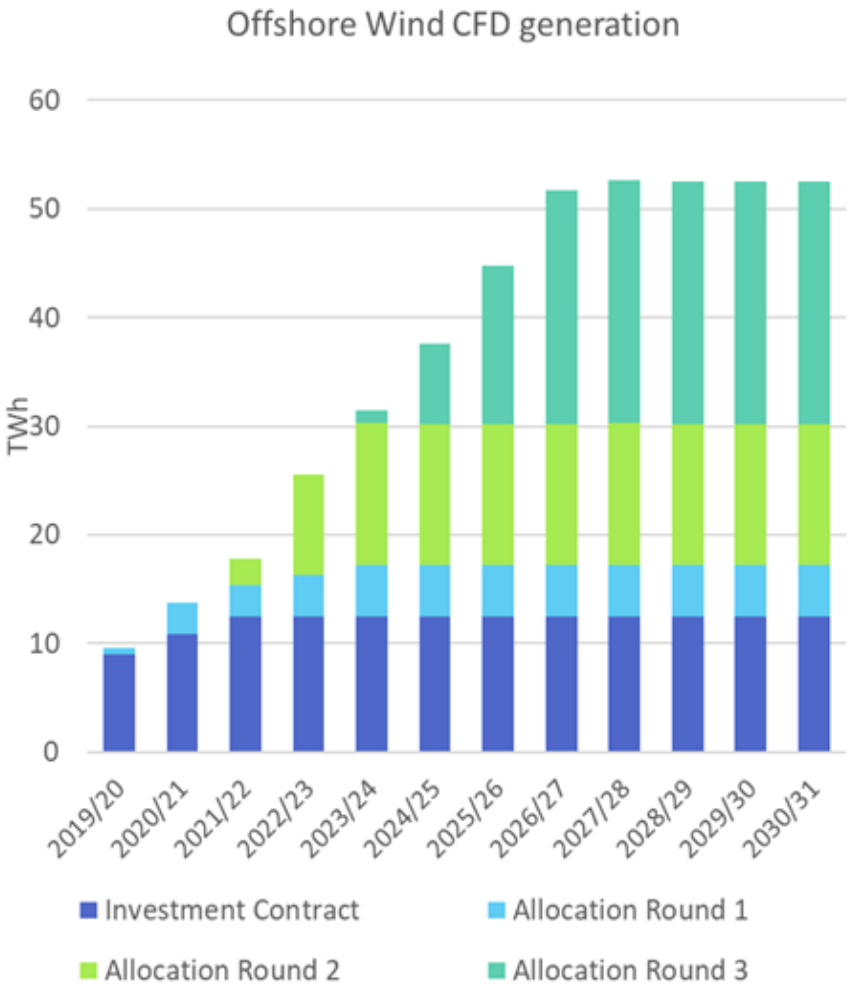



# Offshore wind 84% of renewable portfolio



# Offshore CfD generation increased by over 2/3

# CM Standstill and Restart

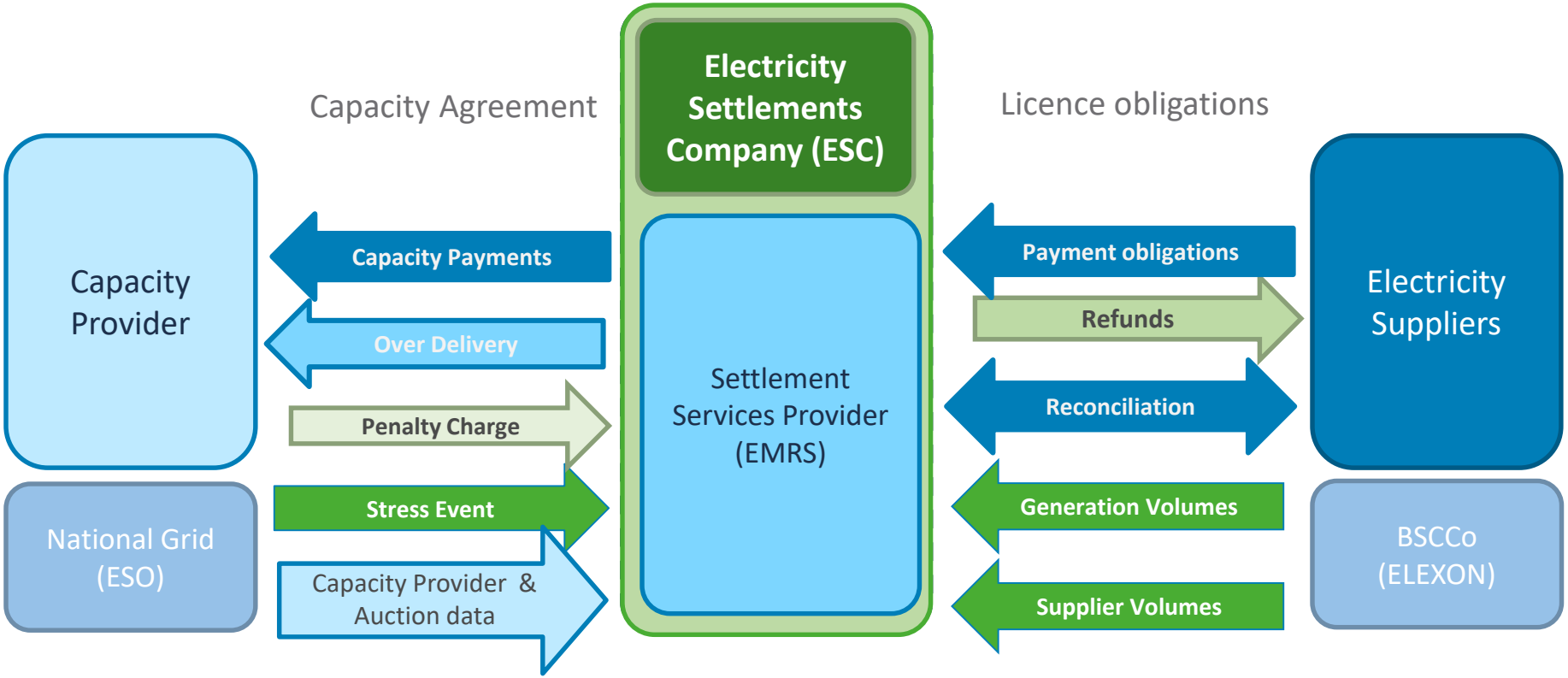
Speaker: Patrick Bibby, LCCC

# Capacity Market – Brief overview

ESC manages all financial transactions

- Designed to ensure sufficient, reliable capacity in periods of system stress
- Enables the market to competitively set the price for capacity
- Gives eligible capacity providers a reliable revenue stream
- Capacity providers face penalties if they fail to deliver capacity when required
- Year-ahead and 4-year-ahead auctions are run by the EMR Delivery Body
- Different Delivery Partners have specific roles and responsibilities in running the scheme

# Capacity Market Interactions



# Delivery partners: Roles and responsibilities

| National Grid (NG) | EMR Settlement Limited (EMRS) and the Electricity Settlements Company (ESC) |
|---|---|
| ❑Manage Pre-qualification for Auction | ❑Manage Credit Cover for prospective Capacity Providers and Suppliers |
| ❑Manage Capacity Auctions (T-1) and (T-4) | |
| ❑Award and Manage Capacity Agreements | |
| ❑Conduct DSR tests and Satisfactory Performance Day Tests (SPDs) | ❑Manages Settlements (receiving money from suppliers to pay capacity providers) including service desk |
| ❑Determines Terminations and Suspensions | |
| ❑Manages Obligation Trading | ❑During a stress event – maintain capacity volume register, manage volume re-allocation, calculate penalty invoices |

# Capacity Market Standstill

## We have not been standing still


**What the market experienced**

**What the Electricity Settlement Company (ESC) experienced**

### Standstill Nov 2018

New Rules and Regs April 2019

EC Investigation Feb 2019

T-1 Auction Jun 2019

New Rules and Regs July 2019

**Restart Oct 2019**

### Questions

Release 14 DSR Component Reallocation + ALFCO updates Aug 2019

Release 13 New rules and regs Apr / Jun 2019

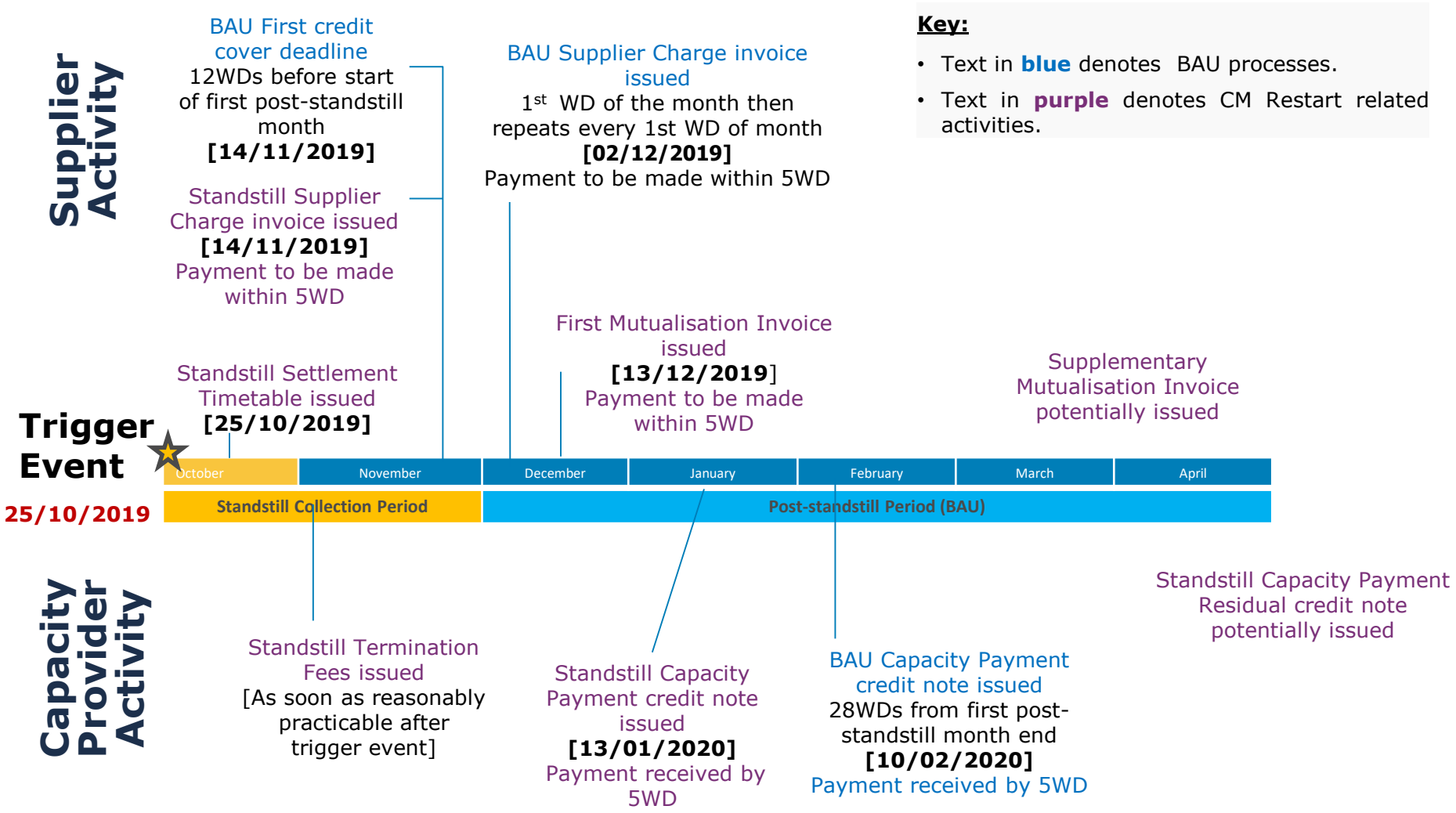
Release 14.1 Core Restart Functionality Sep 2019

Guidance / Working Practice Updates

Meter Tests Sep/ Oct 2019

**Invoicing / Collection Preparation**

# Capacity Market Restart – Here and Now




**Key:**

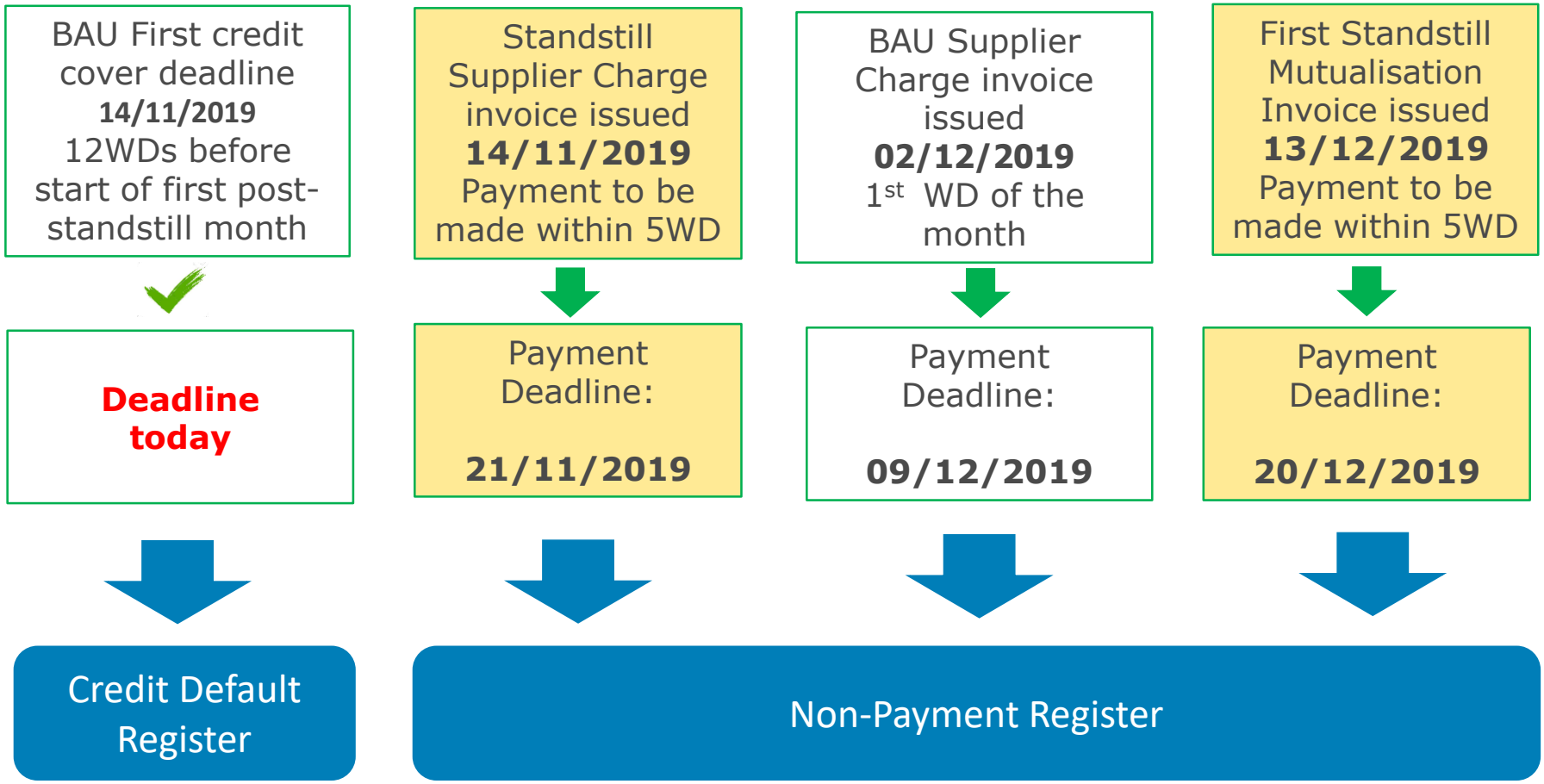
- Text in **blue** denotes BAU processes.
- Text in **purple** denotes CM Restart related activities.

**N.B.**

- This timeline does not include Stress Event related Payments, Reconciliations or Capacity Provider credit cover.
- Standstill Supplier Charge payment will be reconciled no later than 90WD, 160WD and 295WD after Standstill Capacity Payment credit note issued.

# Supplier Focus – 1 in a billion month

## Today is the start of a critical month for suppliers



# Suppliers Standstill in numbers*

BAU First credit cover deadline **14/11/2019** 12WDs before start of first post-standstill month

**Highest Credit cover liability**

**£100 Million**

Standstill Supplier Charge invoice issued **14/11/2019** Payment to be made within 5WD

**Standstill Liability**

**£1.2 Billion**

BAU Supplier Charge invoice issued **02/12/2019** 1st WD of the month

**First BAU payment**

**£80 Million**

First Standstill Mutualisation Invoice issued **13/12/2019** Payment to be made within 5WD

**Known defaulting Suppliers**

**£8 Million**

*approximations based on current ESC data

# Pre–conference Sli-DO responses

## 1) Update on CM Restart

- Yes, we will discuss restart and the critical activities required from Supplier and Capacity Provider perspective

## 2) How Supplier charges are calculated

- Elements of the scheme to be covered in the first break out this afternoon, please ask questions and utilise the expertise within the room if you would like more detail. There are a number of guidance documents to support Suppliers and Capacity Providers on the EMRS website under Guidance in the publications section. G15 Supplier Payments contains supporting detail to help understand calculations.

## 3) Information about CM Scheme

- As above

## 4) How is the CM Scheme Changing?

- There is an opportunity to discuss this in the second break out session

# Capacity Market Break out session

## What we will be discussing

- Capacity Market Restart – Here and now
- Supplier Focus – 1 in a billion month
- Supplier Standstill in numbers
- Capacity Provider Payments – A year into 2 months
- Supplier Considerations
- Capacity Market 2020 Business as usual
- Capacity Provider Mock Stress Event Discussion

# CFD and CM Financial Highlights

Speaker: Asad Jamil, LCCC

# Key CFD stats

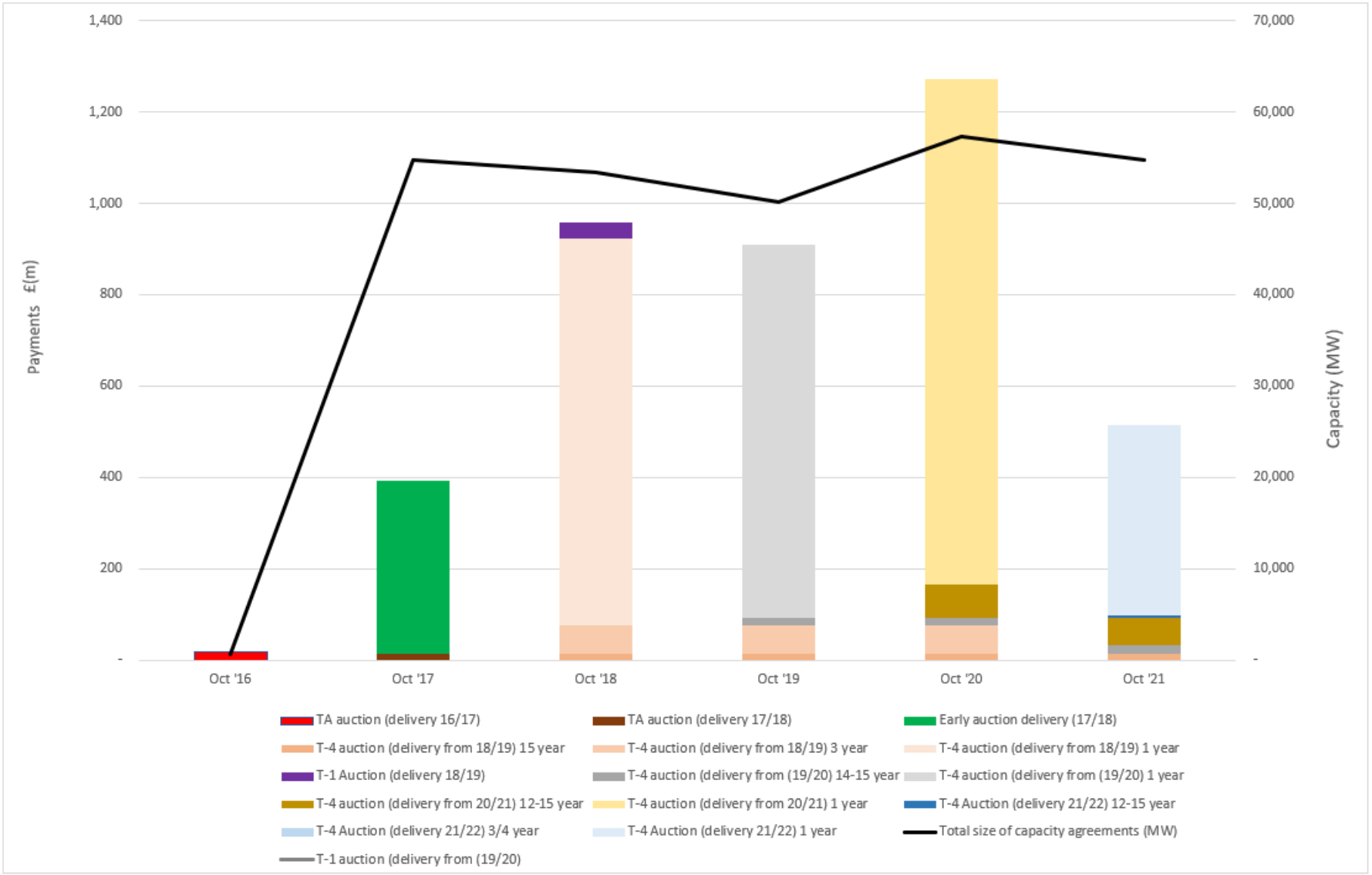
| | Actuals<br>April 2018 – March 2019 | Forecast*<br>April 2019 – March 2020 |
|---|---|---|
| CFD payments | £980.0m | £1.8bn |
| Suppliers' credit cover | £93m | £153m |
| Operational cost | £12.3m | £12.7m |
| Operational costs as a percentage of total annual cost | 1.2% | 0.7% |
| **Since start of CFD scheme – Oct 2019** | | |
| CFD payments | £2.3bn | |
| CFD payment £/MWh of low carbon generation | £78 | |
| Operational cost | £58.5m | |
| Operational costs as a percentage of total cost up to Oct 2019 | 2% | |

*N.B. all LCCC forecasts are estimates based on assumptions. For information about our CfD assumptions visit our website: www.lowcarboncontracts.uk/dashboards

# Key CM Stats

| | Actuals<br>April 2018 – March 2019 | Forecast<br>April 2019 – March 2020 |
|---|---|---|
| CM payments | £175.6m | £1.5bn |
| Operational cost | £7.2m | £7.1m |
| Operational costs as a percentage of total annual cost | 4.10% | 0.47% |
| Capacity providers' collateral | £64m | £244m |
| Suppliers' credit cover | £113m | £100m |
| **Since start of CM scheme – Oct 2019** | | |
| CM payments | £405.5m | |
| Operational cost | £23m | |
| Operational costs as a percentage of total cost up to Oct 2019 | 5% | |

# Total cost of capacity agreements by auction and year



# Third Party Costs for suppliers – the role of the CfD and CM levies and their impact on the supply market

Speaker: Dan Starman, Cornwall Insight

# CORNWALL INSIGHT

CREATING CLARITY

CORNWALL INSIGHT

CREATING CLARITY

# The Supplier Cost Perspective

14 November 2019

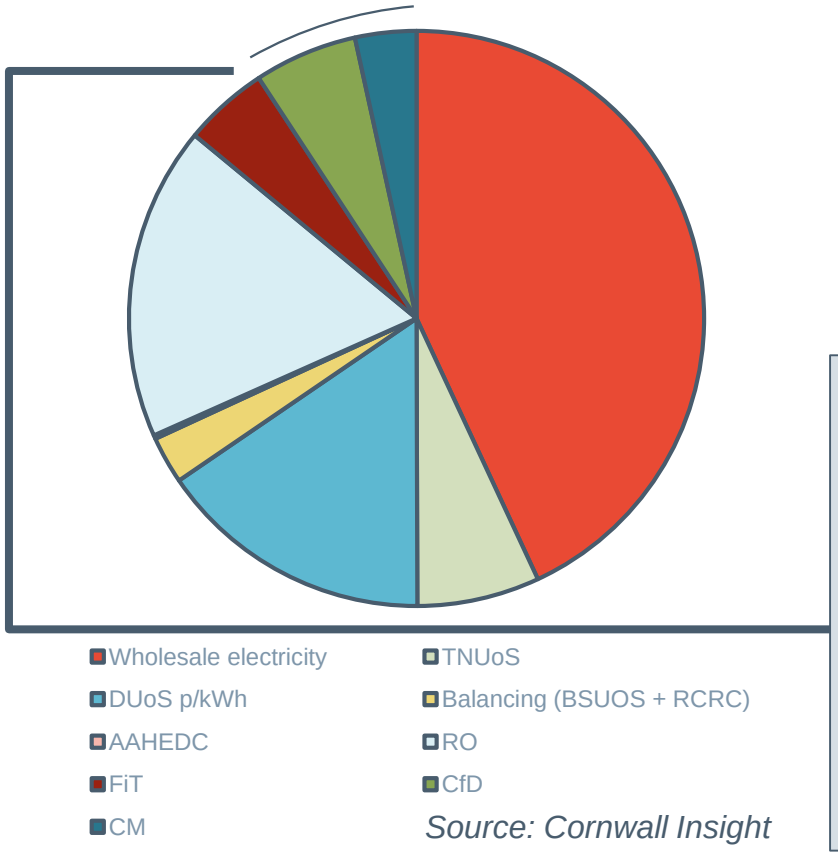
Daniel Starman

# We will discuss

- EMR costs as part of the wider bill
- The evolution of supplier costs since 2010
- Charge thresholds
- Cost profile
- Cost trajectories
- CM cost recovery

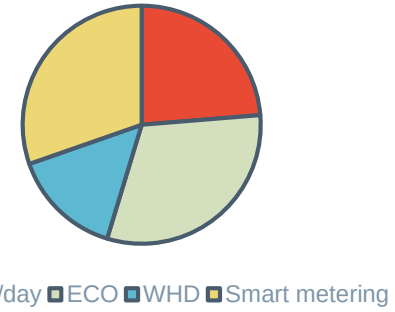
# Domestic Electricity Supply Costs

## Volumetric costs




*Source: Cornwall Insight*

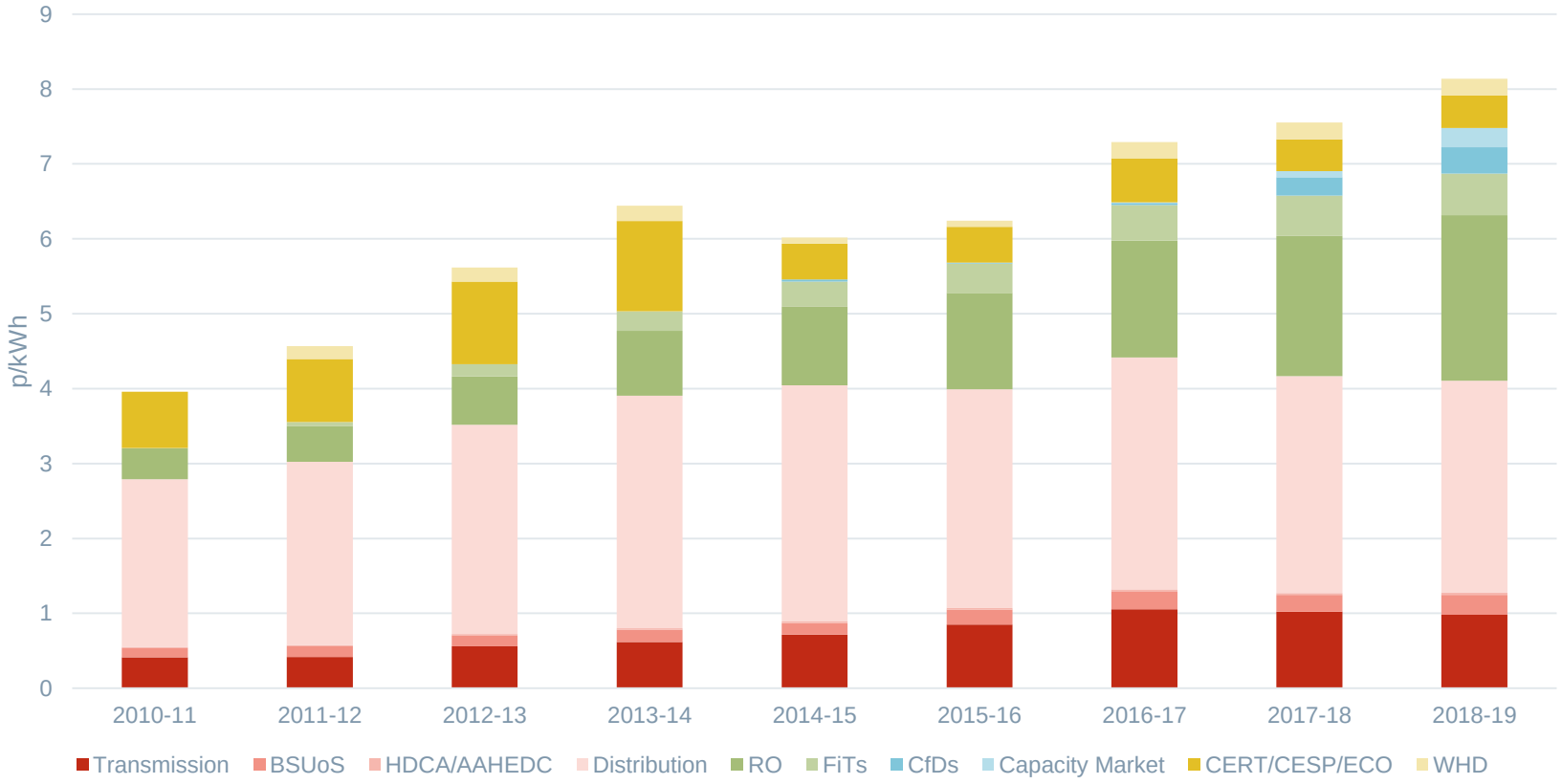
## Fixed costs



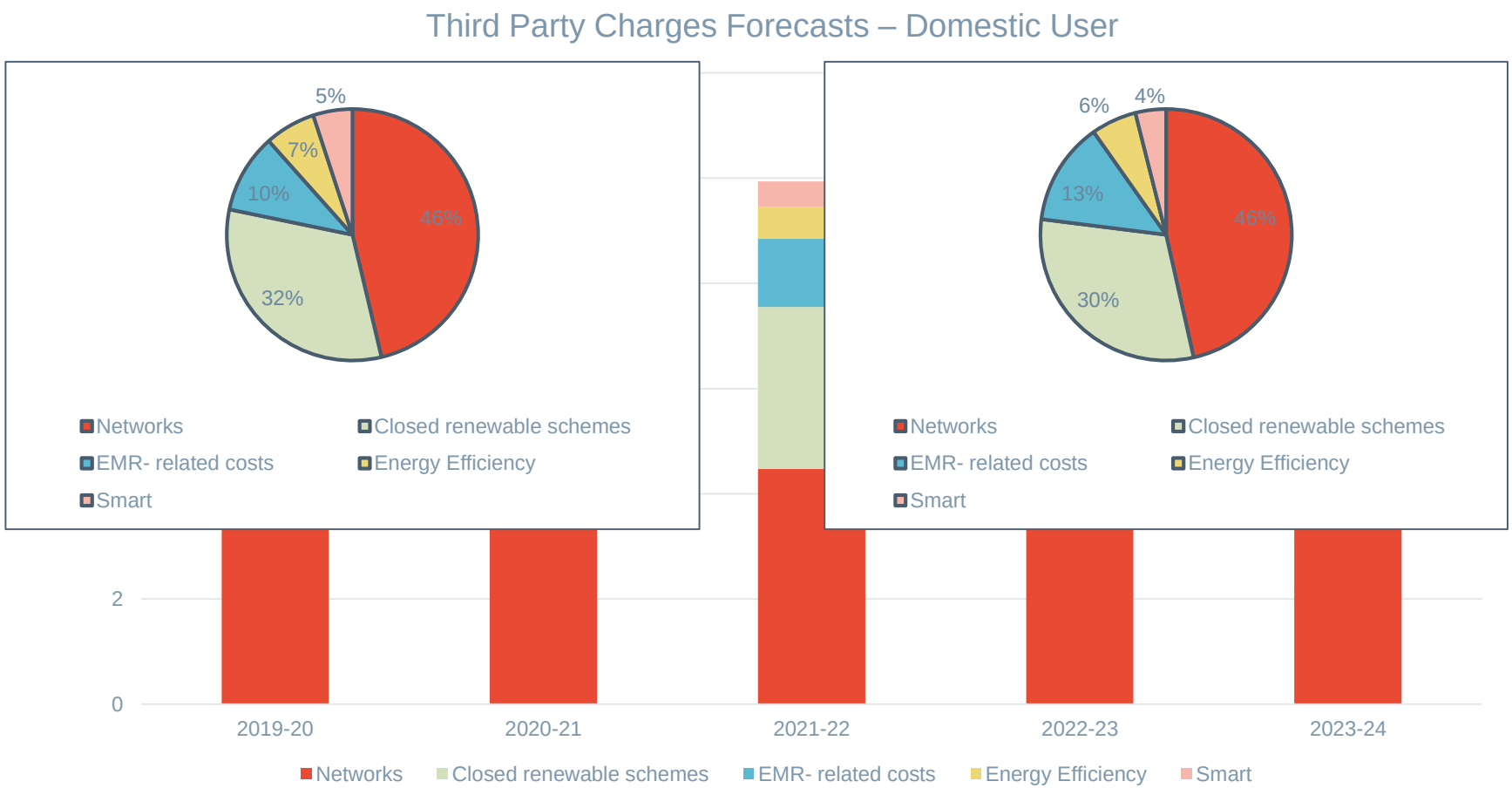

- Electricity charges comprise of volumetric and fixed costs
- The largest components are wholesale and network related
- RO costs equate to almost 20% of the volumetric charge
- EMR costs equate to around 10% of the electricity bill

# Cost Evolution

## Third Party Charges – Domestic PC1



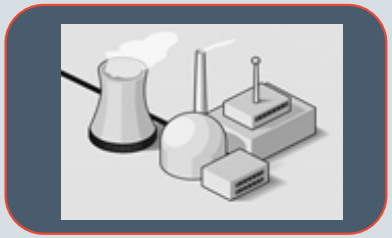
# Where Are the Costs Going?



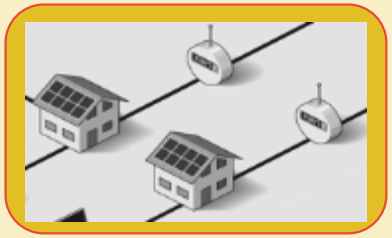

*Source: Cornwall Insight*

# Key Drivers

- Deployment of offshore wind
- Reinforcement of networks
- RIIO-2
- Network Charging Reforms

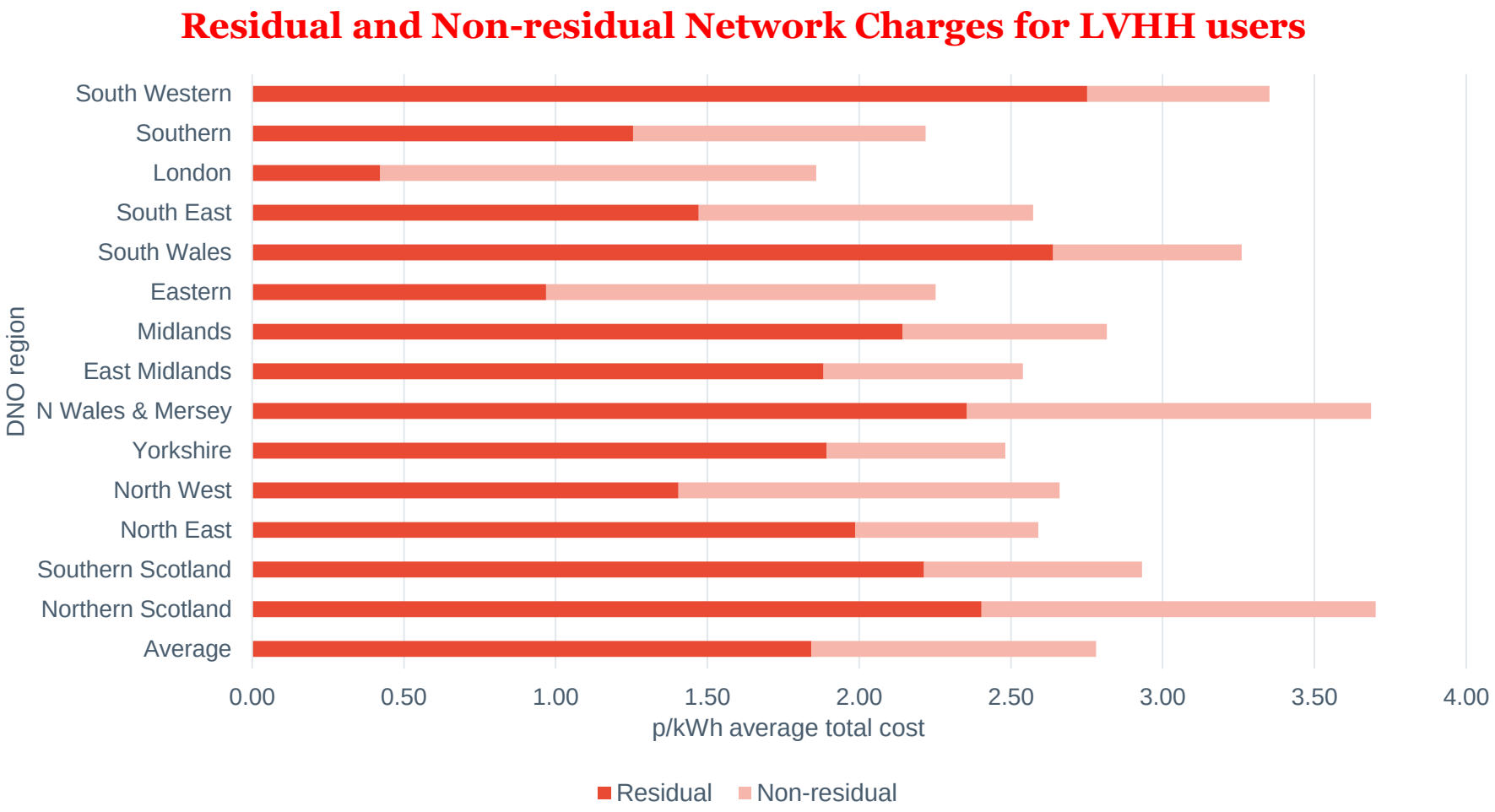


- Capacity supported under CfDs
- FiT grace periods
- CM auction results
- Weather and demand patterns



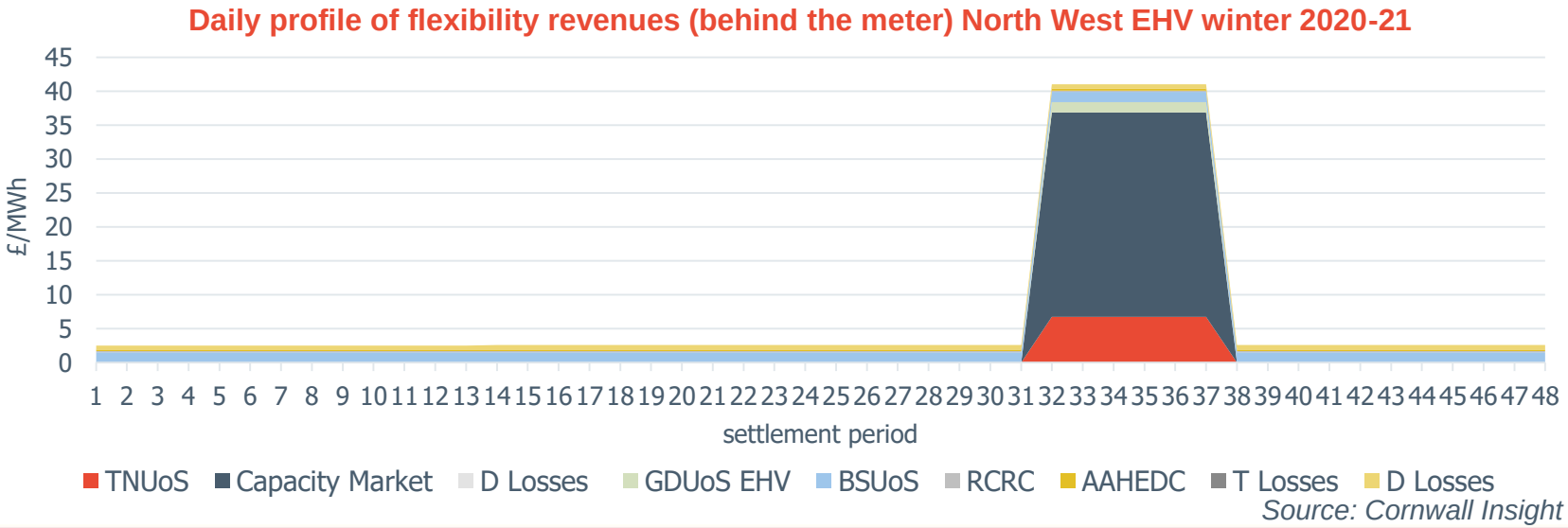
- Future decisions on affordability and energy efficiency policy
- CCL electricity/ gas rebalancing

# Fixed Cost Increases for Networks



# Capacity Market Supplier Charge

- Recovers cost of Capacity Market contracts to providers from suppliers
- Capacity Market charges are based on consumption during liable periods
- Moved to gross charging from 1st November 2018
- Signals from network and policy charges can be temporal and locational
  - Temporal signals give consumers and operators signals about when to shift demand or turn on assets




*Source: Cornwall Insight*

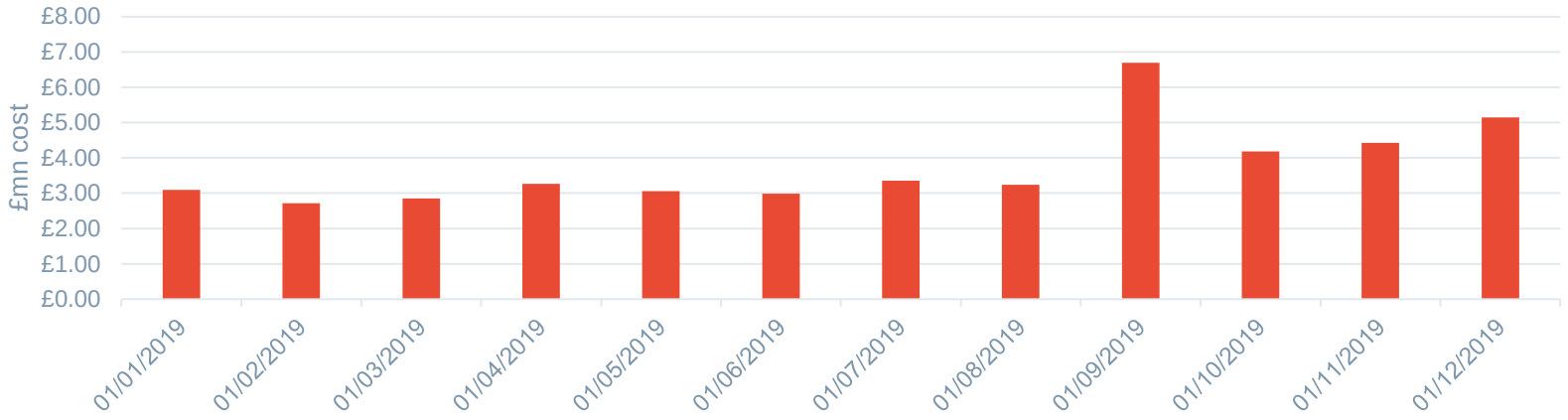
# Charging Thresholds

- Some elements of the bill are subject to customer number and volume thresholds
  - ECO
  - WHD
- Customers with over 250,000 accounts are also mandatory FiT licensees

**ECO thresholds**

| Charge | Customer numbers | Electricity volumes | Gas volumes |
|---|---|---|---|
| Prior to Apr 19 | 250,000 | 500GWh | 1,400GWh |
| 2019-20 | 200,000 | 400GWh | 1,100GWh |
| 2020-21 | 150,000 | 300GWh | 700GWh |

# Cashflow and Credit




- Cashflow requirements for electricity supply are “lumpy”
  - Daily
  - Monthly
  - Quarterly
  - Annually
- Credit requirements are substantial
  - Trading
  - Networks
  - EMR
  - SEC

# Supplier exits since April 2018

| Supplier | Date | Method of exit | Customers | Impact on schemes |
|---|---|---|---|---|
| Flow Energy | May-18 | Acquired by Co-op Energy | 130,000 | |
| GEN4U | Jul-18 | SoLR to Octopus Energy | 500 | ✓ |
| Iresa | Jul-18 | SoLR to Octopus Energy | 95,000 | ✓ |
| National Gas & Power | Jul-18 | SoLR to Hudson Energy | 80 (business) | ✓ |
| Affect Energy | Aug-18 | Octopus Energy purchase | 20,000 | |
| Ephase | Aug-18 | Administration | <100 | ✓ |
| USIO | Oct-18 | SoLR to First Utility | 7,000 | ✓ |
| Snowdrop Energy | Oct-18 | Transfer to Nabuh Energy | 6,000 | |
| Planet 9 | Oct-18 | Stated in 2017 accounts it would cease trading in 2018 | Business | |
| Extra Energy | Nov-18 | SoLR to Scottish Power | 108,000 | ✓ |
| Spark | Nov-18 | SoLR to Ovo Energy | 290,000 | ✓ |
| Oneselect | Dec-18 | SoLR to Together Energy | 33,000 | ✓ |
| Economy Energy | Jan-19 | SoLR to Ovo Energy | 235,000 | ✓ |
| Our Power | Jan-19 | SoLR to Utilita | 31,000 | ✓ |
| Flogas Energy | Feb-19 | Exited after soft-launching electricity | Business | |
| Brilliant Energy | Mar-19 | SoLR to SSE | 17,000 | ✓ |
| Avid Energy | Jul-19 | Acquired by Nabuh | ~15,000 – 20,000 | |
| Cardiff Energy Supply | Aug-19 | SoLR to SSE | 800 | ✓ |
| Solarplicity | Aug-19 | SoLR to EDF Energy | 7,500 | ✓ |
| Ure Energy | Aug-19 | Licence revoked | N/A | ✓ |
| Co-op Energy | Aug-19 | Customers acquired by Octopus Energy | > 300,000 domestic | |
| Eversmart | Sep-19 | SoLR to Utilita | 39,000 domestic and "very small amount" of business | ✓ |
| Green Star Energy | Oct-19 | Customers acquired by Shell Energy | Around 200,000 domestic | |
| Hudson Energy | Oct-19 | Customers acquired by Shell Energy | Around 2,000 | |
| Rutherford Energy | Oct-19 | SoLR to Total Gas and Power | 280 (business) | ✓ |
| TOTO Energy | Oct-19 | SoLR in progress | 134,000 | ✓ |

RO CP17

FiT year 9

CM – Standstill yr 1

RO CP18

FiT year 10

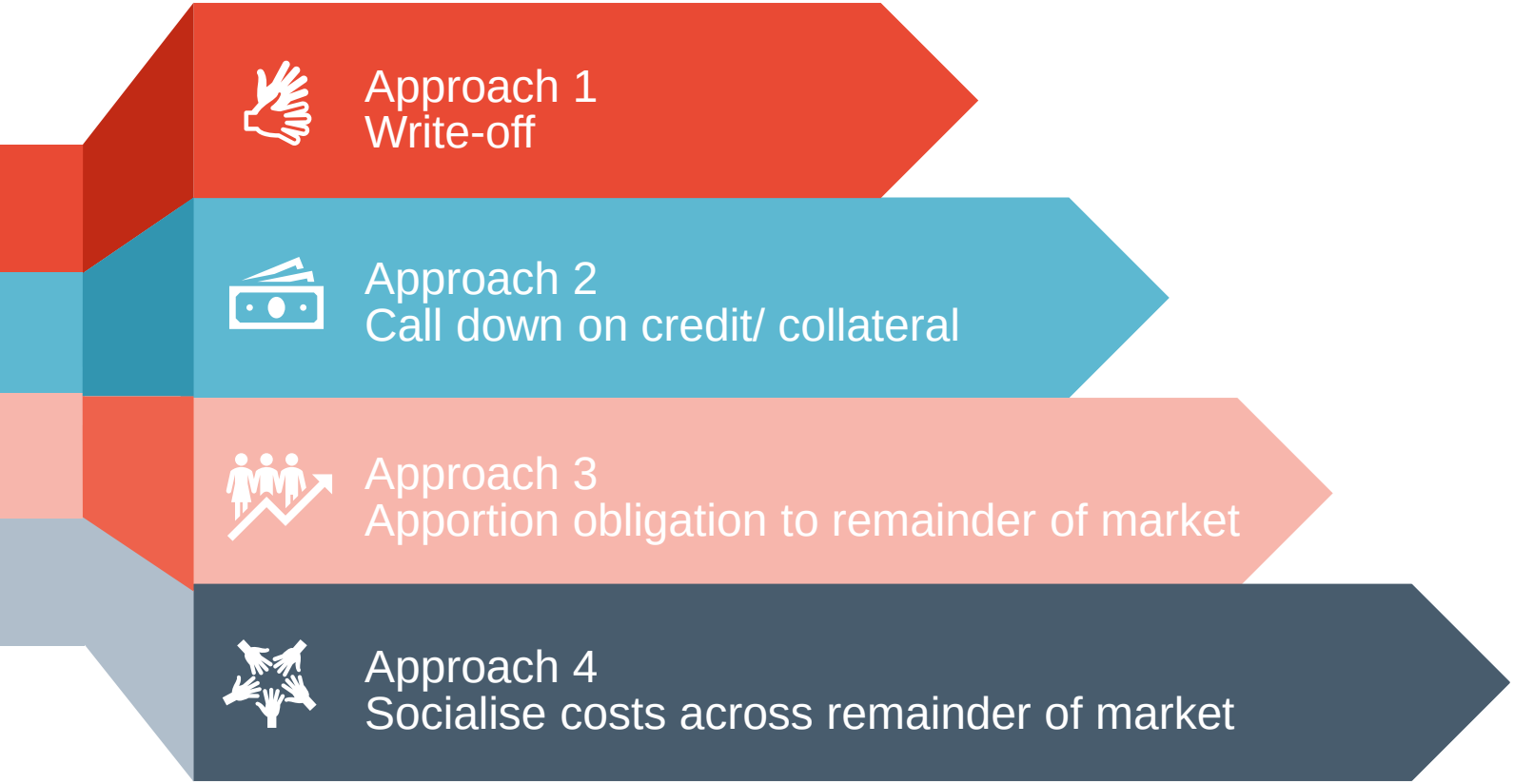
CM – Standstill yr 2

# Supplier of Last Resort levy

- Suppliers can claim Last Resort Supply Payments to cover certain costs incurred when acting as a Supplier of Last Resort
  - Honouring credit balances, capital costs, IT and operational costs, emergency wholesale price purchases etc.
- Recovered through Distribution Use of System charges

| SOLR | LRSP |
|---|---|
| Co-operative Energy - GB Energy | £14.04mn |
| Octopus Energy – Iresa | £13.8mn |
| Together Energy – OneSelect | £4.8mn |

# Making up shortfalls in schemes



# Summary

- EMR support mechanisms represent a small but growing proportion of the electricity bill
- Regular payments and credit requirements support cost recovery
- CM charge recovery occurs over the peak periods, incentivising load shifting
- The restart of CM payments represents a significant cashflow requirement for suppliers

# Contact details

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# Panel discussion – impact of third party costs on suppliers

Speakers: Dan Starman, Cornwall Insight
Bogi Hojgaard, LCCC
Gordon Edge, LCCC (chair)

# Coffee

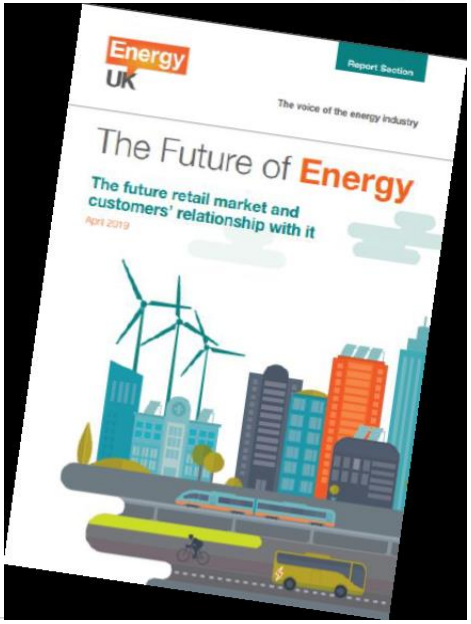
Please return by 11.30

# LCCC Dashboards – a new window onto our data

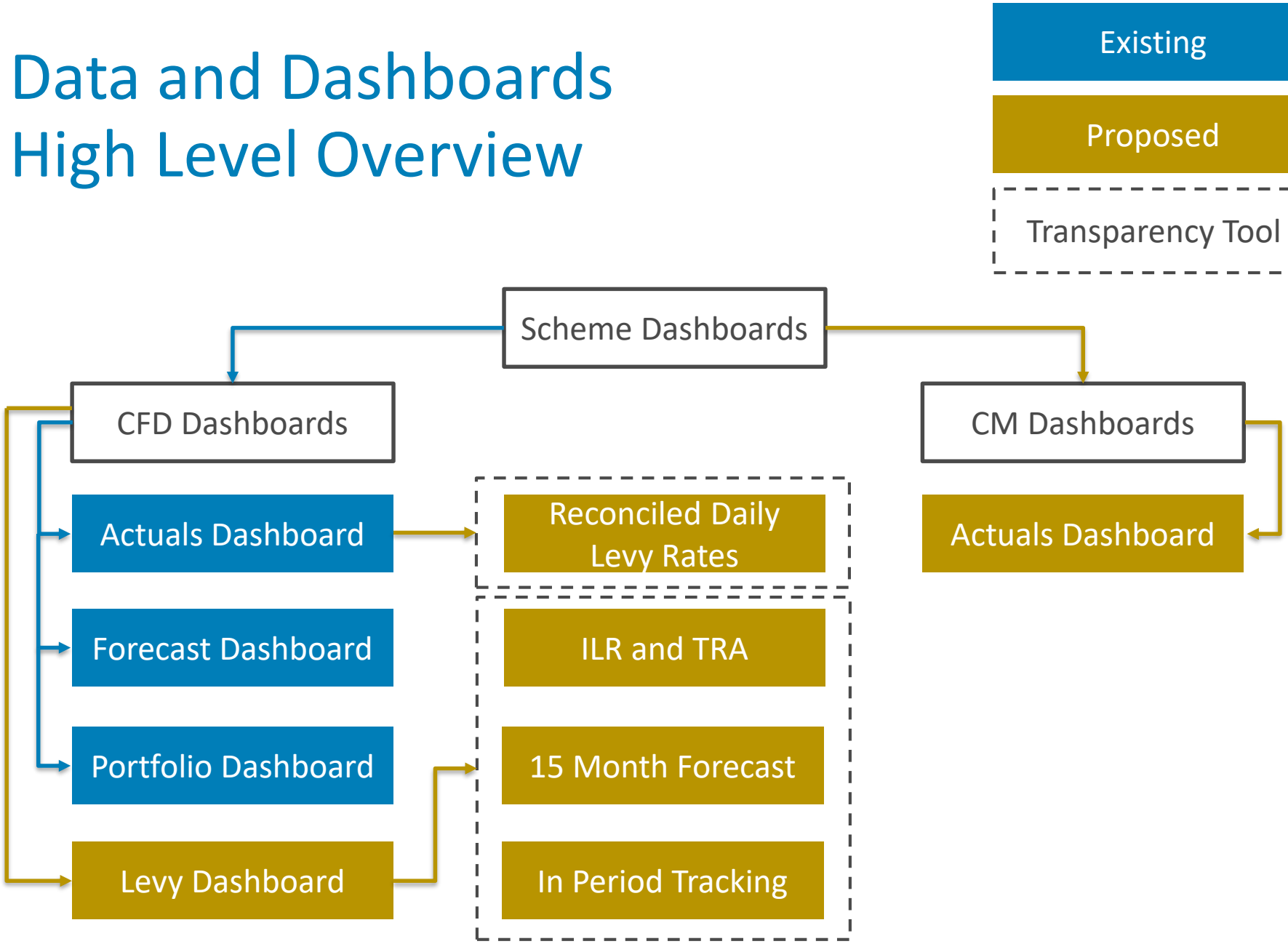
Speaker: Ulrich Arnheiter, LCCC

# Data and Dashboards Objectives

- LCCC's core objective is to maintain investor confidence in the CfD scheme & minimise costs to consumers. Providing data & analysis will
  - increase transparency.
  - help improve investor confidence.
  - reduce operational cost of dealing with numerous repeat queries for scheme data, including the FOI process.
- At LCCC we create and maintain vast amounts of data on the CfD & CM scheme. The dashboards are a first step into opening up access to this data to empower stakeholders and advance the Energy Data Taskforce data openness principle which is supported by the industry (EnergyUK).

# Data and Dashboards High Level Overview

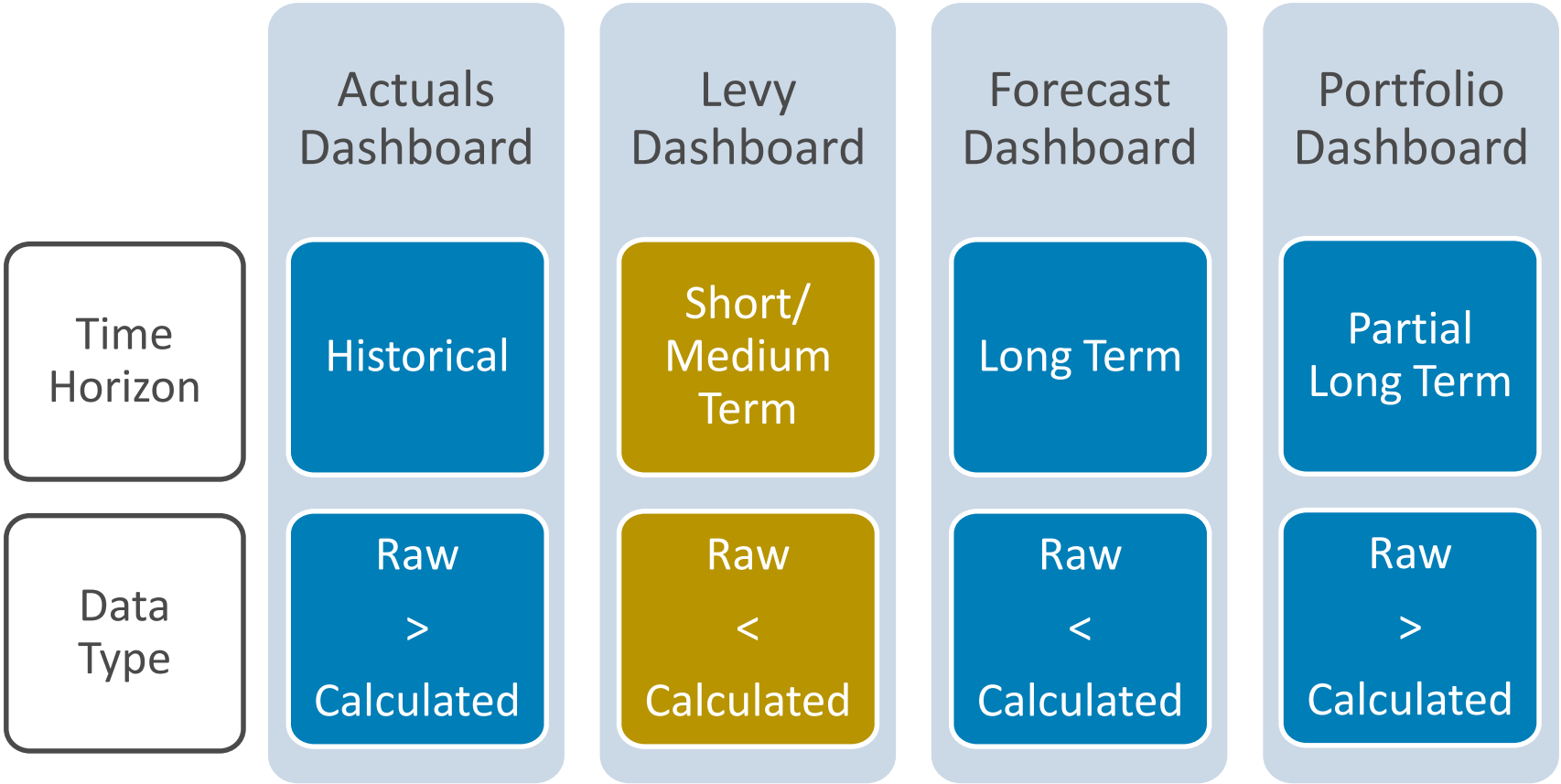


# Data and Dashboards Descriptions

CFD Existing

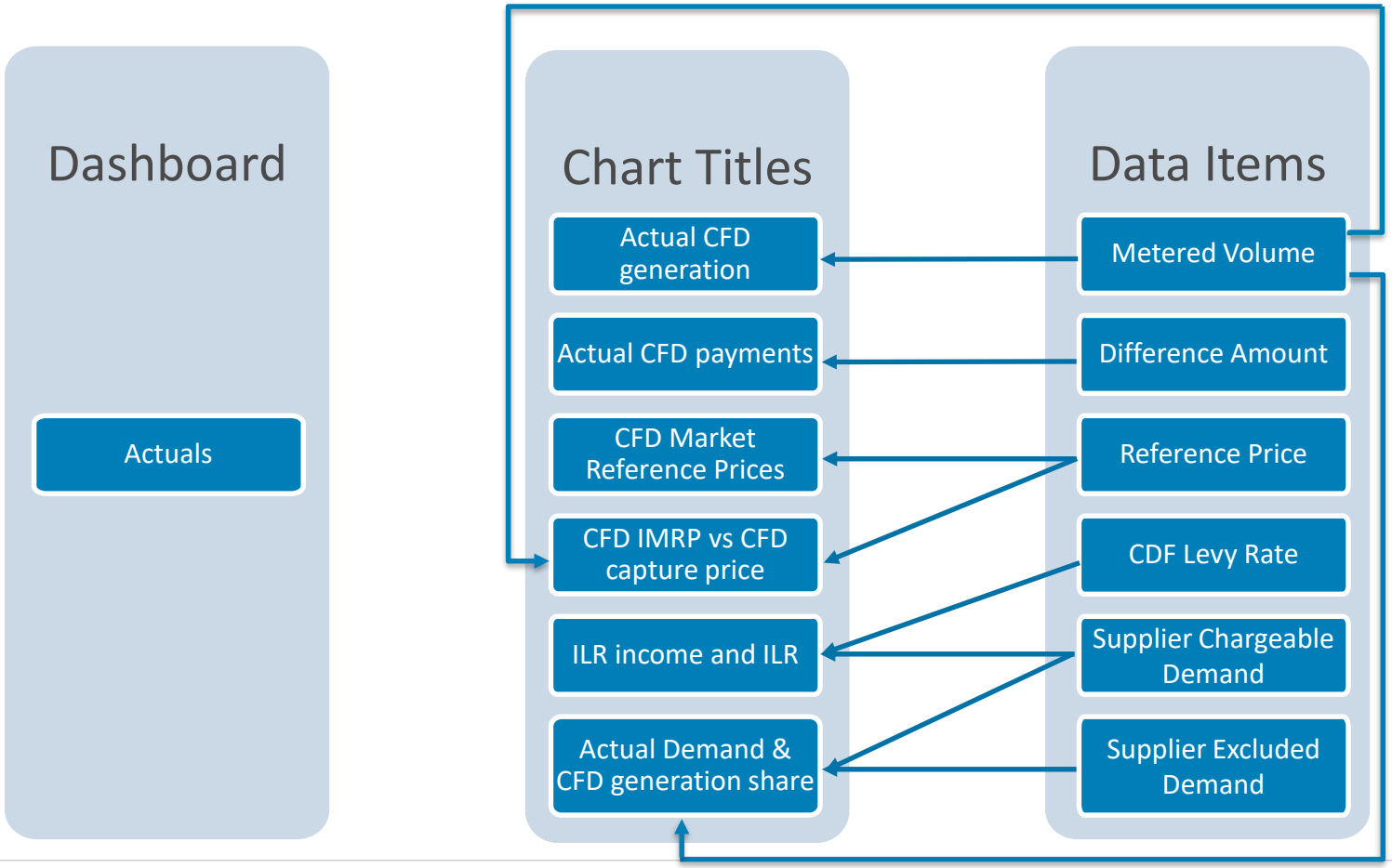
CFD Proposed

- The dashboard contents can be described in terms of time horizon and data type



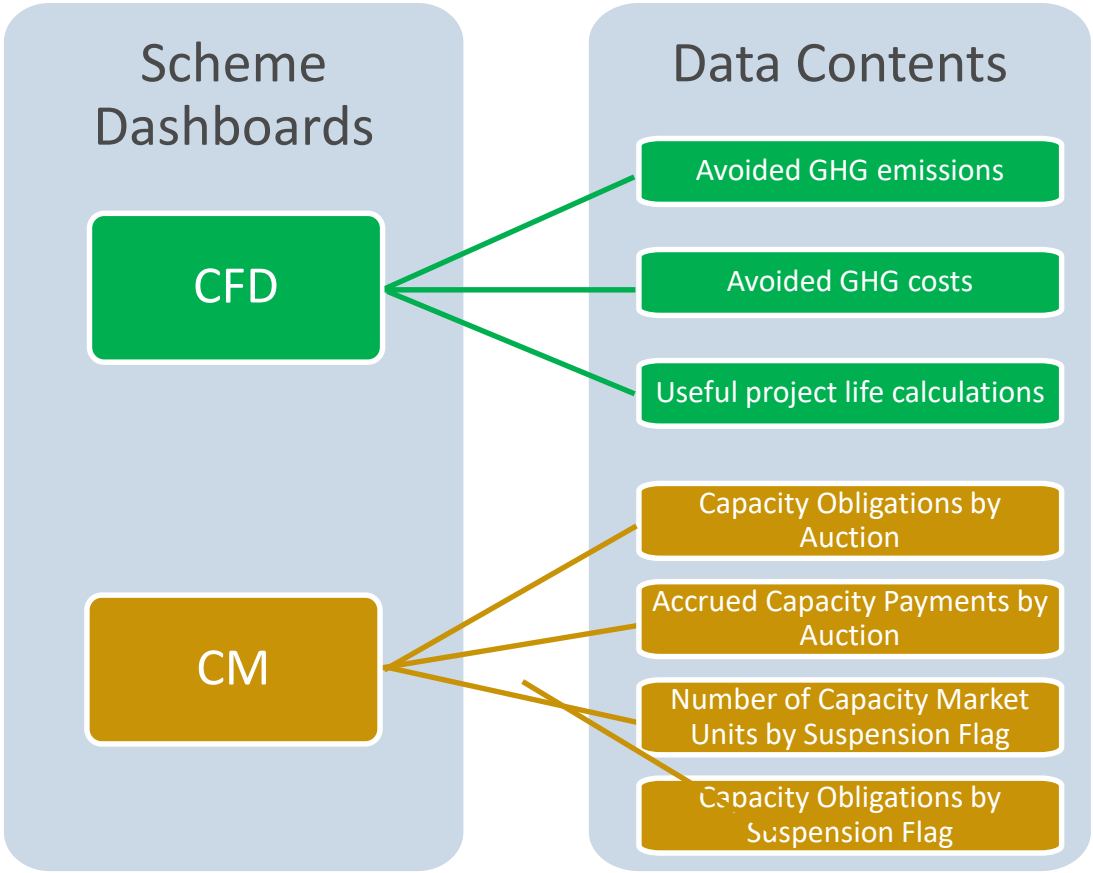
# Data and Dashboards Example

- The Actuals dashboard has charts containing raw and calculated data items



# Data and Dashboards Evolution

- The dashboard content evolution is under development

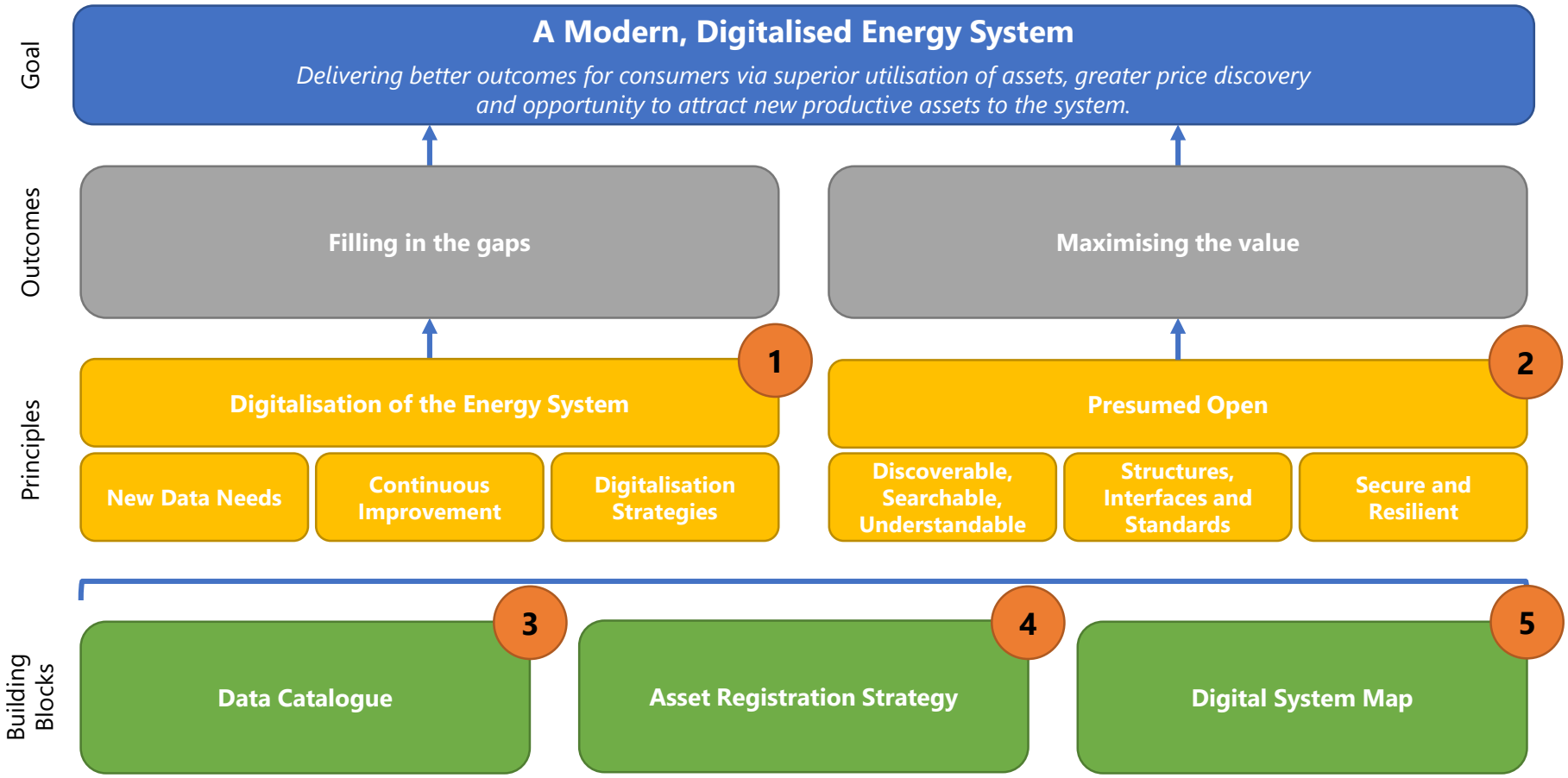


# Panel discussion – How low can you go?

The level of granularity to which it is possible and desirable to go with system and generator data

Speakers: Dr Richard Dobson, Energy Systems Catapult
Stuart Noble, ScottishPower Renewables
Gordon Edge, LCCC (chair)

# Energy Data Task Force



# Afternoon session and future engagement

Speaker: Ruth Herbert, LCCC

# Afternoon Agenda

| ROOM: | Plenary Room | | Long Drawing Room | | Wedgewood Room | |
|---|---|---|---|---|---|---|
| 13:30 – 14.30 | **The CM in detail – 1**<br>CM Restart deep dive<br>• Timetable and events<br>• Mutualisa-tion/invoice-ing/credit cover/LPI | Patrick Bibby, ESC | **Policy and regulation forward look** | LCCC Policy & Insights team | | |
| 14:30 – 14:45 | **COFFEE** | | | | | |
| 14:45 – 15:45 | **The CM in detail – 2**<br>Future policy and regulatory evolution of the CM | Omer Ahmad, ESC<br><br>Simon Dawes & Ollie Power, BEIS | **Levy forecasting 101**<br>Introduction to SOFM and ILR/TRA setting | Daniel Minifie, LCCC | **EMRS – Improvement programme** | Matt Johnson, EMRS<br><br>Alec Thompson, LCCC |
| 15:45 – 16:30 | **REFRESHMENTS AND NETWORKING** | | | | | |

# Future engagement activities

- **Stakeholder survey**
  - February 2020
- **CfD Generator events in Q1 2020:**
  - AR3 onboarding workshop
  - Direct Agreement workshop
  - Generator engagement event
- **Supplier events**
  - Quarterly ILR/TRA webinars – next one mid-January 2020
- **Capacity Provider event** – Mock Stress Event to be confirmed (poss. Q1 2020)
- **Autumn conference 2020**
- Further events throughout 2020 will be listed here: www.lowcarboncontracts.uk/events or sign up for our bulletins…

# Contact Us

The Low Carbon Contracts Company always endeavours to meet the needs of our stakeholders. Please give us your feedback or send us your queries through the form below or email us at: info@lowcarboncontracts.uk. We will reply to you as soon as we can.

If you wish to contact us by phone, please call +44 (0) 207 211 8881.

**Full Name*** **Job Title***

**Company Name***

**Email Address***

**Subject***

- Dashboard feedback
- General Information
- CFD Question
- Other...
- Capacity Market Question
- General Feedback

**Please describe the issue*** This is a required field

## Low Carbon Contracts Company Ltd

Fleetbank House
2-6 Salisbury Square
EC4Y 8JX

www.lowcarboncontracts.uk
info@lowcarboncontracts.uk
T: 0207 211 8881

**Company registration no:**

8818711

**VAT Number:**

227 7014 21

## Electricity Settlements Company Ltd

# We need your feedback!

- Event feedback will be gathered via Slido
- Use the event signifier **#autumnconference**
- Please use the questionnaire to tell us how useful you found this event and the individual sessions within it

# Lunch

Please return by 1.30

# Parallel session 1: 13.30-14.30

The CM in detail – 1

LOW CARBON
CONTRACTS COMPANY

# Capacity Market

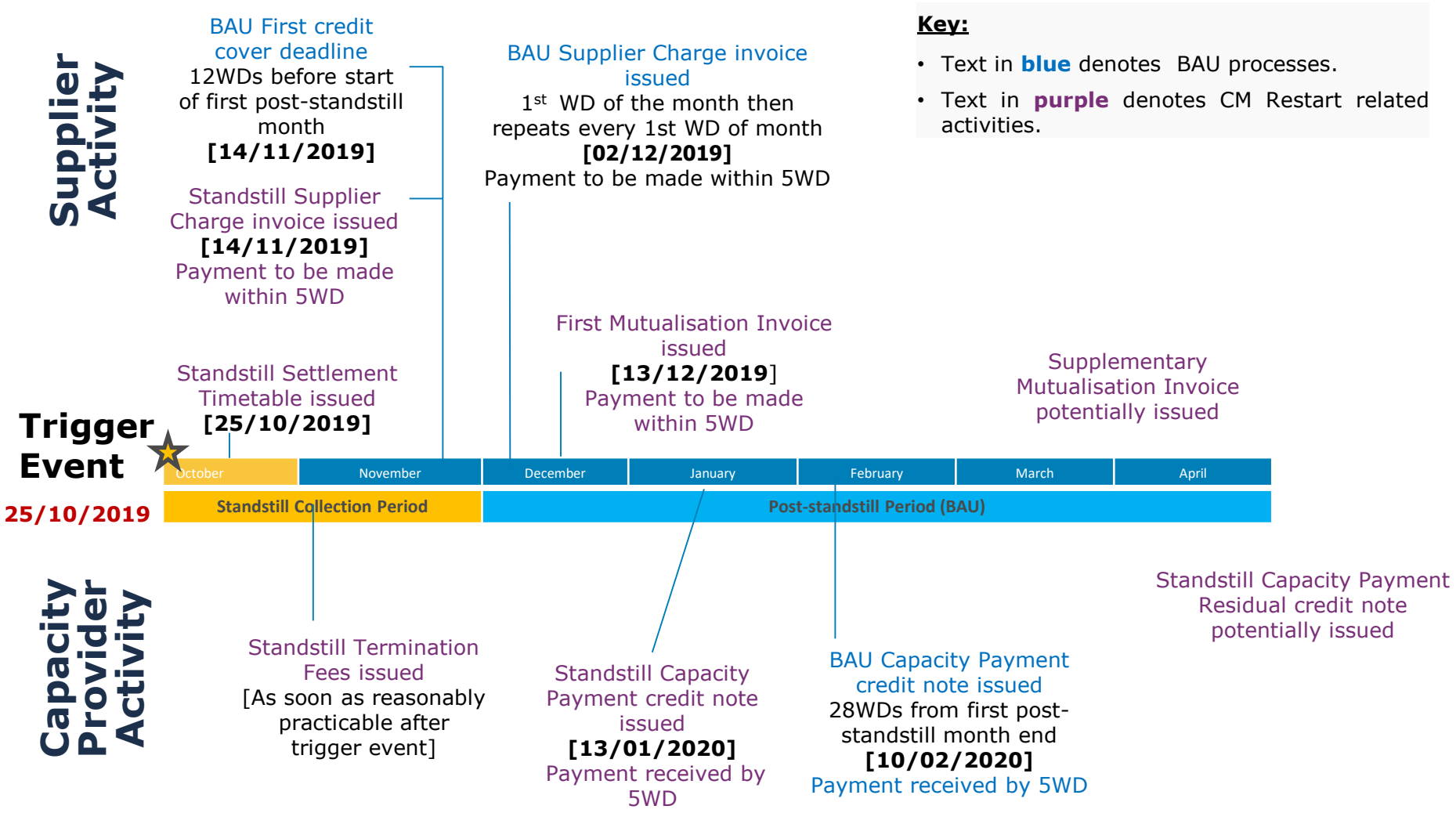
## Break out session

# Capacity Market Break out session

## What we will be discussing

- Capacity Market Restart – Here and now
- Supplier Focus – 1 in a billion month
- Supplier Standstill in numbers
- Capacity Provider Payments – A year into 2 months
- Supplier Considerations
- Capacity Market 2020 Business as usual
- Capacity Provider Mock Stress Event Discussion

# Capacity Market Restart – Here and Now




**Key:**

- Text in **blue** denotes BAU processes.
- Text in **purple** denotes CM Restart related activities.

**N.B.**

- This timeline does not include Stress Event related Payments, Reconciliations or Capacity Provider credit cover.
- Standstill Supplier Charge payment will be reconciled no later than 90WD, 160WD and 295WD after Standstill Capacity Payment credit note issued.

# Supplier Focus – 1 in a billion month

## Today is the start of a critical month for suppliers

BAU First credit cover deadline **14/11/2019** 12WDs before start of first post-standstill month

**Deadline today**

Credit Default Register

Standstill Supplier Charge invoice issued **14/11/2019** Payment to be made within 5WD

Payment Deadline:

**21/11/2019**

BAU Supplier Charge invoice issued **02/12/2019** 1st WD of the month

Payment Deadline:

**09/12/2019**

First Standstill Mutualisation Invoice issued **13/12/2019** Payment to be made within 5WD

Payment Deadline:

**20/12/2019**

**Capacity Market Non-Payment Register**

**Date: 22/11/2019**

Issued in accordance with The Electricity Capacity Regulation 47

| Due Date | A/C | Name | Number | Payment Type | Amount | Cleared | Dispute Raised |
|---|---|---|---|---|---|---|---|
| 21/11/2019 | xxxxxx | Supplier Example Ltd | 12345 | Supplier Charge | £100,000 | £0 | No |

Electricity Settlements Company

# Suppliers Standstill in numbers*

BAU First credit cover deadline **14/11/2019** 12WDs before start of first post-standstill month

**Highest Credit cover liability**

**£100 Million**

Standstill Supplier Charge invoice issued **14/11/2019** Payment to be made within 5WD

**Standstill Liability**

2018/19:
**£1 Billion**

2019/20:
**£160 Million**

BAU Supplier Charge invoice issued **02/12/2019** 1st WD of the month

**First BAU payment**

**£80 Million**

First Standstill Mutualisation Invoice issued **13/12/2019** Payment to be made within 5WD

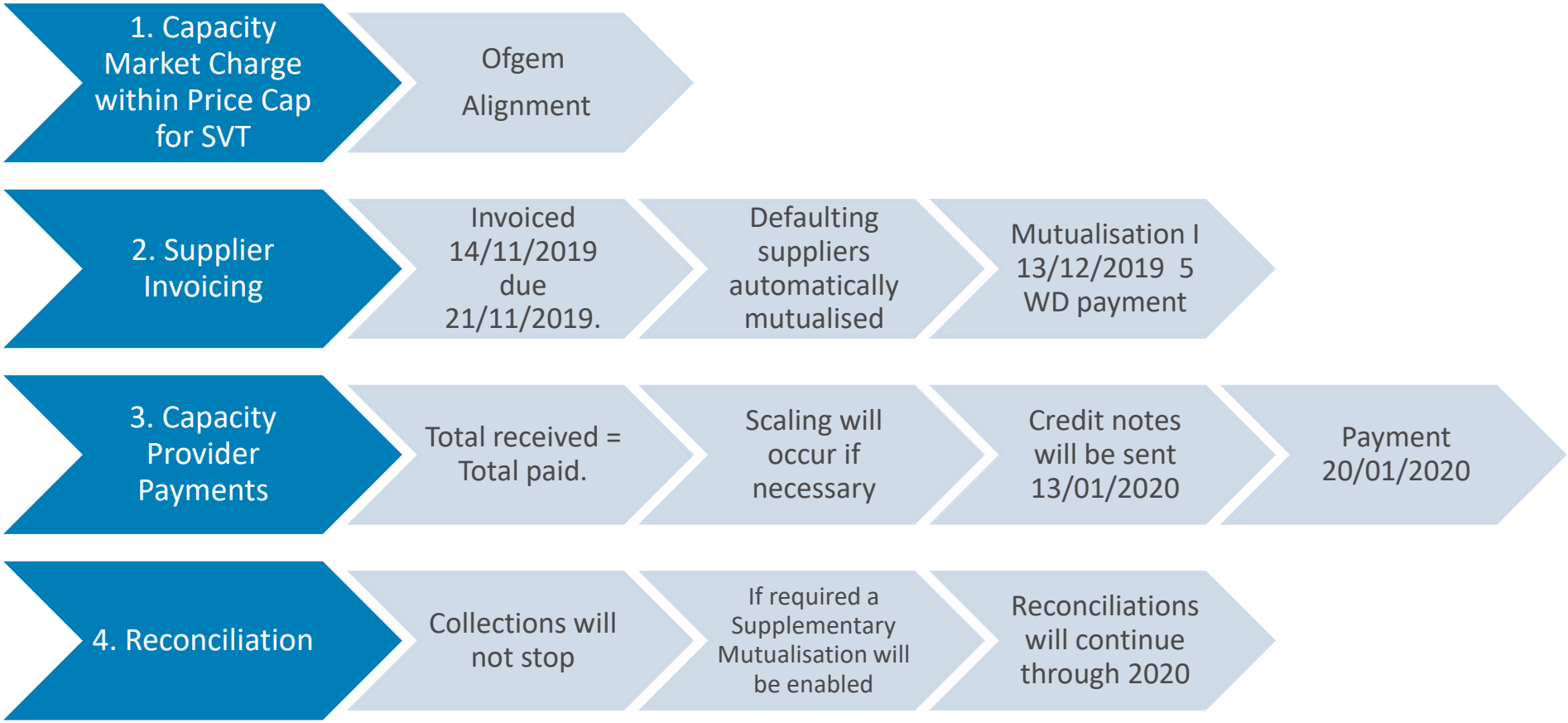
**Known defaulting Suppliers**

**£8 Million**

*approximations based on current ESC data

# Capacity Provider Payments

## A year condensed into 2 months



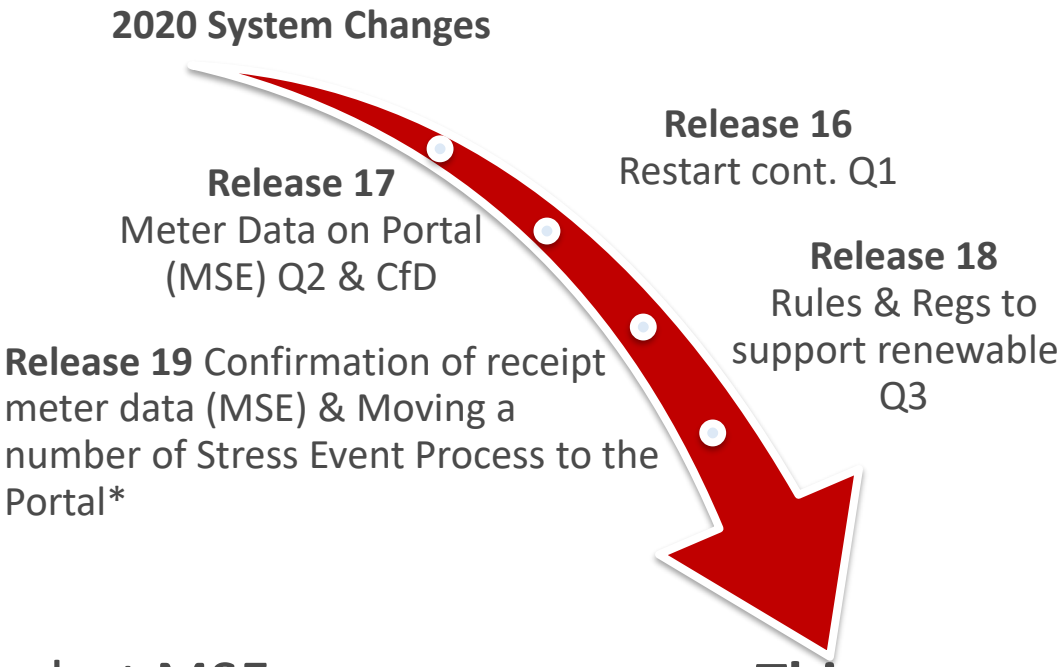
# Capacity Market Supplier considerations

Should any Supplier fail to pay their Standstill Supplier Charge invoice in full by the due date of the invoice, they will be in post-standstill payment default.

- Non-Payment Register https://www.lowcarboncontracts.uk/non-payment-registers
- Late Payment Interest: 5% above base
- Debt Recovery: ESC will take robust debt recovery action to collect any outstanding amounts with interest, in line with its regulatory duties
- Mutualisation: The amount is shared between the non-defaulting Suppliers based on market share for the Gross Demand for the Periods of High Demand (Peak Period)
- Scaling: Capacity Providers payments will be reduced based on the calculation below

# Capacity Market 2020 Business as usual

- System change pipeline for 2020 set out but we have to be flexible
- Restart conditions could mean we have to prioritise differently




- Mock Stress Event 2020
  - System changes following last MSE
  - Testing plan proposal
  - Deliver a staged approach 1 per quarter
  - Audit of delivery partner process
  - Support from a variety of CPs required

*Release 19 subject to change

# Capacity Provider Phased Mock Stress Event

## Proposal Discussion - Testing Plan

***Although these activities flow from one to the next the testing could be done independently***

### 1. Delivery & Settlement Body Interface test

- Sample participants (volunteers helpful)
- High risk area – Time constrained (file 9)
- Run on day where there has been balancing

### 2. Systems Operator & Settlement Body test

- Instruction and Operator Interface timing of Stress Event
- Involuntary Load reduction data
- Focus on process and data

### 3. CVR and CMVRN test

- Requires participant input for testing
- Improvement to CVRN and CVR
- Time sensitive window that is critical for CPs

### 4. Stress Event Calculations test

- ALFCO - Ensure System calculations validated post restart
- Run without involving participants

### 5. Comms test

- Advice welcomed from participants / Contacts list
- Check reliability of agreed contacts and processes of notification

***We will ask for further views before the end of 2019***

***We are planning based on post restart change pipeline to ensure quality delivery***

# Questions

# Coffee

Please return by 14.45

# Parallel session 1: 14.45-15.45

The CM in detail – 2

Due to purdah restrictions, the presentation by BEIS on the Capacity Market is not being published here

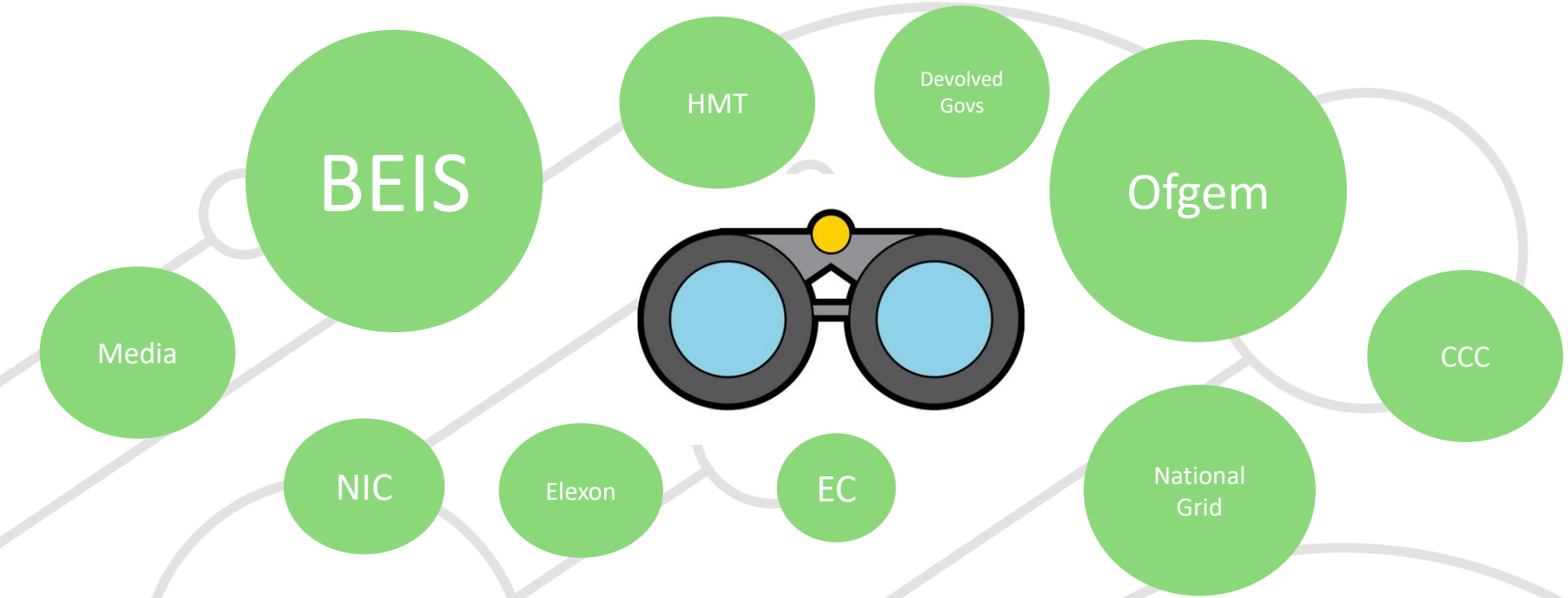
# Parallel session 2: 13.30-14.30

Policy and regulation forward look

LOW CARBON CONTRACTS COMPANY

Electricity Settlements Company

# Policy & regulatory overview



# Introductions

## About our Team

The Strategy & Development team provides five central functions:

1. Setting and implementing strategy
2. Building our reputation externally
3. Managing the relationship with our Shareholder, BEIS
4. Developing insight and influencing capability
5. Coordinating a coherent approach to change

## Policy and Insights

We focus on innovating and advising government and other expert or delivery bodies around the future development of the schemes and the broader energy market, through: developing insights from our scheme data and experience to inform the public debate and enhance our image as Centre of Expertise, including proactively identifying, scoping and supporting the delivery of value-adding online publications, in anticipation of our work as Trusted Advisors.

We also manage the advisory interface with BEIS and Ofgem on the evolution of the schemes and energy market, enabling LCCC to act as Trusted Advisors to key stakeholders in the policy and regulatory space. Keeping the business informed on scheme and market-wide changes via the policy committee as well as working closely with the business in forming company positions on key topics and supporting the internal understanding of policy intent that underpins the schemes

## Meet the Team

**Ruth Herbert**
Director of Strategy & Development

**Alex Coulton**
Head of Policy & Insights

**Omer Ahmad**
Policy & Regulation Manager

**Murray Mitchell**
Policy and Economic Analyst

# Outcome

- This session has been designed to both:
  - Inform you of policy & regulatory developments that are of specific relevance to EMR schemes
  - Inform us of policy & regulatory developments that you might feel relevant to the you and the schemes

- We have structured this session across three dimensions:
  - Regulatory change pipeline
  - Policy change pipeline
  - Horizon scanning

# Some rules…

- **Purdah**
  - The general principles and conventions set out in the General Election Guidance 2019 apply to the board members and staff of all public bodies.
  - This means that during this period we must be particularly careful to maintain our impartiality, in particular:
    - Only provide a factual explanation of current government policy, statements and decisions.
    - Avoid being drawn into discussions in a partisan way on election issues.

- **Out of bounds**
  - Election & manifesto related questions are out of bounds

# Chatham house rules & Disclaimer

- In order to ensure open discussion we would ask everyone present to respect Chatham House rules.
- Nothing in these slides should be taken as pertaining to future government policy
- LCCC/ESC have prepared this material from published documents
- Any views that might be expressed relate solely to LCCC/ESC operational experience

# Agenda

1. Regulatory Change Pipeline

2. Policy change Pipeline
   - Scheme Development Overview
   - Recent developments

3. Horizon Scanning
   - White paper
   - HMT review

# Regulatory Change Pipeline

Key areas of current focus:

- Final Consumption Levies
- Market-wide Half Hourly Settlement Target Operating Model
- Targeted Charging Review
- Energy Industry Code Review
- Ofgem Forward Work Program

# FCL Exemptions – towards an enduring solution

In early 2018 it came to our attention that the BSC rules did not allow us to enable Final Consumption Levy (FCL) exemptions for license exemptible generation. ESC produced a temporary solution to exempt some generators which went live in January 2019.

**Elexon have now put forward proposals to modify the BSC in order to implement an enduring solution (P395).**

**LCCC will need to review for any impacts on our settlement systems once there are further details.**

Existing LCCC interim solution (for information)

- 08/11/18 BSC Panel agreed with the LCCC's proposed interim solution
- 23/01/19 New FCL aggregation functionality was fully operational
- This solution covers:
  - Sites that has a Licensed electricity generator
  - Distribution connected under 50MW
  - Using 100% of the imported electricity for the purposes of generation
- It does not cover:
  - A non-licensed generator
  - Transmission connected under 50MW
  - A generator with onsite demand

# Market-wide Half Hourly Settlement (MHHS) Target Operating Model (TOM)

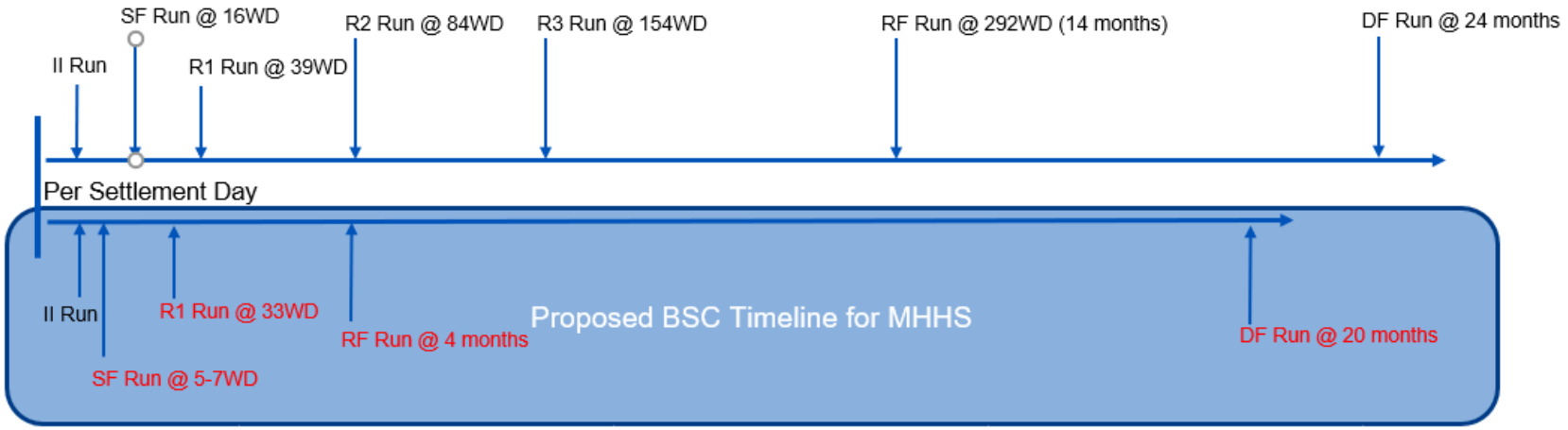
On the 12th February 2019 Ofgem published their preferred TOM for MHHS, it was picked up by the Policy Team as part of their horizon scanning function.

**Possible impact of MHHS TOM:**

Scheme Regulations and Rules, specifically settlement system and reconciliation process:

- Is likely to affect CfD Fuel Measurement and Sampling (FMS) processes
- Is also likely to affect associated schemes such as Green Excluded Electricity (GEE)

**We are currently assessing implications of aligning the EMR reconciliation timelines with these changes.**



# BEIS & Ofgem Code Review consultation

**BEIS & Ofgem outlined reasons for energy code reform:**

- Requirement for 'strategic body' who could guide industry change
- Empowered code management to ensure that the strategic direction is followed through
- Independent decision making – being taken out of industry control
- Code simplification and consolidation of the 10k+ pages of code

**Proposal:**

- Reorganising the energy code management structure with 2 different models:
  - A 'strategic body' sitting on top of the code managers guiding industry change
  - The 'strategic body' acting as a all encompassing code manager

**We are of the view that:**

- A 'strategic body' is likely to be a good idea
- This would help us ensure EMR schemes evolve in line with regulatory change

# Targeted Charging Review (TCR): Significant Code Review

**The objectives**

- Reform of residual charging arrangements for both generation and demand, to ensure it meets the interests of current and future consumers
- Keep other 'embedded benefits' that may distort investment or dispatch decisions under review

**Targeted Charging Review: Minded to decision and draft impact assessment**

Transmission & distribution residual charges

- Fixed Charges (in the form of segment-specific fixed charges, set using the use of net system volumes for each segment)
- Ofgem consulting on: Implementation plan from April 2021

**Remaining non-locational Embedded Benefits**

- Setting the Transmission Generation Residual to zero & extension of the Small Generator Discount to 31 March 2021.
- Charge suppliers BSUoS using gross demand at Grid Supply Point
- Charge BSUoS Charges to Small Embedded Generation (excluded in partial option)
- Implemented anticipated in either April 2020 or April 2021
- Ofgem consultation on: Full or Partial BSUoS solution

**This is currently a watching brief. We intend to run an impact assessment in due course and we will address any counterparty queries on a case by case basis.**

# Other Regulatory Workstreams

Ofgem's Forward Work Programme:

- Making retail markets work for all: including making market participants more resilient and increasing the level of consumer engagement
- Enabling future markets & system arrangements: including electricity settlement reform, decarbonisation of heat and transport and network access and charging rules
- Network preparedness & performance: including finalising the approach for RIIO-2
- Excellence in statutory & core functions: including ensuring effective licensing, compliance and efficient delivery of environmental schemes

# Policy change pipeline: Scheme Overview

# Contract for Difference AR4 preparations

1. Government has announced its intention to hold a CFD allocation round every 2 years – we therefore have good reason to expect that AR4 will open in March 21

2. Recent experience:
   - 1st Allocation Round 3 consultation was published in Dec 2017
   - The 3rd Allocation Round opened in May 2019 to eligible Pot 2 (less established) renewable technologies

3. Operationally we are aware of interest in innovative/hybrid-type arrangements:
   - Mixed generation technologies
   - New generation technologies
   - Co-location of merchant capacity with CfD site
   - Co-location of storage/hydrogen

# BEIS Capacity Market 2019

**CM Outputs - recap**

- 22.07.19: BEIS Decision on CM 5-year review published
- 06.09.19: CM Emissions Limits consultation

**CM Standstill/Restart**

- 24.10.19: EC CM Decision – Positive
- 25.10.19: ESC instructed by SoS to restart Settlement Body activities

**Next steps**

Six improvements for the CM resulting from the EC CM Decision:

1. the lowering of the minimum capacity threshold for participating in the auctions;
2. the direct participation of foreign capacity;
3. the participation rules for new types of capacity;
4. the access to long-term contracts;
5. the volume in the year-ahead auction and
6. the compliance with the new Electricity Regulation.

# Policy change pipeline: Recent developments

We will touch briefly on:

- CCUS
- RAB

# BEIS CCUS business models consultation

BEIS CCUS Business Models consultation **set some objectives:**

- CCUS deployment in mid-2020s
- a minimum of 10GW of CCUS generation on line by 2050

**Covered all aspects of CCUS:**

- Transport & storage network – RAB type model
- Power CCUS – CfD type model
- Industrial CCUS – CfD type model/Certificate system/direct funding
- Hydrogen production – not sure

(greenhouse gas removals was excluded this time round)

**Proposed options for Power CCUS business models:**

- Standard CfD
- Dispatchable CfD
- LCCC as counterparty/settlement agent

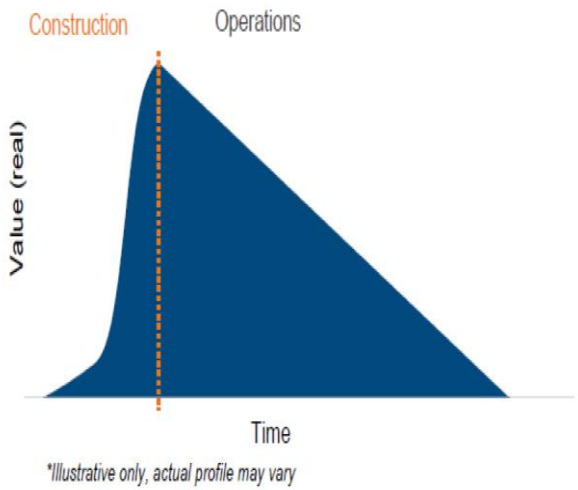
LCCC's published response stated our view that:

- All Power CCUS solutions consulted on can be implemented
- Biggest challenges with other models is in the funding and governance regime

# BEIS Nuclear RAB consultation

**BEIS issued a Nuclear RAB consultation in July 2019**

Seeking views from interested parties on how a Nuclear RAB model could be implemented within the current energy system in a way that allows new nuclear to be built at low cost to consumers.




**LCCC's published response included some key considerations:**

1. The setting of the Funding Cap is critical. If the right balance can be struck in the RAB funding model between risk and reward for investors, it is possible that new nuclear projects could be delivered at lower costs;
2. Analysis would be required on not only those risks inherent to a nuclear building project but also on construction risks inherent to large, long-term construction projects;
3. For the collection of the nuclear RAB levy, the funding model could use the CfD Supplier Obligation Regulations as a blueprint for a standalone nuclear RAB levy.
4. Alternatively, a more expedient approach might be to extend the existing CfD Supplier Obligation regulations to cover the collection of monies for new nuclear.

# Horizon Scanning

- State of play
- CCC 2019 progress report
- HMT Net Zero review

# State of play

## Market structure

**Existing market structure:**

- Contract for Difference
- Wholesale Market
- Capacity Market
- Balancing market
- Ancillary services

**Known developments:**

- CCUS CfD
- Nuclear RAB

## Institutional landscape

**Economic Regulator needed for Nuclear and possibly CCUS T&S**

**New delivery bodies/responsibilities**

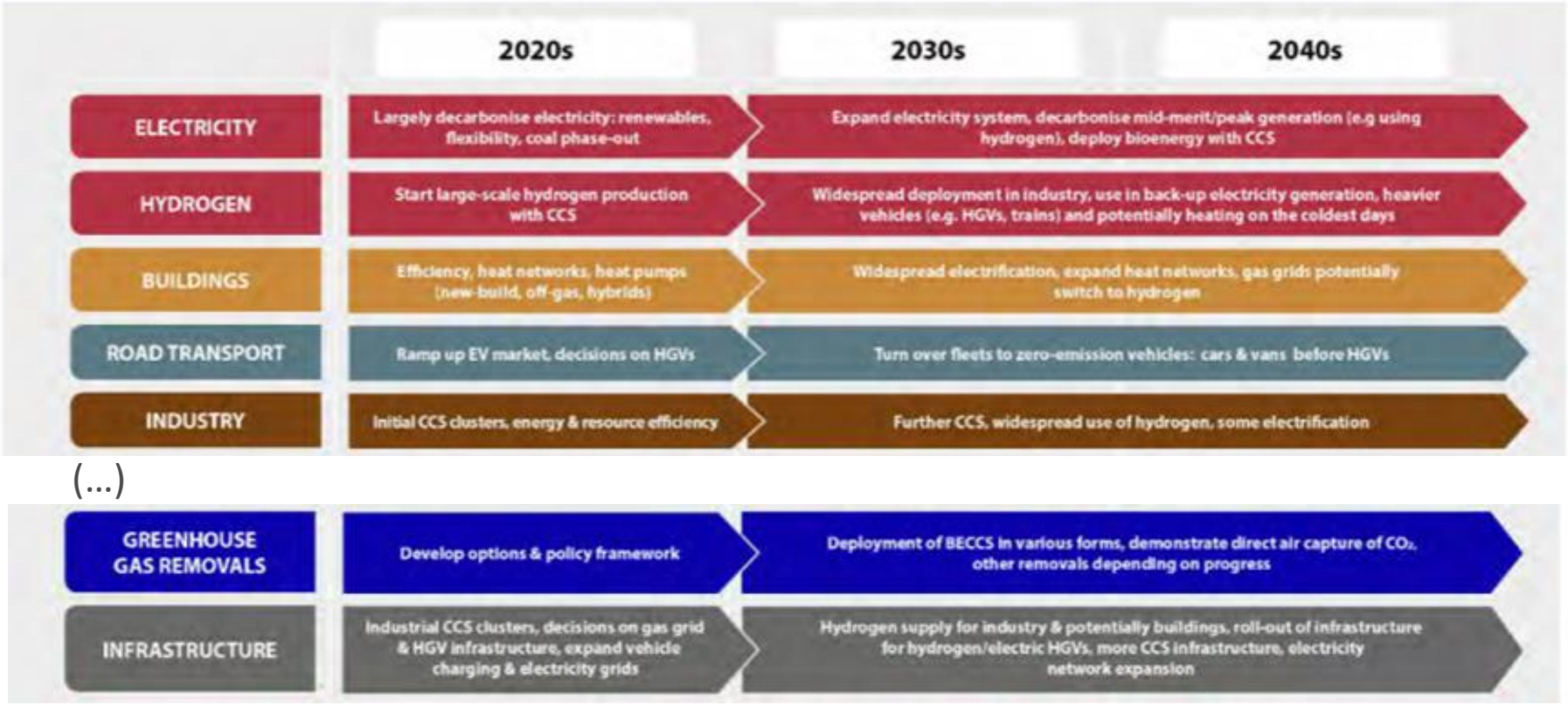
- New nuclear settlement body
- LCCC to take on new counterparty & settlement body for Power CCUS
- Administrator for CCUS industry scheme
- Possible overarching CCUS delivery body

**Code Governance**

- Possible strategic function

# CCC Net Zero / 2019 progress report

**Figure 6.1.** The transition implied in our Further Ambition scenario over the period to 2050



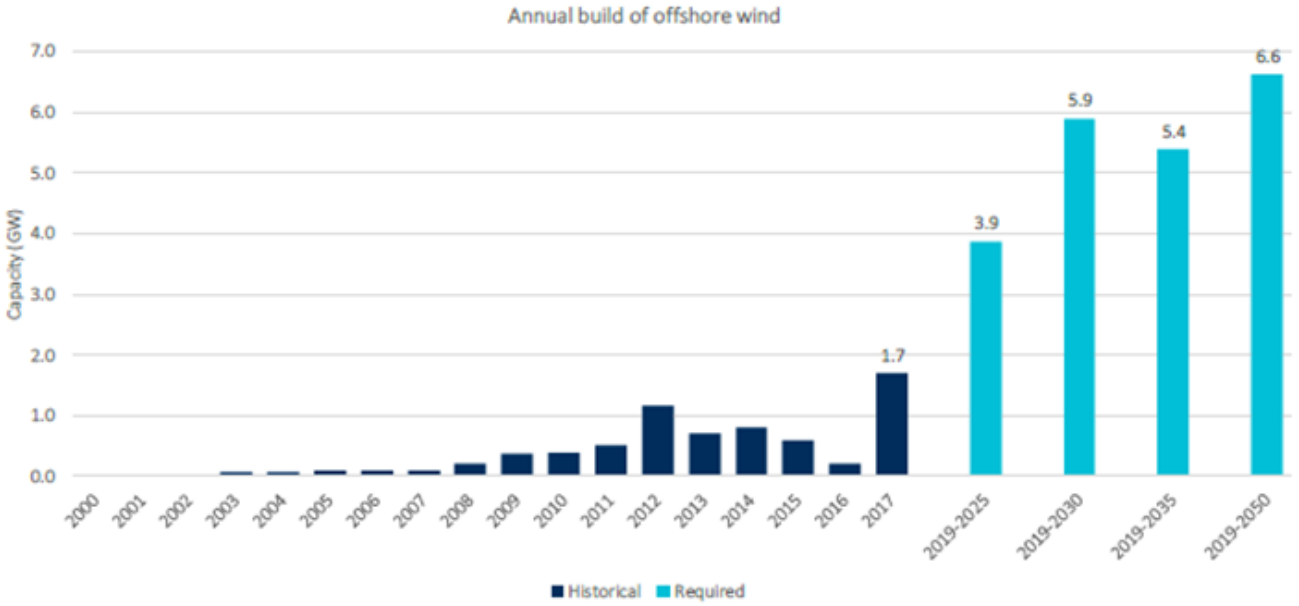

(...)

(...)

**Source:** https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

# Example of level of ambition this represents in power sector:

Figure 43 A significant increase in offshore wind build rates would be needed in an offshore-led scenario




Source: Vivid Economics, Imperial College, BEIS

- **2019 progress report suggests an additional 111TWh of low-carbon generation is needed in the build up to 2030**

# HMT Net Zero Review

https://www.gov.uk/government/publications/net-zero-review-terms-of-reference/hm-treasurys-review-into-funding-the-transition-to-a-net-zero-greenhouse-gas-economy-terms-of-reference

## 2. Objectives

To consider how the transition to net zero will be funded and assess options for where the costs will fall. This will involve:

1. Analysing the range of choices for how households, businesses and the taxpayer could contribute towards different elements of the transition to net zero.
2. Identifying mechanisms to create an equitable balance of contributions.
3. Maximising opportunities for economic growth as we transition to a green economy.
4. Evaluating the trade-offs between cost, competitiveness, effects on consumers and impacts on the taxpayer.

- Wide consultation & report to be published  by autumn 2020

# Closing

- Recap
- Feedback
- Next steps

& Thanks!!

# Parallel session 2: 14.45-15.45

Levy forecasting 101

LOW CARBON CONTRACTS COMPANY

# CFD Levy Forecasting – an Introduction

**14 November 2019**

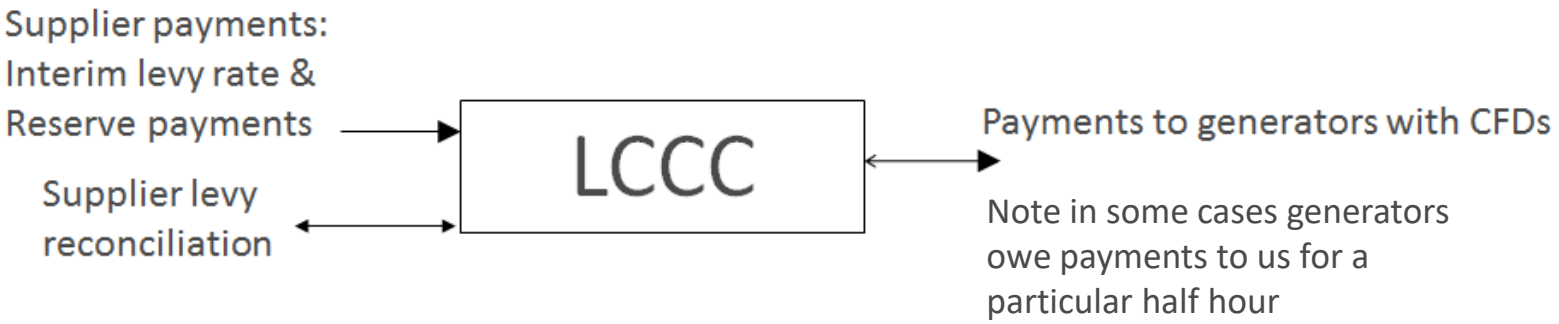
Forecasting Team, LCCC

# Agenda

- **Introduction:**
  - **Overview of Supplier Obligations**
  - **Role of Forecasting**
- More about the Supplier Obligation
- Longer Term Outlook
- The Transparency Tool

# Introduction: Overview of Supplier Obligations

- Contracts for Differences are a key part of Electricity Market Reform designed to support low carbon generation
- Paid for by a levy on suppliers
- Based on ***initial payments*** (reserve and interim rate) and ***later reconciliations***
- Rate set quarterly, 3 months in advance, with ability for LCCC to raise in period adjustments if required
- Credit requirements (cash or letter of credit)



# Introduction: Role of Forecasting

- Regulations require we set an Interim Levy Rate and Total Reserve Amount each quarter, at a level giving a 19 in 20 confidence that LCCC will have sufficient money to pay
- To ensure this requirement is met, we must make probabilistic forecasts taking into account the uncertainties regarding CFD payments
- Also need to take into account the flow of cash considering the payment timing
- We need to continually re-forecast within period to check we are still likely to be able to pay
- We also produce longer term forecasts to give suppliers a longer term view of likely obligations in future quarters

# Agenda

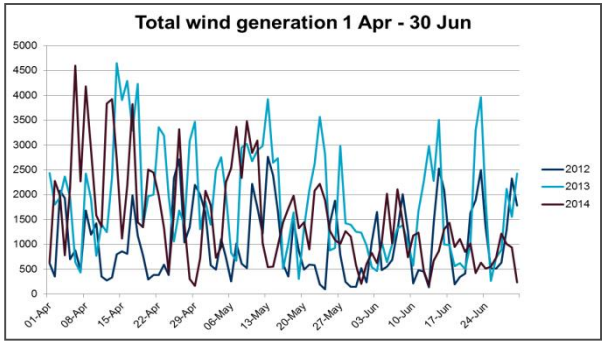
- Introduction
- **More about the Supplier Obligation**
  - **Main drivers of uncertainty**
  - **How we deal with uncertainty**
  - **Process**
- Longer Term Outlook
- The Transparency Tool

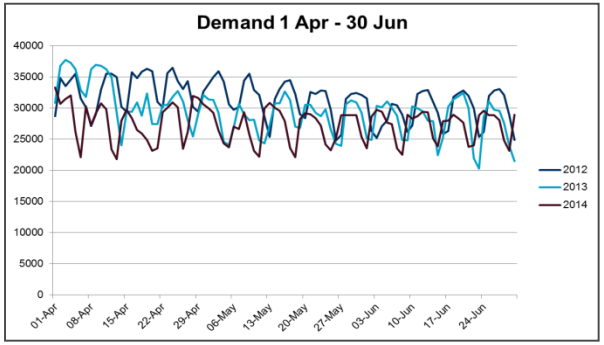
# SO: What are the main drivers of uncertainty

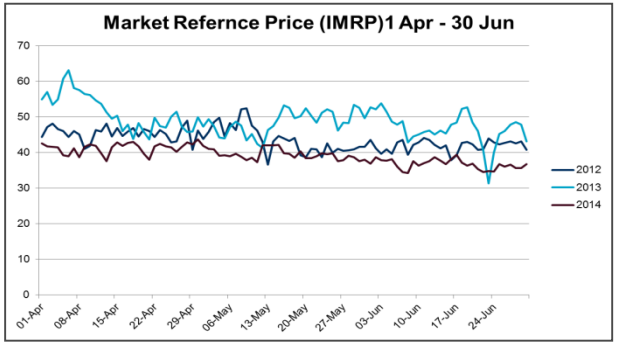
- The highlighted variables of the calculation can change considerably from the time of forecast to when realised

$$SO\ Levy_{(£/MWh)} = \frac{(StrikePrice_{(£/MWh)} - MarketReferencePrice_{(£/MWh)}) * Generation_{(MWh)}}{Total\ Eligible\ Demand_{(MWh)}}$$

- The potential difference between forecast and out-turn means that LCCC needs a reserve fund to manage the cash flow risk




Market reference prices:

- Baseload (e.g. biomass)
- Intermittent (e.g. wind or solar)
- Both dependent on market prices

Generation

- Wind – very uncertain day to day
- Solar – uncertain hour to hour
- Biomass – reasonably certain unless there is an unplanned outage

# SO: Dealing with uncertainty

## Market reference prices

- Spectron* power prices
- Industry standard volatility model

## Wind generation

- Sampled from historic wind speeds
- Use NASA MERRA** data set for UK

## Solar data

- Sampled from historic sunshine hours
- Use met office data from across UK

All input into Supplier Obligation Forecasting Model (SOFM). This is a Monte Carlo*** Simulation Model typically run with 5000-10000 simulations

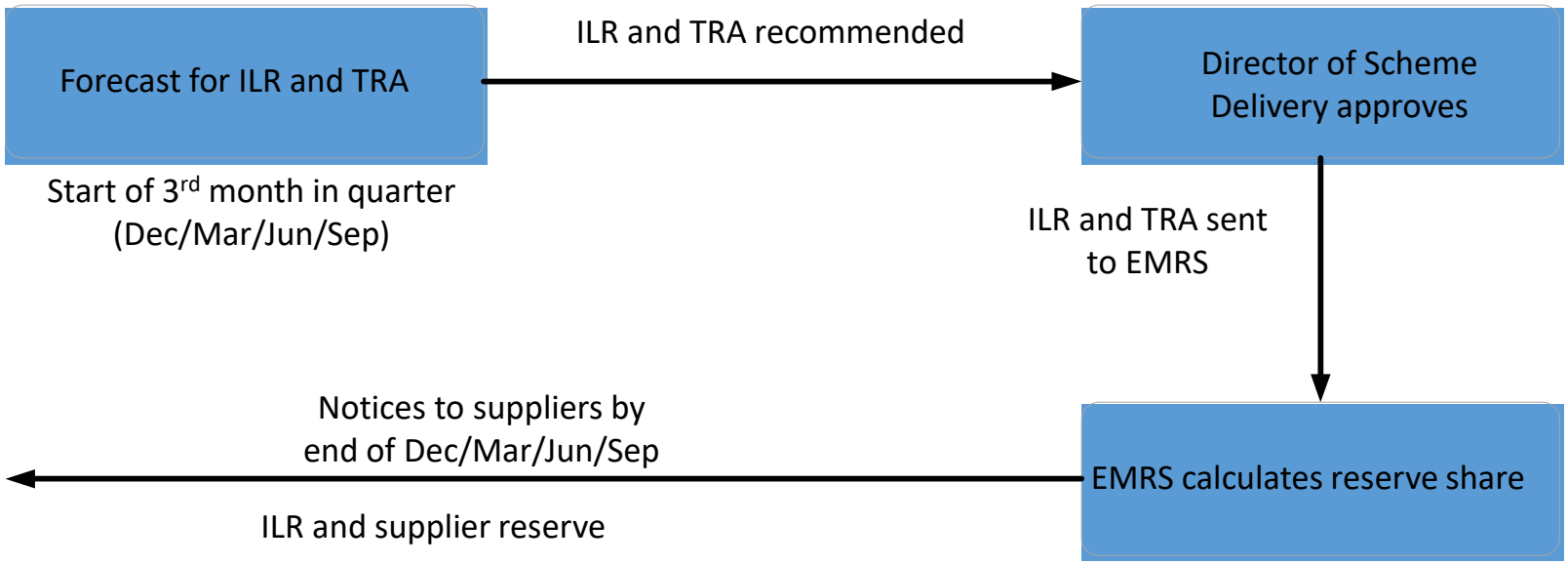
*Spectron is a leading commodities broker and has a leading position in GB power market

** The MERRA data includes worldwide wind speeds at defined longitude, latitude and height and is made available free of charge by NASA

*** Monte Carlo simulation is a standard industry approach to assessing the impact of uncertainty

# SO: Process Explained

**An overview of the levy rate/reserve setting process**



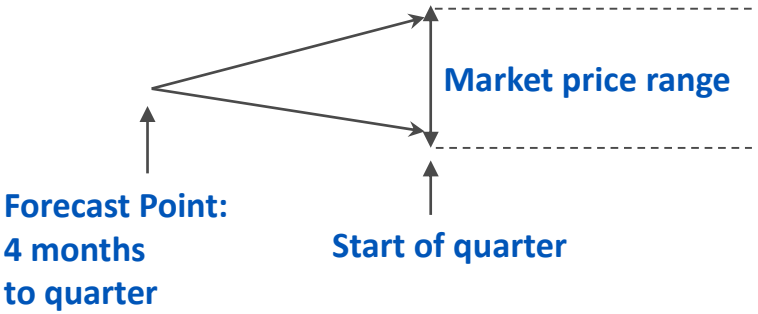

LCCC will update the Transparency Tool and may well also issue a supplier briefing at this time

# Agenda

- Introduction
- More about the Supplier Obligation
- **Longer Term Outlook**
  - **Principles**
  - **Current Approach**
- The Transparency Tool

# Longer term outlook: principles

- Mimic the SOFM forecasting process for producing the Interim Levy Rate (ILR) and Total Reserve Amount (TRA)
  - Essentially same approach to uncertain generation
  - Market price uncertainty mimicking the way in which the levy setting run would be produced




**Price simulations start 4 months before each quarter to reflect forecast uncertainties in calculating TRA**

- Forecast only for known CFD generators
  - No speculation on contracts arising from future allocation rounds

# Longer term outlook: current approach

- Approach to CFD start dates
  - Usually public information for generator start dates – e.g. the Target Commissioning Date or Generator's Expected Start Date from the CfD Register (however, we reserve right to use a different view if necessary)
  - This forms the base case, to which we apply high & low case sensitivities (e.g. generator commissions late)
- Forecasting refresh
  - Refresh forecasts quarterly in line with setting the rate and reserve for a new quarterly obligation period
  - Extend forecast horizon to cover 3 additional quarters beyond determination quarter
  - Apply appropriate base case and sensitivity assumptions on a case-by-case basis (including power prices)

# Agenda

- Introduction
- More about the Supplier Obligation
- Longer Term Outlook
- **The Transparency Tool**
  - **Transparency Tool Remit**
  - **Transparency Tool Information**
  - **Transparency Tool Transition**
  - **Transparency Tool Demonstration**

# Transparency Tool Remit

- Developed from consulting closely with experts from our Working Groups, in order to provide our stakeholders with insight into our assumptions and calculations.
- Purpose is to give visibility of the calculations supporting the Interim Levy Rate, Total Reserve Amount and Forecasts by providing:
  - Confidence to suppliers that the calculations are correct
  - Understanding of the generation assumptions in the model
  - Understanding of the uncertainties

# Transparency Tool Information

- Determined ILRs and TRAs
- 15 month forecasts, with base case and sensitivities.
- Reconciled daily levy rate and eligible demand from historical quarters
- Online tracking of forecast and actual:
  - To show users the total usage of cash throughout a Quarterly Obligation Period
  - To give suppliers an early indication of what their quarterly reconciliation invoice might look like – with increasing accuracy closer to the invoice date
  - View will be refreshed weekly, and updated quarterly
- Annual Operational Cost Levy Rates

# Transparency Tool Transition

- Content of current TT will be moved onto Dashboards section of LCCC main website
- New TT Dashboards expected to go live in early 2020
- During transition period, old and new TTs will be updated together in parallel
- Old TT to be decommissioned Q2 2020

# Transparency Tool Demonstration

- Current TT: https://sofm.lowcarboncontracts.uk/landingpage.aspx
- New TT Dashboards (Staging site only)

# Questions & Feedback

- **Thank you for your time**
- How did you find the presentation?
- Feedback! Please email us at forecasting@lowcarboncontracts.uk

# Parallel session 3: 14.45-15.45

EMRS continuous improvement programme

EMR SETTLEMENT LIMITED

Commercial in confidence

# EMRS

SSPA renewal and Continuous Improvement Programme

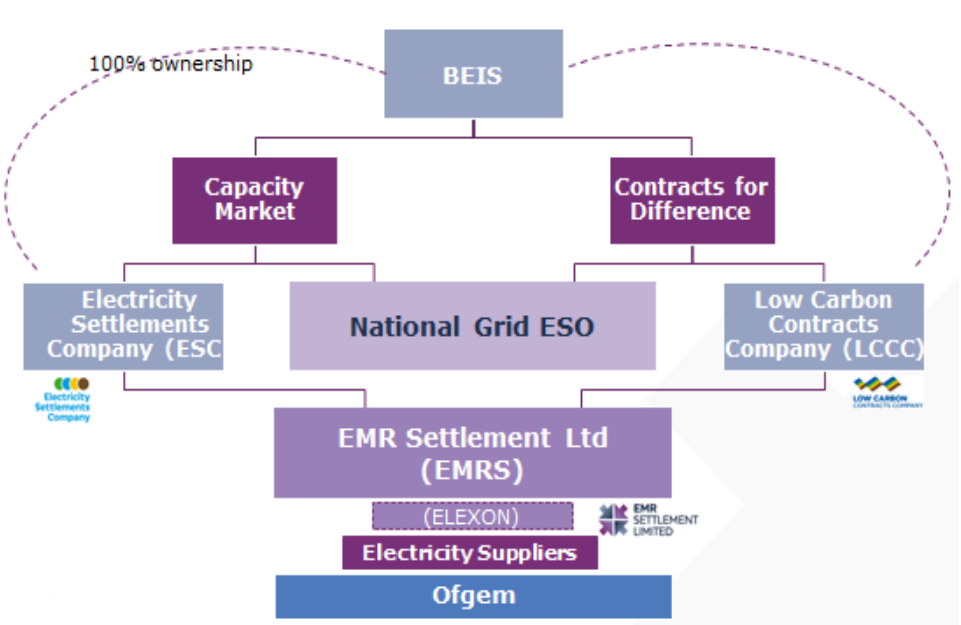
# EMRS: Providing settlement services to LCCC and ESC

- The CfD scheme **incentivises investments** in new low-carbon electricity generation in the UK by providing stable and predictable future revenue streams
- The Capacity Market provides **security of supply** for the UK energy market ensuring the "lights stay on" and mitigating the risk of blackouts

## What we do

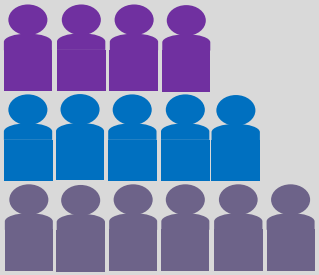
- EMR Settlement Limited (EMRS) is a wholly owned subsidiary of ELEXON and has been appointed to act on behalf of the Low Carbon Contracts Company (LCCC) and the Electricity Settlements Company (ESC) to deliver settlement for Contracts for Difference and the Capacity Market.
- We provide essential market services that ensure smooth operation of the **Contracts for Difference** (CfD) and **Capacity Market** (CM) schemes.
- We maintain the systems that allow us to collate, securely store, and where appropriate securely transmit the data necessary for CfD and CM settlement.
- We calculate, collect and distribute funds to effectively administer the CfD and CM schemes.
- EMRS interact with Electricity Suppliers, CfD Generators and CM Capacity Providers to administer this service on behalf of LCCC and ESC.

## Who is involved in settlement delivery



## Some volumetrics

We serve
**514**
market participants including:



~24 Generators

~183 Suppliers

~307 Capacity Providers

**£5bn**

**Payments made/collected annually**

**100%**

**Delivery of change since 2015 on or ahead of time**

**56,000**

**Invoices/Credit notes issued annually**

**Zero**

**Material service Failures**

**£153m**

**Credit Cover held**

# Settlement Services Provider Agreement (SSPA) background

- The original SSPA was signed June 2014 with services commencing 1 April 2015.
- The SSPA is an evergreen contract, with the first service period running to March 2020.
- Service performance has been excellent, since the start of the contract to May 2019 EMRS has achieved 98% (679 of 692) of all contractual Service Measures.
- From June 2018 to May 2019 LCCC reviewed and benchmarked EMRS to ensure:
  - The service provided good value for money.
  - The technology used is fit for purpose and, importantly, would remain fit for purpose for an extended contract length especially with the expected high levels of change within the EMR schemes and the broader Energy Market.
  - The appropriate performance metrics were in place to ensure an optimal service to LCCC and industry participants.
- A revised SSPA was signed during May 2019 with the second service period running to March 2026.

# Settlement Services – what's new?

1. To increase the throughput of regulatory type releases.

2. To increase the EMRS capacity to provide Impact Assessments to support LCCC in policy development type discussions and the exploration of potential solutions to EMR related activities.

3. Increased focus on Continuous Improvement (CI).
   - A requirement to develop an agreed long-term CI programme with LCCC focusing on:
     - Risk reduction (service and technology)
     - Stakeholder experience in using the EMR service
     - Efficiency / productivity gains
     - Cost reductions

**1 + 2 + 3 =**

**Higher resource requirement for EMRS**

**EMRS is nearing completion of the recruitment phase**

# Current candidates for Continuous Improvement

- In progress:
  - JIRA Service Desk (expected completion Dec 2019)
  - Sage X3 Phase 1 (expected completion Apr 2020)

- Identified as a priority:
  - EMRS Registration Portal
  - Sage X3 Phase 2 – Invoicing migrated from bespoke Settlement System to recognised finance software
  - Settlement System internal operator User Interface review
  - Stakeholder data access
  - Settlement System validation reporting

# EMRS Registration Portal discussion

- Internal requirements are currently being gathered
- External requirements welcome

# Other CI suggestions for EMRS?

- What are we good at and want to see more of?
- What could we do better?
- What new things could we do?

EMR
SETTLEMENT
LIMITED