CORNWALL INSIGHT

CREATING CLARITY

Elexon – Code Consolidation Insight Study

8 July 2019

Adam Boorman and Tom Edwards

HELPING YOU MAKE SENSE OF THE ENERGY AND WATER SECTORS

Contents

Executive summary and key findings

Code reform and simplification

- In support of the Energy Code Review workstream and the fundamental market changes, Elexon is seeking to leverage its significant experience of Code administration and insight into the electricity market to inform the review
- Cornwall Insight was commissioned by Elexon to examine and assess the potential Code governance structures that could be used, how to transition to these from the current Code structure, and some of the benefits of doing so
- In order to deliver this, the current functions of the industry Code sections have been defined and connections between these mapped, six potential Code simplification structures have been constructed and analysed, and potential options for consolidation and the transition have been considered
- The project, and the move to consolidate the Codes, is the first of several actions needed to deliver the future Code arrangements and structure, including:
  - Simplification of the Code functions and contents
  - Potential Code manager role for Code alignment
  - Consideration of who accedes to the Codes
  - Industry Code objectives
- However, this initial step is key to define the structure and approach around which the other questions and outcomes can be shaped

Key project findings – Code modules

- A key finding for the project is that Code structures should not be considered in market areas or fuels, but instead around the different modules the Codes need to deliver and the groups of arrangements that are needed to enable this
  - These modules provide standard 'sets' of Code functions that are grouped together to deliver specific market functions, such as cost recovery, or enabling the competitive retail market
  - The modules bring together elements that currently sit in a disparate set of Codes, which can be combined via the modular approach to simplify and consolidate Code functions
- We consider that these are a preferable system for considering Code structures because:
  - Provides a core set of Code requirements that can be manipulated at will to test different Code structures
  - Use of existing market roles or fuels risks basing the future Code arrangements on the current market structure rather than delivering arrangements to enable the desired future results
    - Fitting of Code areas to 'ownership' to current market structure rather than allowing flexibility for future arrangements
  - For example consideration by fuel type could deliver a structure designed for current gas markets as opposed to future heat needs
- The modules also provide opportunities for future proofing the Code arrangements
  - Opportunity to create new modules for new requirements as they develop – for example heat or electric vehicles

Key project findings – Code models

- Based on the review of the different potential Code structures, the following conclusions can be drawn:
  - The majority of Code structures examined would deliver industry wide benefits over the current baseline
    - This is a result of the reduced complexity of arrangements, clearer and more transparent rules for market parties, and increased Code coordination
  - However, a vertical Code structure does not appear to provide benefits over a horizontal or framework arrangement
    - Separation into separate fuels negatively impacts retail market delivery by separating the dual fuel REC and SEC
    - The potential size of whole value chain Codes, even for a single fuel, are likely to be unwieldly and difficult to manage
  - In addition to the Code consolidation, a single Code manager would also deliver benefits as a result of
    - Improved cross–Code/ fuel/ party coordination
    - Alignment and simplification of common functions across Codes
    - Improved risk management and compliance functions
    - Transparency and data usage improvements

Next steps and future deliverables

- This project has considered the initial structure and mapping of Code elements onto the potential simplification arrangements
  - This is to support Elexon, BEIS, and Ofgem in identifying a preferred option and analysing the different routes forwards
- Following the choice of preferred option(s) a second research phase should be undertaken to develop the detailed considerations of the chosen model, including:
  - Governance structure – preferred Code Administrator and Panel membership and operating arrangements
  - Voting and signatories – how are the voting arrangements determined for significantly wider Codes
  - Code administrator funding model – to what level will the Code be funded in order to provide support and administration functions, and how will this be recovered from parties
  - Change management – how will the change control process be delivered, are there limits on alternatives, what level of support will be provided by Code Administrators
  - Examples/scoping of simplification within current Code sections to demonstrate approach
- Additional research also needed to quantify the potential costs of implementation against cost savings – from simplified systems and reduced resource requirements

Project objectives

A changing market landscape

- The GB energy market has, and is continuing to, undergo significant changes, including:
  - **Technological changes**: a number of technological innovations are being deployed in the energy market, including small-scale storage, electric vehicles, low carbon generation, smart meters, and automation
  - **Changes in consumer behaviour**: consumers are increasingly becoming engaged with the market, with both switching rates increasing, and more fundamentally, future interactions with peer-to-peer (P2P) trades, consumer demand side response actions, and automation of supply
  - **Diversity in the participant mix**: there has been significant new entry in both the generation and supply markets. On the generation side, this has been particularly pronounced in low carbon and flexible assets. This new entry has included parties who were not originally considered by the industry governance arrangements, including technology companies, local authorities, community groups and social energy suppliers. Many do not have a national footprint
  - **Policy and regulatory drivers**: in order to support the above changes and ensure a low carbon, smart and flexible system the government and regulator are leading a number workstreams to review and reform the market
- These changes mean that the market environment, and the participants within it, are no longer aligned with the structure that the industry Codes and governance arrangements were originally designed for

Ofgem/ BEIS Code Review

- Given this changing market landscape, Ofgem and BEIS have launched a workstream to review the current industry governance arrangements – the Energy Codes Review
- The aim of the review is to consider options for improving the existing arrangements, including scope for fundamental reform
- It identifies a number of limitations with the current Code structure, including that they are:
  - Slow to implement decisions, with even simple decisions often taking many years
  - Reactive to existing problems, rather than forward-looking in preparing the energy system for future changes
  - Overly complex, with the entirety of the Codes estimated to run to over 10,000 pages
  - Resource-intensive, leading to a lack of engagement from smaller and newer parties
  - Lacking coordination between the different Code bodies
  - Fragmented, with a large number of Code panels and bodies

Code reform and simplification

- In support of this workstream and the fundamental market changes, Elexon is seeking to leverage its significant experience of Code administration and insight into the electricity market to inform the Ofgem/ BEIS Energy Codes Review
- Therefore, Elexon has commissioned Cornwall Insight to consider the potential Code governance structures that could be used, how to transition to these from the current Code structure, as well as some of the benefits of doing so
- This Code consolidation would be the first of a number of steps necessary to develop and deliver the future enduring Code arrangements
    - A key further step and enduring end goal will be the simplification of the Code contents and functions
- For this project, Cornwall Insight categorised and mapped all sections of the current electricity and gas Codes to show areas of common processes and conditions, linkages between functions and highlight potential areas for consolidation
- Six potential Code simplification structures have been defined based upon those structures already put forwards as part of the Code Review workstream, discussions with Elexon, and the outputs from the Code mapping exercise
    - These structures have been mapped and examined as part of this project and the findings and outcomes discussed throughout the report
- The purpose of the project is not to make recommendations on the 'best' Code structure, but to define and assess the different models and through the clause mapping exercise identify potential synergies or barriers to implementation of the different structures
- The project, and the move to consolidate the Codes, is one of several steps needed to deliver the future Codes structure, including:
    - Potential Code manager role for Code alignment
    - Consideration of who accedes to the Codes
    - Industry Code objectives
- However, the first and most important step is defining the broad structure around which these consequential questions hang

Role of the industry Codes

Role of industry Codes in the GB market

- Industry Codes underpin the GB gas and electricity markets and systems
- They contain the majority of the requirements needed to allow the competitive markets to function while ensuring the safe and secure operation of the overall system
  - They set out the obligations on parties within the energy market, as well as their respective roles and obligations
- The industry Codes are legal documents which parties are obligated to accede to under the various licences that define the industry roles
  - Breaching the obligations within the Codes is therefore also a licence breach and so an enforceable act
- The Codes operate under living governance arrangements, meaning that they are continually evolving and changing as parties raise modifications in response to how the energy market changes

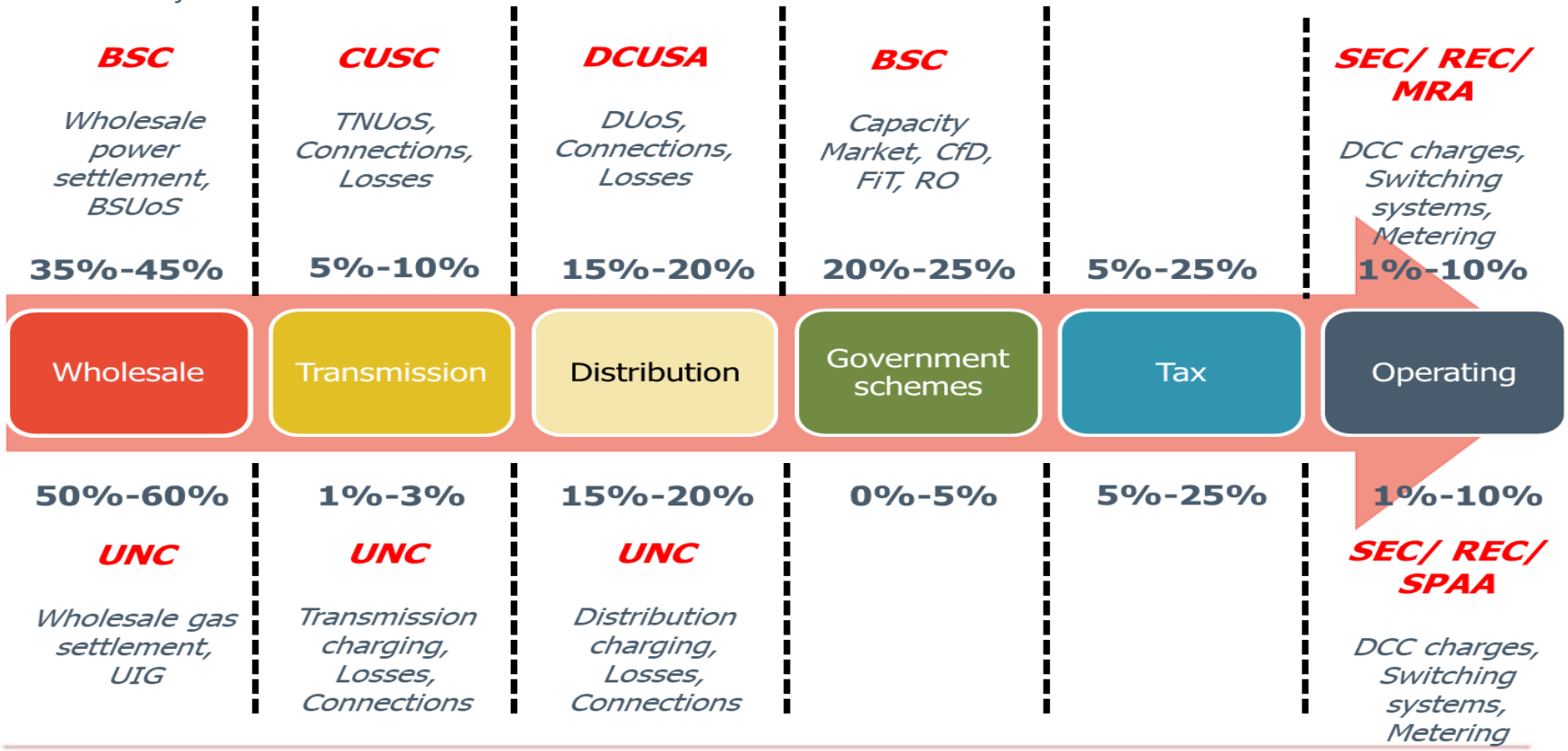
Role of industry Codes in the GB market

- The rules and principles as to how the GB market is structured (currently contained within the industry Codes) are fundamental to the current and future operation of the GB energy market, and as shown below impact throughout the energy value chain, in terms of both total costs, and how these are attributed and recovered between different parties

Cost item	Sector	Cost impact/ driver	Code
Transmission Network Use of System Charge (TNUoS)	Electricity	Calculation methodology	CUSC
Distribution Use of System Charge (DUoS)	Electricity	Calculation methodology	DCUSA
Balancing Services Use of System Charge (BSUoS)	Electricity	Calculation methodology	BSC
Renewable Obligation	Electricity	Based upon settlement volumes	BSC
Feed-in Tariff	Electricity	Based upon settlement volumes	BSC
Contracts for Difference	Electricity	Based upon settlement volumes	BSC
Capacity Market	Electricity	Based upon settlement volumes	BSC
Transmission and distribution losses	Electricity	Loss calculation methodology	CUSC and DCUSA
Wholesale energy	Electricity and gas	Imbalance and contract notification	BSC, UNC
Gas transmission	Gas	Entry and Exit charges	UNC
Gas distribution	Gas	System and User charges	UNC
Unidentified gas (UIG)	Gas	Unidentified gas calculation	UNC
Connections to the network	Electricity and gas	Calculation methodology	UNC, CUSC, DCUSA
DCC services	Electricity and gas	Calculation methodology	SEC

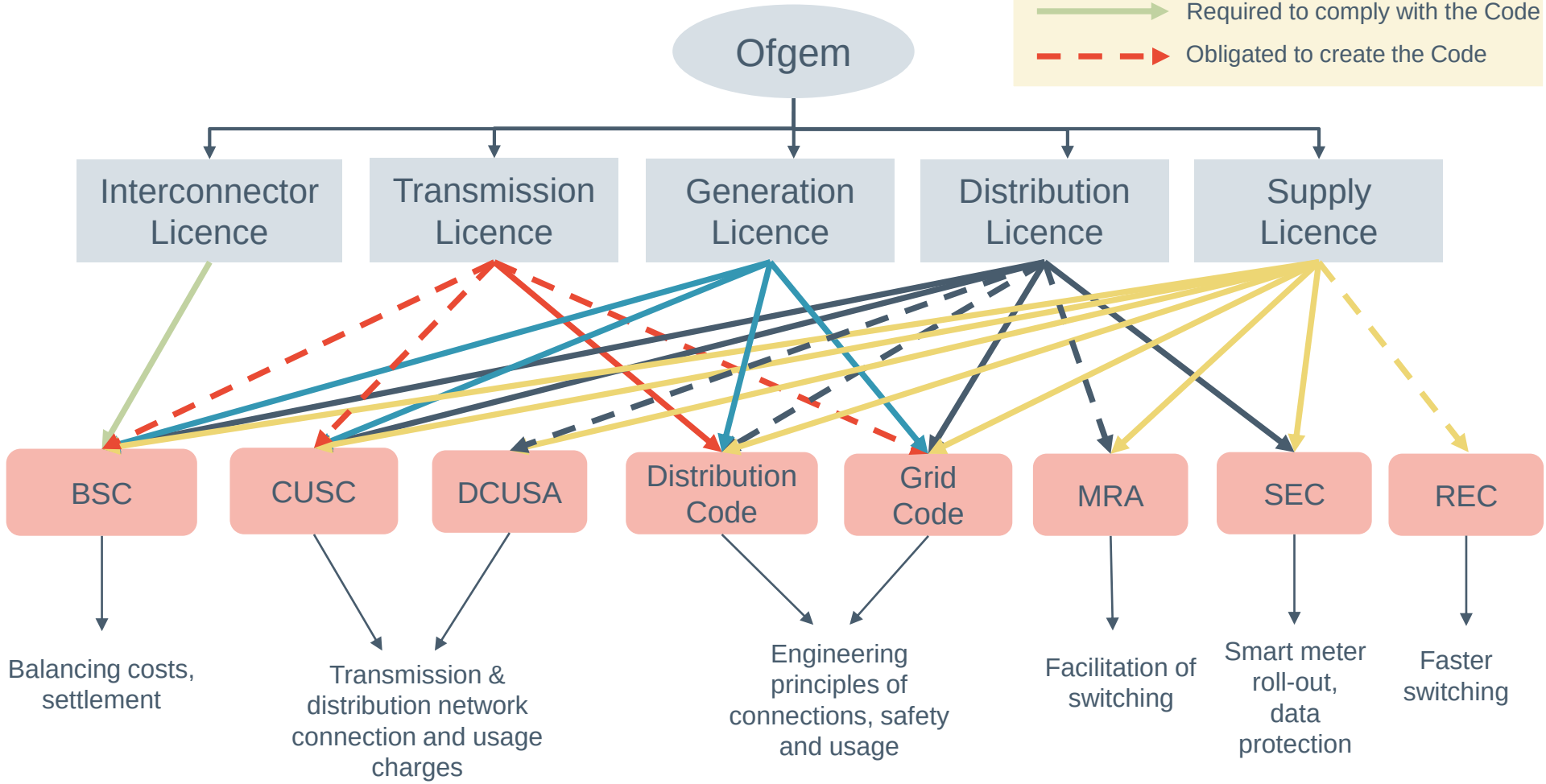
Impact of industry Codes in the GB market

- The importance of the industry Codes to the energy industry can be seen in the domestic customer bill, where Cornwall Insight estimates that 80-90% of the energy bill is contained within, linked to, or influenced by the industry Codes

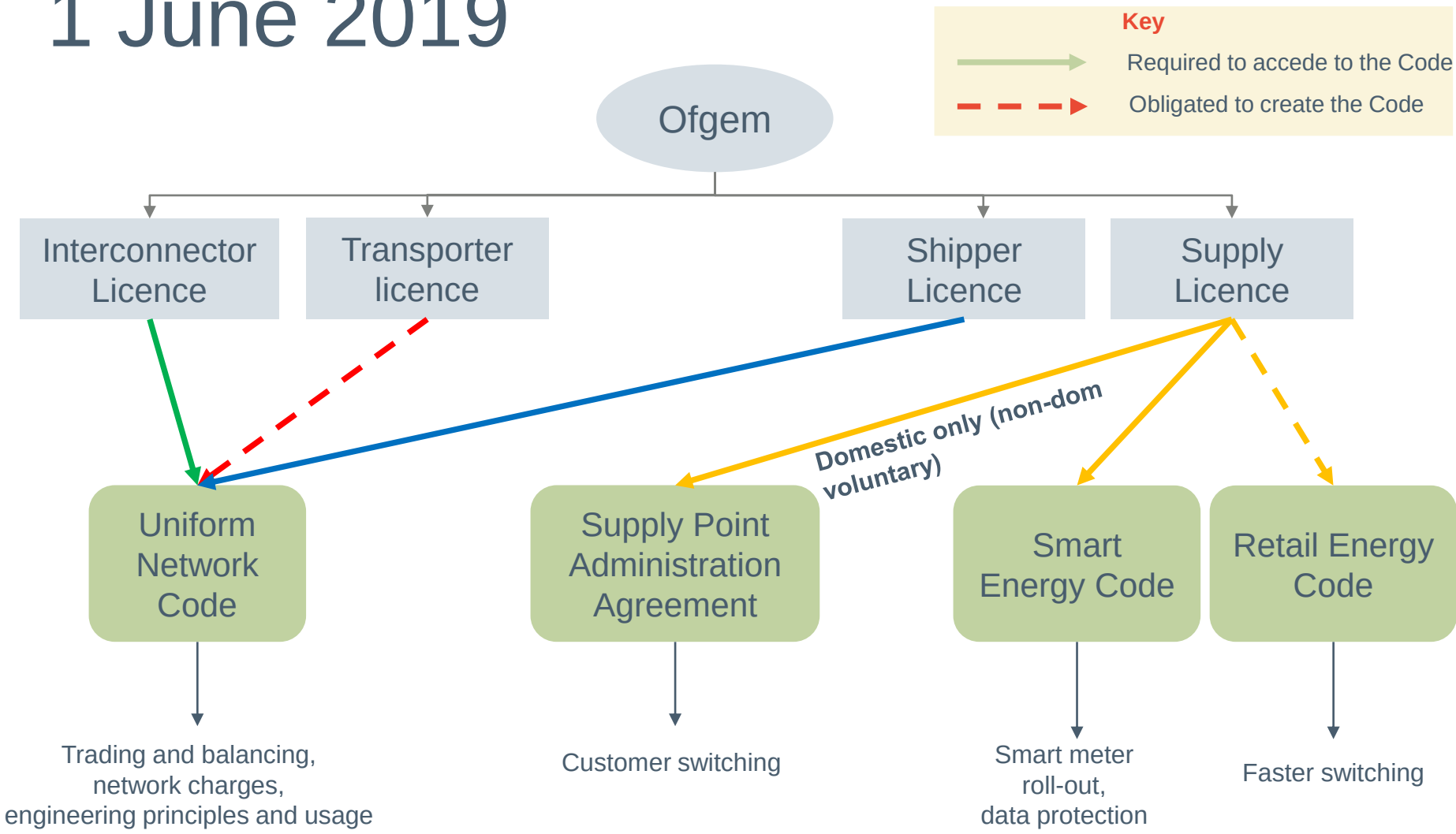


Current situation and evolution of the Codes

Regulatory control – electricity 1 June 2019



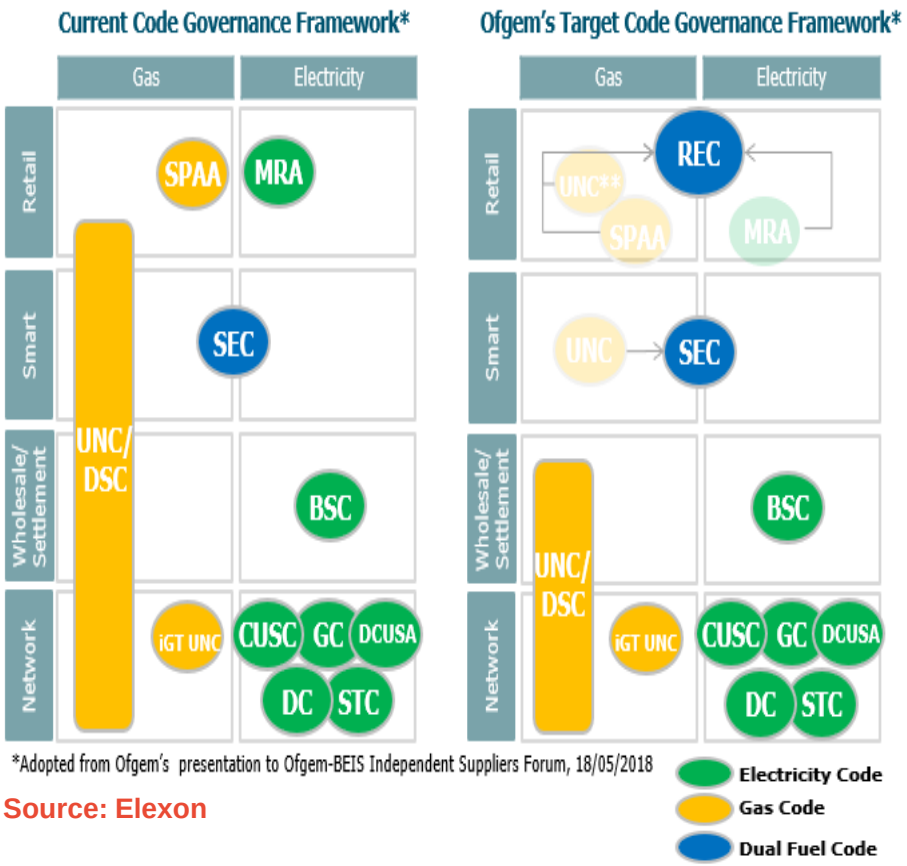
Regulatory control – gas
1 June 2019



Regulatory control – key points

- The industry Codes are embedded within the current regulatory structure for the GB energy market and contain the rules and principles core to market delivery
- The industry Codes are fundamental to GB energy markets, which could not operate without them
- The current and historical role of the supplier hub principle can be observed from the requirement for electricity suppliers to comply with all Codes
- The current industry Code structure for electricity is significantly more complex than for gas
  - This is a result of privatisation approach taken for the two fuels, with the decision to separate the electricity value chain at privatisation into the different market functions, leading to the creation of the additional Codes to handle these interactions and apply to the separate functions
  - This is compared to the initial gas privatisation approach which had a single central body resulting in the majority of the requirements being contained within the single Code
  - Additionally, engineering and operational issues are more complex for electricity, with instantaneous balancing required and limited storage opportunities
- The industry Codes are fragmented and reflect the market structure when they were put in place
  - For example single fuel retail Codes and the separations between the transmission and distribution Codes
  - The move to dual fuel retail Codes, the REC and SEC, demonstrate the recognition of this, and initial steps to address it
- The suitability of this structure should be re-examined for the future market arrangements
  - For example, the current splits between transmission and distribution Codes and arrangements could be changed as a result of Ofgem's examination of the network boundaries under the network charging SCRs and whole system licensing considerations

Current Code governance situation



Source: Elexon

- Introduction of the SEC created the first cross fuel Code for the energy industry
  - Recognised that smart meters are an issue for both gas and electricity parties
  - Entirely new Code for a new industry area
- Under the Faster Switching Programme, another new dual fuel industry Code is being created – the REC
  - Designed to deliver the requirements for faster switching, but also encompassing other aspects of the retail market
  - Unlike the SEC, the REC impacts areas which are already covered by existing industry Codes – the SPAA, MRA, and elements of the UNC
  - Phased introduction that will eventually result in the consolidation of the other Codes into the REC

Code introduction and evolution

- The fundamental design and purpose of the industry Codes was established at their inception. These include:
  - A rules based governance system to deliver the competitive bilateral energy market
  - A flexible and responsive governance system, which can be changed in a timely and proportionate manner by industry parties through the Code modification process
  - Administration and management by independent Code Panels and Administrators
- These fundamental principles have been maintained since the Codes' inception
- The electricity only industry Codes are contained in a greater number of Code than gas – seven Codes vs two gas only Codes
  - Both fuels could benefit from consolidation and simplification under the Energy Code Review
- However, as the energy market has developed, the Codes have also organically evolved alongside the market
  - Development of new Codes to meet industry needs, including the REC, SEC, SPAA, UNC
  - Introduction of new arrangements to address perceived market failures, including the Significant Code Review structure and the Code Administrators Code of Practice
- As a result of this, the Code structure still delivers the originally intended purpose, and whilst there have been a number of reforms to governance processes there has not been a fundamental root and branch review since the inception of NETA

Code governance reviews and criticisms

- Given their importance to the functioning of the energy industry the industry Codes have undergone a number of reviews and considerations since their inception
- This has included three Code Governance Review's (CGR) – Ofgem led reviews of the Code governance process in response to criticisms with the process. The salient changes from these reviews are as follows:
  - Introduced the Significant Code Review process – and subsequently modified to allow an Ofgem led end-to-end change process
  - Introduction and expansion of self-governance arrangements for minor Code changes
  - Inclusion of the specific charging methodologies within the Codes to allow changes to be raised by Code parties
  - Provision of send back powers for modifications to Ofgem
  - Addition of environmental considerations to modification assessment process
  - Enabling non Code signatories (in specified circumstances) to propose Code modifications (e.g. consumer representatives)
- The CGRs introduced some significant changes to Code governance, with a particularly focus on the change management processes
- The CGRs are summarised in the following table

Code governance reviews

Review	Date launched	Reasons for review	Outcomes from review
Code Governance Review 1	November 2008	• Concerns regarding the quality and depth of analysis provided in modification reports • Questions of whether the Code objectives where still fit for purpose • Lack of market participant ability to influence network charging methodologies • Issues relating to the fragmentation of Code administration and administrators	• Creation of the Significant Code Review process for the UNC, CUSC, and BSC • Inclusion of self-governance arrangements for the UNC, CUSC, and BSC • Introduction of Ofgem's send back powers for UNC, CUSC, and BSC • Code Administrator Code of Practice (CACoP) • Inclusion of charging methodologies into UNC and CUSC • Addition of environmental considerations to objectives
Code Governance Review 2	April 2012	• Recognise need/desire to expand CGR1 outcomes to other industry Codes • Particular focus on expanding and aligning self-governance arrangements, SCR, and CACoP into other Codes	• Introduced, aligned, and extended self-governance arrangements into DCUSA, iGT UNC, MRA, SPAA, STC, BSC, CUSC, UNC • Introduced SCR for remaining industry Codes • Align Code Administrator principles, powers, and requirements in remaining Codes • Enable non Code entities to raise modifications, if sanctioned by Ofgem
Code Governance Review 3	May 2015	• Recognition of upcoming industry changes – smart meter rollout, decarbonisation, EU Third Energy Package • Ongoing governance issues, including difficulties for smaller parties engaging with Code governance, and quality of analysis for complex changes	• Introduction of end-to-end Ofgem SCR process • Introduction of ability for Ofgem to raise SCR modifications • Housekeeping changes to Code objectives • Introduction of Open governance for Grid Code

CMA review and the Codes AEC

- As part of it energy market investigation in 2016 the CMA identified an Adverse Effect on Competition (AEC) arising from the Code governance arrangements and the Codes themselves
  - Through limiting innovation and causing the energy markets to fail to keep pace with regulatory developments and other policy objectives, the Codes could limit pro-competitive change, in particular:
    - Parties' conflicting interests and/ or limited incentives to promote and deliver policy changes
    - Ofgem's insufficient ability to influence the development and implementation phases of a Code modification process
  - As a result, the CMA recommended a number of remedies, including for Ofgem to:
    - Publish a cross-cutting strategic direction for Code development
    - Oversee the annual development of Code-specific work plans
    - Establish a consultative board of stakeholders to addressing cross-cutting issues
    - Initiate and prioritise modification proposals that, in its view, are necessary for the delivery of the Strategic Direction

Government policy

- In addition to the regulatory reviews of Code governance, government policy also impacts upon the industry Codes
- Greg Clarks' four principles are key for the future Code governance arrangements
  - The market, insurance, agility, and no free-riding principles
- Of these the agility principle is particularly important for the Energy Codes Review workstream
  - The agility principle – energy regulation must be agile and responsive if it is to reap the great opportunities of the smart, digital economy
  - This becomes ever more important in the moves towards a net-zero world as the participant mix changes, the need for a smart, flexible system increases
- Therefore any Code structure taken forwards must be able to deliver the agility principle
- Additionally, the government's view of the potential barriers to change can be seen from the desire to grant Ofgem powers to circumvent the industry change process for key workstreams such as market wide half-hourly settlement via the Smart Meter Act 2018

Ofgem/BEIS Energy Codes Review

- Ofgem and BEIS launched a joint review in November 2018 to undertake a comprehensive review of the industry Codes
  - The aim of the review is to consider options for improving the existing arrangements, including scope for fundamental reform
- Identifies a number of criticisms with the current Code structure, including that they are:
  - Drivers of slow decisions, with even simple decisions taking many years.
  - Reactive to existing problems, rather than forward-looking in preparing the energy system for future changes
  - Overly complex, with the entirety of the Codes estimated to run to over 10,000 pages
  - Resource-intensive, leading to a lack of engagement from smaller and newer parties
  - Lacking in coordination between the different Code bodies.
  - Fragmented, with a large number of Code panels and bodies
- The wide-ranging scope of the review includes, the purpose, content, governance, and change management processes of the Codes
- Following the workstream's launch, Ofgem and BEIS have held a number of industry workshops to support the programme
- A consultation on the next steps is expected in summer 2019

Ofgem/BEIS Energy Codes Review

- Three potential packages of reforms have been identified as potential options for change
  - Process improvements to the status quo - existing structures, responsibilities/ accountabilities are maintained, with evolutionary improvements to current situation
  - Substantial reform of the Codes system – this would involve a significant degree of structural change, including potentially changes to the current Code model
  - Taking a different approach, moving away from Codes – the most radical option, which would involve fundamental structural change, including potentially new bodies and powers
- BEIS and Ofgem have defined four criteria for assessing potential ways forwards, these are that:
  - Rules are clear and accessible
  - Regulatory framework facilitates timely change both ad hoc and systemic, and enables innovation
  - The right expertise and incentives are driving rule design and change process
  - There is robust compliance monitoring and enforcement

Ofgem/BEIS Energy Codes Review

Process improvements to the status quo

Standardise/improve change processes?

- number of alternative proposals;
- 'time-out' arrangements for consideration of modifications.

Improve/restructure code modification panels?

- consider how new players and smaller market participants are represented –e.g. introduce a 'funded seat'
- look to replicate best practices across codes panels
- clarify responsibility for/consistency of legal advice/text.

Substantial reform of the codes system

Consolidate the 11 codes into 3? 1?

- Wholesale/Retail/Networks?
- Take content out of codes e.g. network charging

Replace Code Administrators with Code Managers (CMs), with significantly greater powers and responsibilities?

- Power to raise changes;
- Power to prioritise modifications;
- License CMs to ensure clarity of accountability and effective performance management;
- Include delivery functions?

Separate code administration function from code management – tender as a shared service?

Increase Ofgem powers?

- beyond binary approve/veto (suggest amendments);
- to raise rule changes.

Give a **single body responsibility** and powers for Code Management?

Taking a different approach – moving away from codes

Fundamental change to regulatory approach?

- Principle-based regulation (e.g. learning lessons from telecoms, food and other sectors);
- Risk-based approach (e.g. financial sector; regulatory burden proportionate to risk a party presents to market).

Introduce Strategic Oversight Function such as:

- Energy Security Board (Australian model)?

- Composed of CMs, Ofgem, BEIS representatives and independent advisors;
- Responsible for implementation of the energy strategy (can take on SCRs); provides whole of system oversight for energy security and reliability to drive better outcomes for consumers.

- System Architect/Governance Facilitator (Energy Catapult/IET)?

- Functions include those above, and also operational planning, investment planning, data (?)

Summary

- The reviews and changes to date have led to a number of piecemeal developments to the industry Codes, mainly focussing on the change process itself
  - A number of the changes from these have been significant in scale, such as the inclusion of the charging methodologies within the Codes themselves, and the introduction of the Significant Code Review powers
- While there has been no fundamental, holistic, review of the Code structure, some of the more recent actions have indicated a lack of patience with the current arrangements
  - The CMA's recommendations regarding licensable Code manager roles
  - BEIS taking action to grant Ofgem powers to supersede the governance process for issues it has identified as material to the success of the future energy system – for example the half hourly settlement workstream

Code mapping

Code mapping

- For the Code mapping exercise, Cornwall Insight considered the 11 industry Codes, and applied one or more ‘function’ labels to each Code section
  - These are based upon the activity(ies) we consider the Code section is looking to deliver, for example
    - Accession to the code - To define the steps necessary for parties to complete in order to accede to the industry Code
    - Planning – To define the Code's approach to planning for future developments
    - Credit provision – To detail the security/ credit and collateral provisions for Code parties to provide against their outstanding obligations
    - Technical specifications – Clauses which set out technical specifications for Code parties in their activities with the Code
- These labels define the purpose of the Code section and are used for the mapping exercise and to support the construction and consideration of the potential future Code arrangements
- The accompanying mapping tool provides an interactive tool to display the linkages between the current Code sections and the potential consolidated structures
- The labels, methodology, definitions and outcomes have been provided separately in the accompanying spreadsheet and mapping tool

Code mapping – key findings

- The following initial key findings can be taken from the Code mapping exercise
  - A significant number (24) Code sections can be removed as part of a housekeeping exercise
    - These are no longer used sections which have either been superseded, related to transitional matters, or have had their text removed
    - This shows the value in addition to potentially consolidating the Codes of undertaking an in-depth tidying exercise
  - The Grid Code, and to a lesser extent Distribution Code, contain significantly more Code sections and schedules than the other Codes
    - These could likely be consolidated into a reduced number of schedules for user ease, regardless of whether a consolidation exercise is undertaken or not
  - The inherent complexity of the current industry Code arrangements can be seen by the number and variety of connections mapped

Code modules

Code modules

- The findings of the categorisation and mapping exercises show that the GB electricity and gas industry Codes can be categorised into a series of modules capable of delivering all the functions and requirements of the Codes
- Code structures could be considered in market areas or fuels, but we think a better segmentation is around the different functions the Codes needed to deliver that specific industry function, for example the competitive retail market or Code governance and the groups of arrangements that are needed to enable these. We refer to these as Code 'modules'
- We consider that these are a preferable system for considering Code structures because:
  - Provides a core set of Code requirements that can be manipulated at will to test different Code structures
  - Use of existing market roles or fuels risks basing the future Code arrangements on the current market structure rather than delivering arrangements to enable the desired future results
    - Fitting of Code areas to 'ownership' into current market structure rather than allowing flexibility for future arrangements
  - Potential to help ensure that the arrangements are future proofed by considering the fundamental requirements for industry Codes functions and market requirements, and providing a adaptable set of building blocks with which to deliver these
    - For example the potential future need to consider 'heat' for retail customers and potentially 'transport' considerations throughout the industry value chain

Code modules

- The modules can therefore be used to conceptualise and test different Code structures and operating arrangements
- Code governance reform options can be considered based upon: how the modules are arranged, and what impacts this has on users, governance, and process delivery
  - Can also be used as a check function to ensure new structure contains and delivers all the required functions
- The modules can be combined to form the different Code sections for the different Code structures considered for this research
- The identified modules are detailed in the following tables

Code Modules – Standard Arrangements

Module	Purpose	Categories	Example signatories	Existing Codes
User Module	Module to cover the functions for users to accede to the Code, exit arrangements, qualifications for Code parties, and the definitions of Code terms	1. Accession 2. Qualifications 3. Definitions 4. Exit	The standard arrangements are likely to capture all market participants as they are intended to cover basic functions 1. Suppliers 2. Generators 3. Networks 4. Aggregators 5. Administrators 6. Agents 7. Non physical traders 8. System operators	1. All Codes
Governance Module	Module to deliver Code governance arrangements, including Panels, change management, voting, dispute management, and Code Administration functions	1. Governance Arrangements 2. Change Management 3. Dispute Resolution		1. All Codes
Data and Communications Module	Module for data and communications arrangements, including, data requirements, processing, submission and communication specifications and usage	1. Data 2. Communications		1. All Codes
Cost Recovery Module	Module for cost recovery functions, including charging methodologies, credit and collateral arrangements, arrangements for defaults against the charges, and risk management in relation to cost recovery	1. Funding and Charging Arrangements 2. Credit Provision 3. Arrangements for Party Default 4. Risk Management		1. CUSC 2. DCUSA 3. UNC 4. BSC 5. SEC *Note – Codes are those with charging functions, not admin cost recovery*

Code Modules – Technical Ops

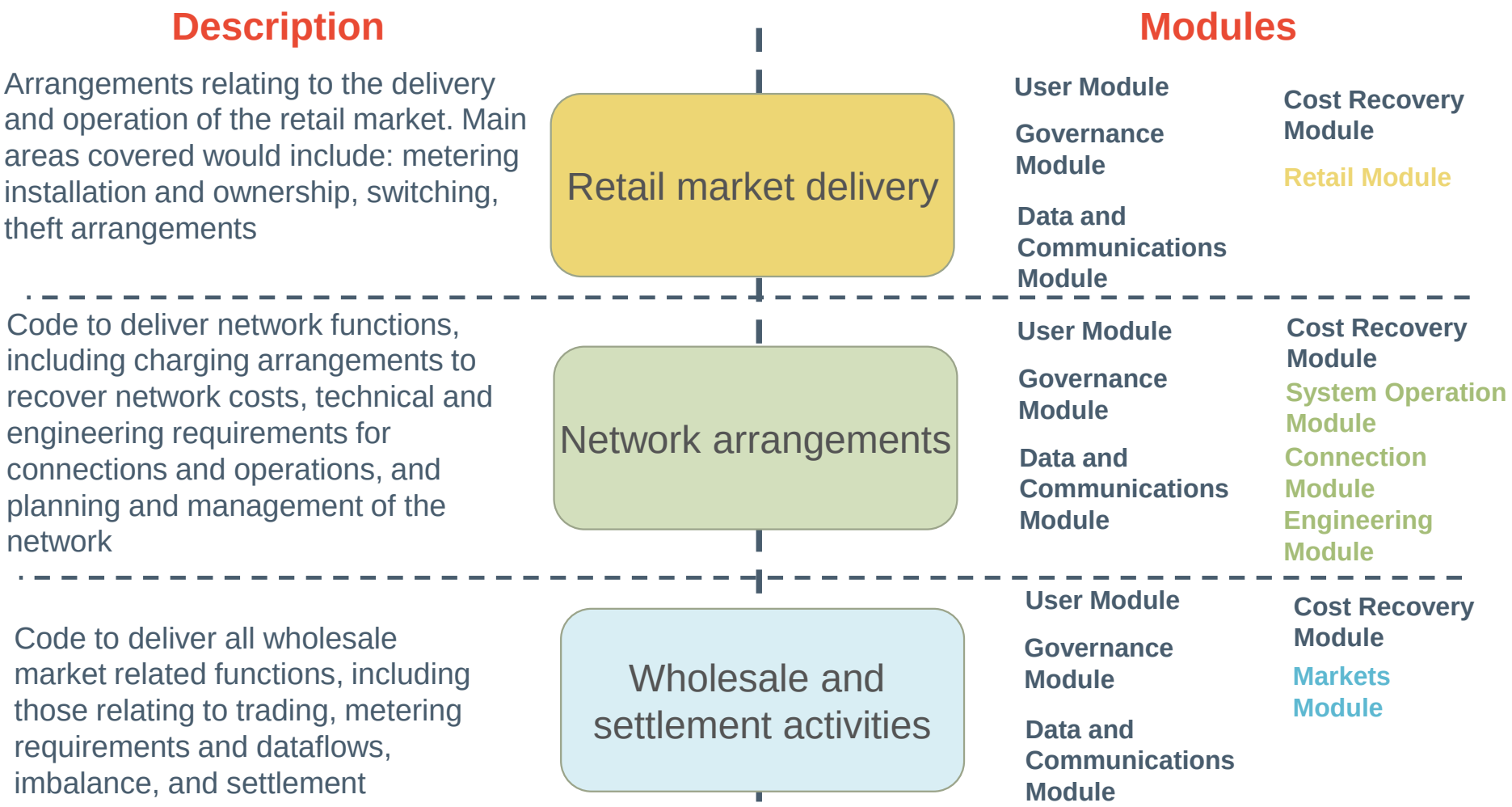
Module	Purpose	Categories	Example signatories	Existing Codes
System Operation Module	Module for the operation of the GB system and networks. Including system balancing and operational considerations, technical specification for equipment in relation to this, safety and security obligations of system arrangements, and planning and risk management functions	1. Safety and Security 2. Planning 3. Processes and Functions a) System Operation 4. Technical specifications 5. Risk Management 6. Agreements	1. Generators 2. Networks 3. Agents 4. Aggregators 5. System operators	1. Grid Code 2. Distribution Code 3. STC
Connection Module	Module covering connections to the GB system, including physical metering requirements	1. Connection to the GB network 2. Technical Specifications 3. Agreements	1. Generators 2. Networks 3. Agents	1. CUSC 2. DCUSA 3. UNC
Engineering Module	Module for the engineering and technical requirements for physical assets associated with the GB energy system	1. Technical Specifications 2. Safety and Security 3. Risk management	1. Networks 2. Generators 3. Agents	1. Grid Code 2. Distribution Code
Market Module	Module for all activities related with the delivery of the competitive wholesale market, including trading, settlement, metering data and reading, and imbalance	1. Processes and Functions a) Trading b) Settlement c) Metering d) Imbalance e) Unidentified Gas	1. Networks 2. Generators 3. Agents 4. Non physical traders 5. Suppliers	1. BSC 2. UNC
Retail Module	Module to deliver the competitive retail market and functions, predominantly customer switching, meter ownership and operations, and managing the risks relating to energy theft	1. Processes and Functions a) Switching b) Meter ownership and operations c) Risk management in relation to theft	1. Suppliers	1. REC 2. MRA 3. SPAA 4. SEC

Potential Code structures

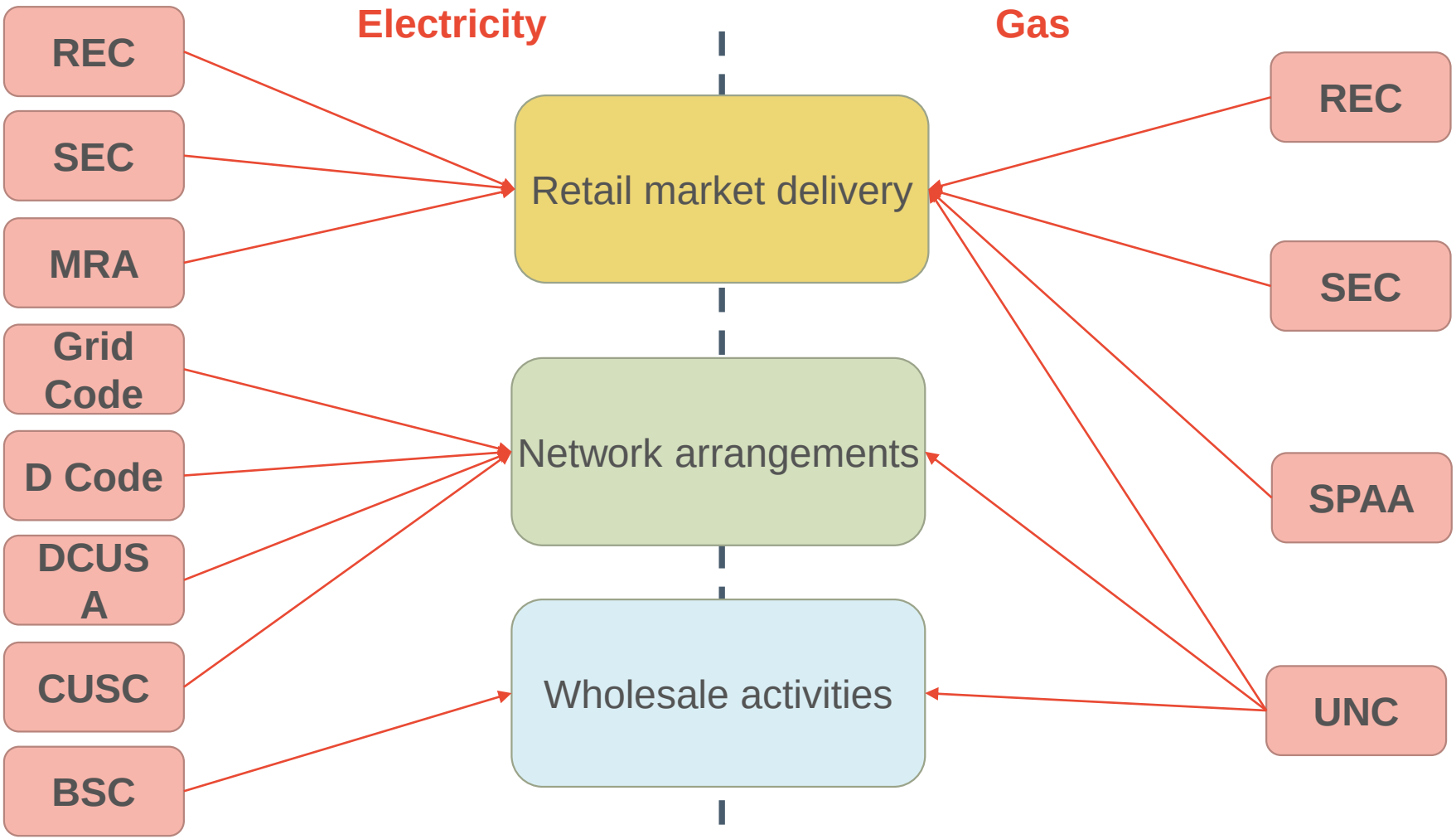
Potential Code Structures

- Six potential Code models have been considered as part of this work
- The models were chosen following discussions between Elexon and Cornwall Insight
  - **Horizontal alignment**
    - Three dual fuel Codes aligned with the market functions of wholesale and settlement, networks, and retail
    - Consistent with the current market activities and the general direction of Code development
  - **Vertical alignment**
    - Two single fuel Codes delivering the full value chain for that fuel
    - Follows discussions by industry Panel's and workgroups
  - **Single Code**
    - A single Code to deliver all functions within the industry, along the full value chain and both fuels
    - The greatest level of consolidation and simplification of all options
  - **Upstream/downstream split**
    - Two dual fuel Codes split into downstream retail activities and upstream wholesale and settlement and system operation functions
    - Reflects the linkages between the wholesale market and system balancing in regards to data flows and operations
  - **Framework agreement**
    - A single 'core' Code containing the standard Code functions, with specific 'arms' to deliver technical and specialist functions
  - **Dual fuel downstream, single fuel upstream**
    - A dual fuel retail Code to maintain the REC/SEC dual fuel nature, and single fuel Codes for upstream network and market functions

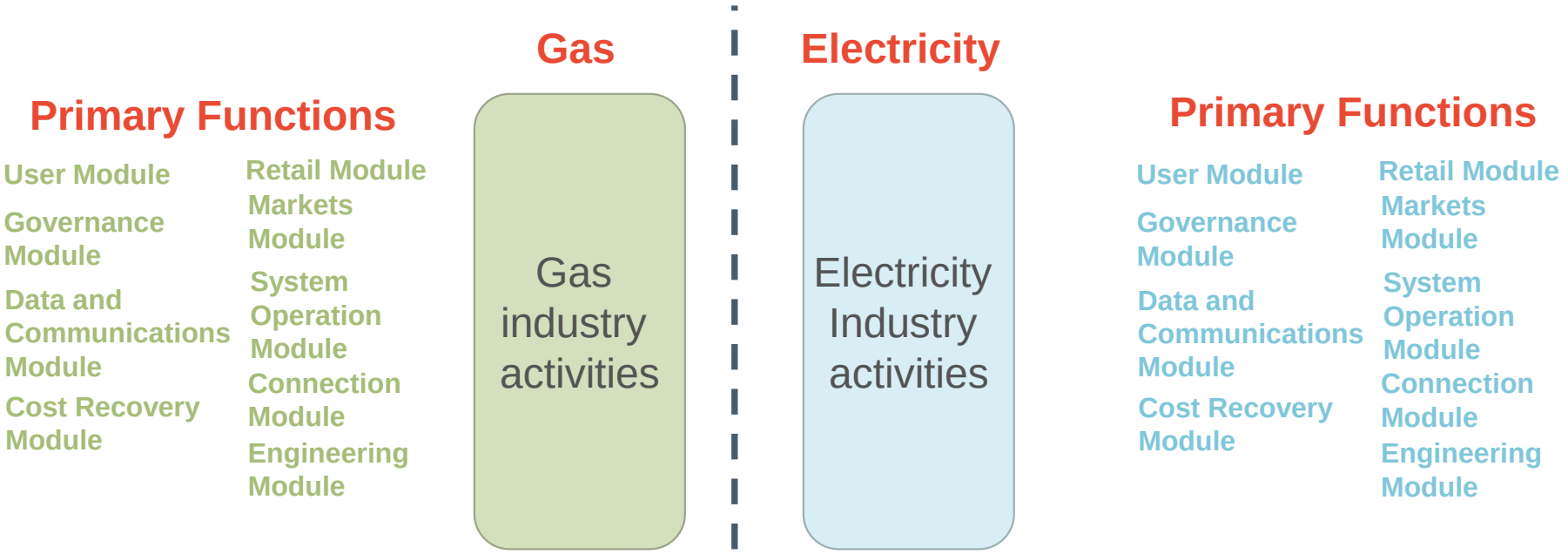
Horizontal alignment



Horizontal alignment



Vertical alignment

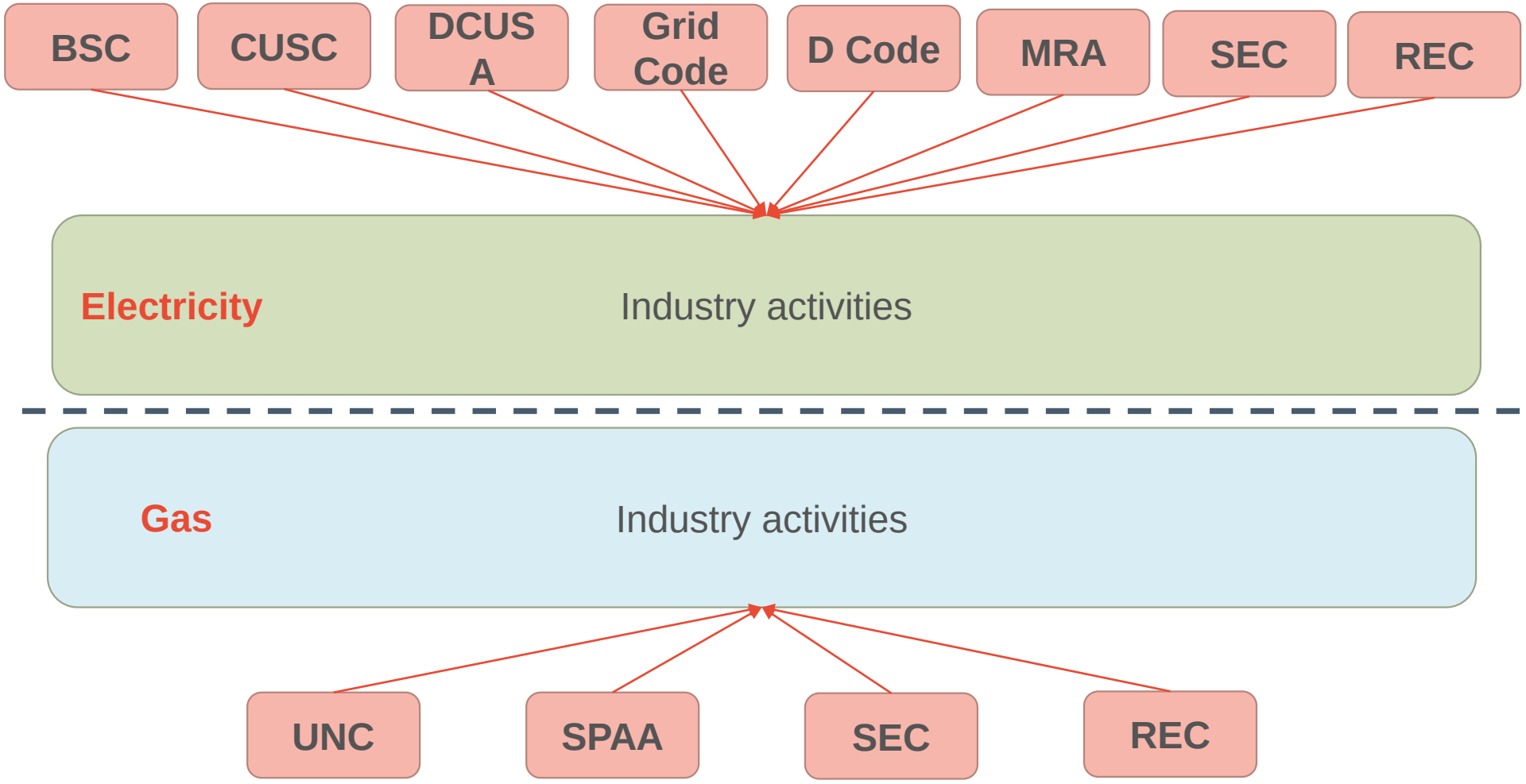


Description

Two Codes to deliver all the functions relating to electricity and gas industry deliverables in separate Codes.

This would allow consistency across the whole value chain for each fuel, while recognising the differences between power and gas.

Vertical alignment



Upstream/downstream Code

Description

Modules

Code to deliver all upstream functions – namely those relating to the wholesale market and network activities. This would include trading, metering requirements and dataflows, imbalance and settlement, charging arrangements to recover network costs, technical and engineering requirements for connections and operations, and planning and management of the network

Upstream activities

User Module

Governance Module

Data and Communications Module

Cost Recovery Module

Markets Module

System Operation Module

Connection Module

Engineering Module

Arrangements relating to the delivery the downstream activities, predominantly the retail market. Main areas covered would include: metering ownership and switching, theft arrangements and potentially consumer protections

Downstream activities

User Module

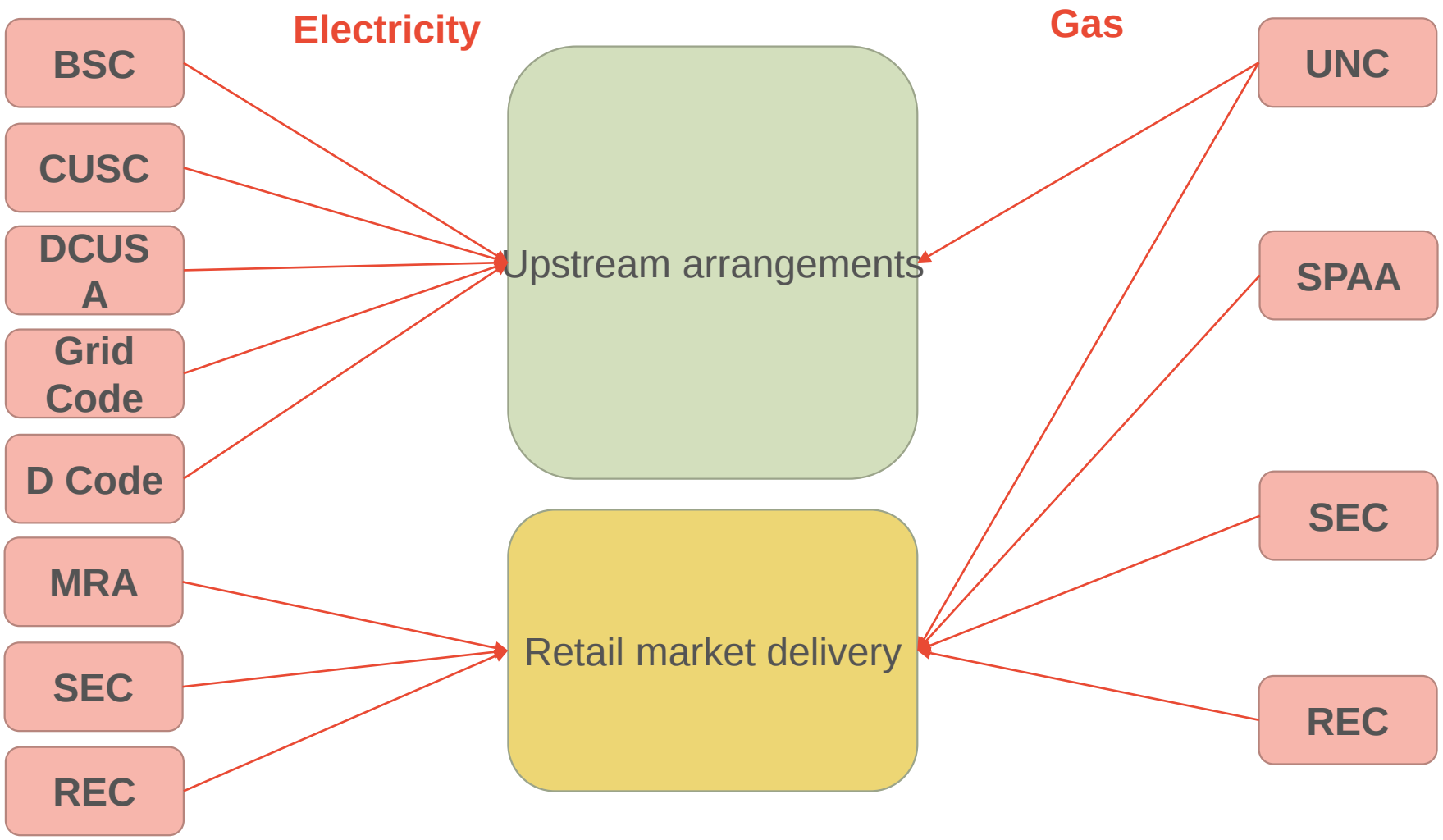
Governance Module

Data and Communications Module

Cost Recovery Module

Retail Module

Upstream/downstream Code

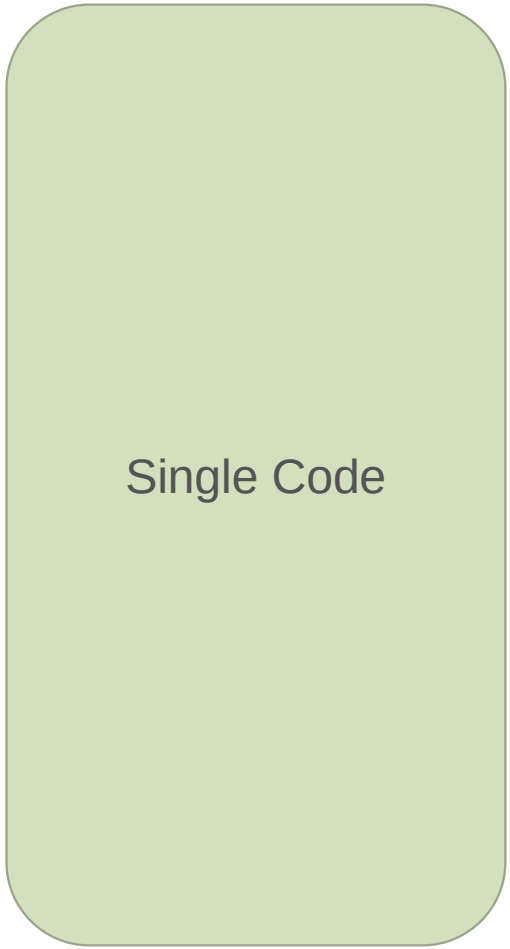


Single Code

Description

A single Code to deliver all the functions currently delivered by the electricity and gas Codes. This would see a single approach to Code governance and related functions such change management.

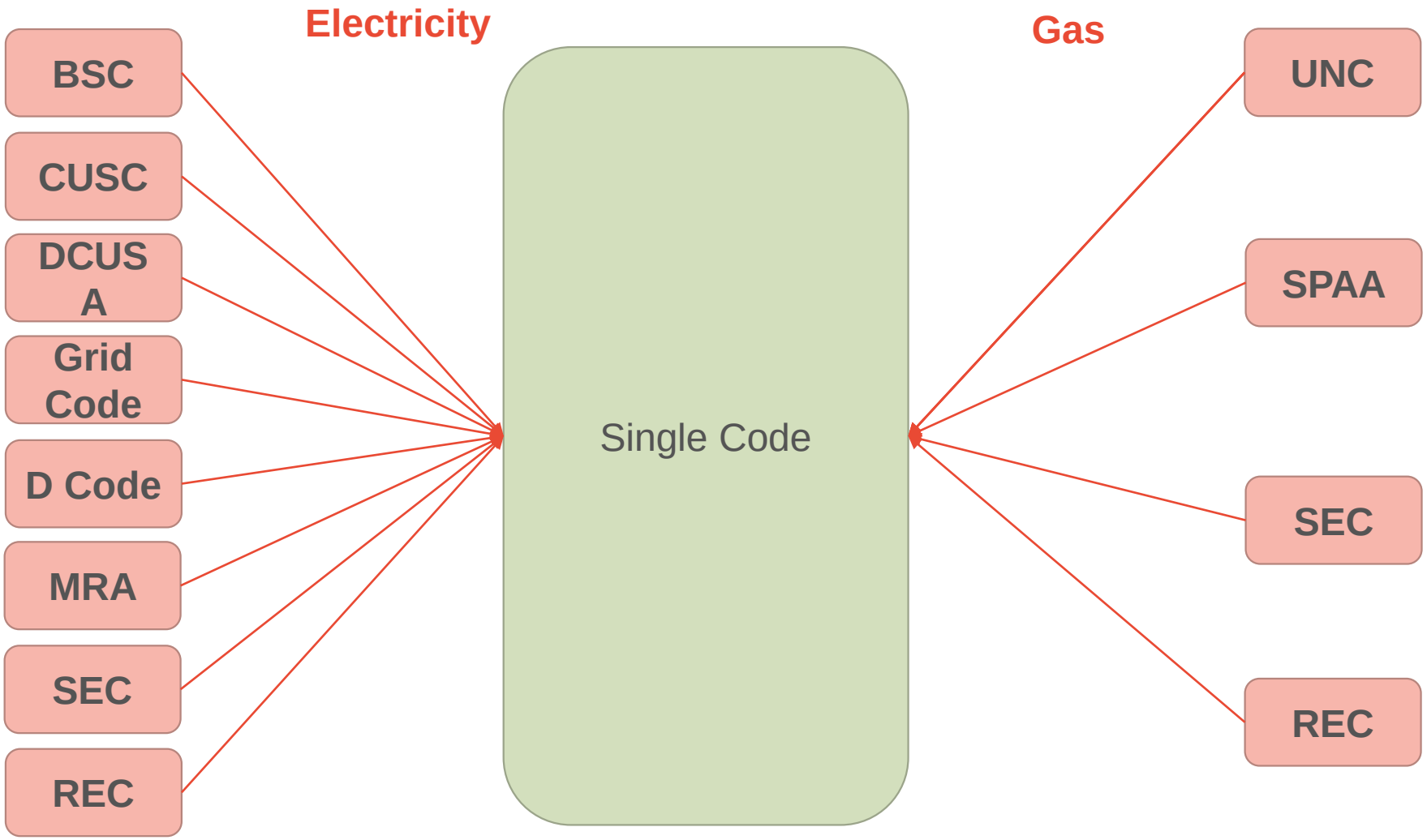
All functions currently delivered by the range of GB energy industry Codes would be contained within the single Code.



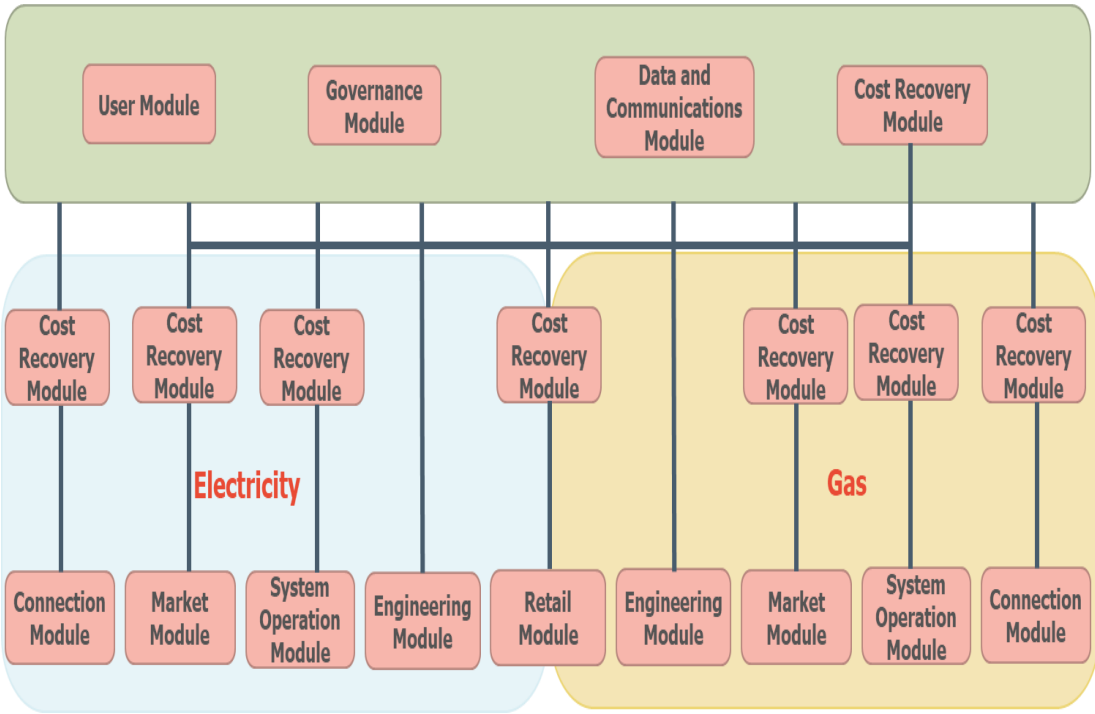
Modules

- User Module
- Governance Module
- Data and Communications Module
- Cost Recovery Module
- Retail Module
- Markets Module
- System Operation Module
- Connection Module
- Engineering Module

Single Code


Electricity
Gas
BSC
CUSC
DCUSA
Grid Code
D Code
MRA
SEC
REC
Single Code
UNC
SPAA
SEC
REC

Framework agreement

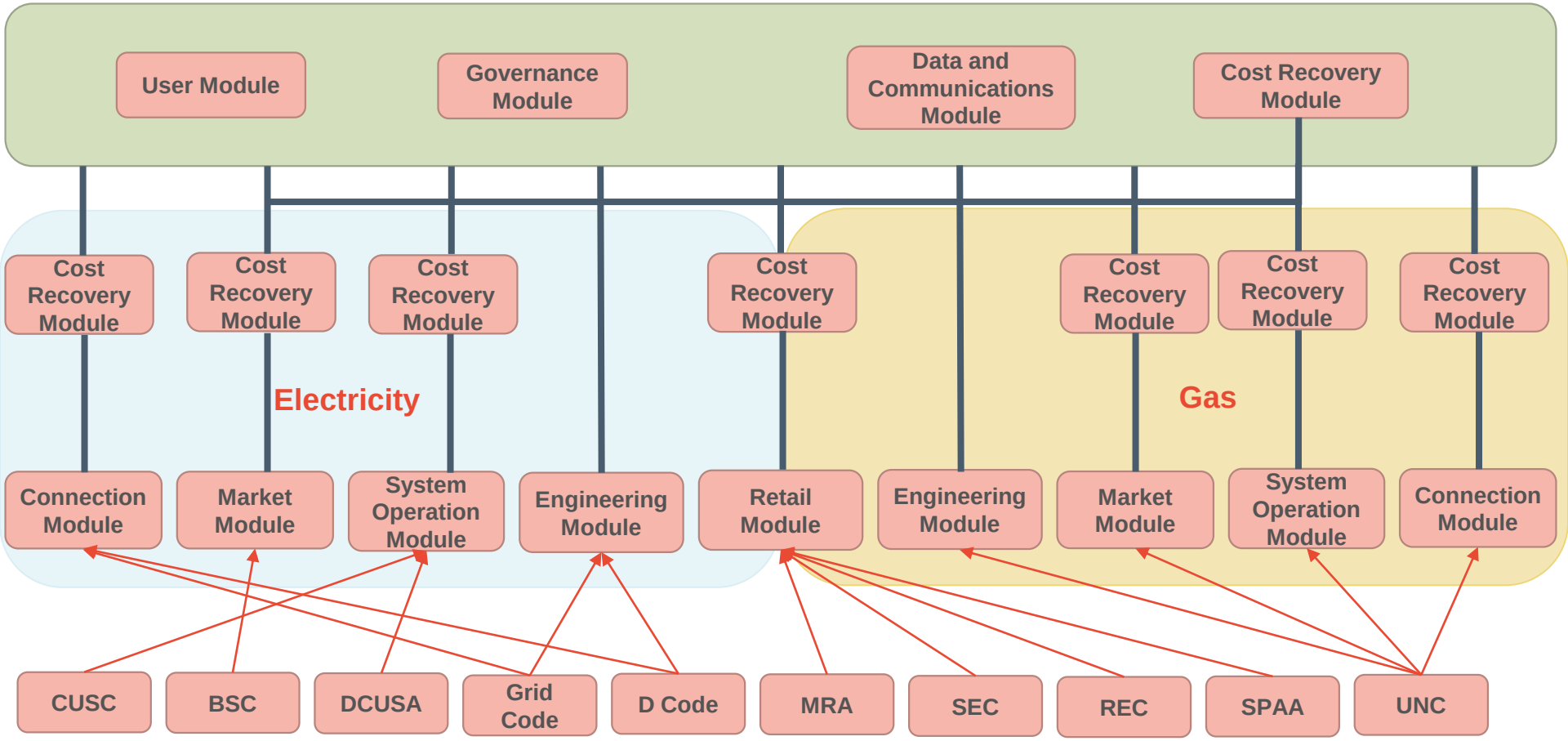


A single overarching “core” Code to deliver a consistent approach to the standard Code functions which all parties would accede too

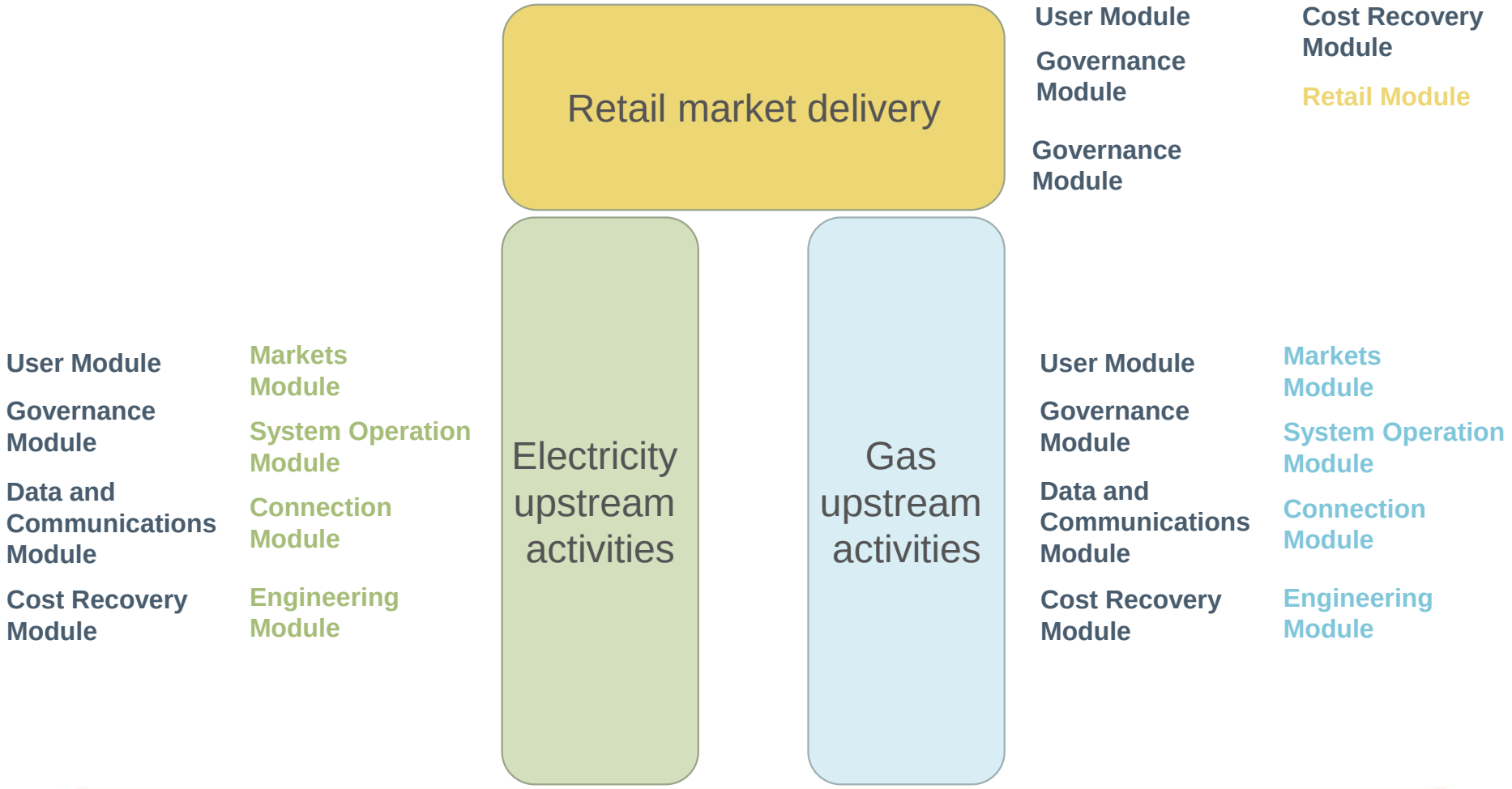
Specific technical and delivery requirements are contained within discrete ‘arms’ for the Code. The intent to require parties to only accede to the elements relevant to their industry roles, while delivering consistent Code governance and a holistic approach to change management.

The retail arm would be a dual fuel arm (to reflect the current dual fuel nature of the REC and SEC) while the others would be single fuel to enable parties to only accede to the Code elements relevant to them.

Framework agreement



Dual fuel retail, single fuel upstream



Dual fuel retail, single fuel upstream

Description

Arrangements relating to the delivery of the downstream retail market activities, predominantly the retail market. Would maintain the dual fuel arrangements established by the REC and SEC

Main areas covered would include: metering ownership and switching, theft arrangements and potentially consumer protections

Retail market delivery

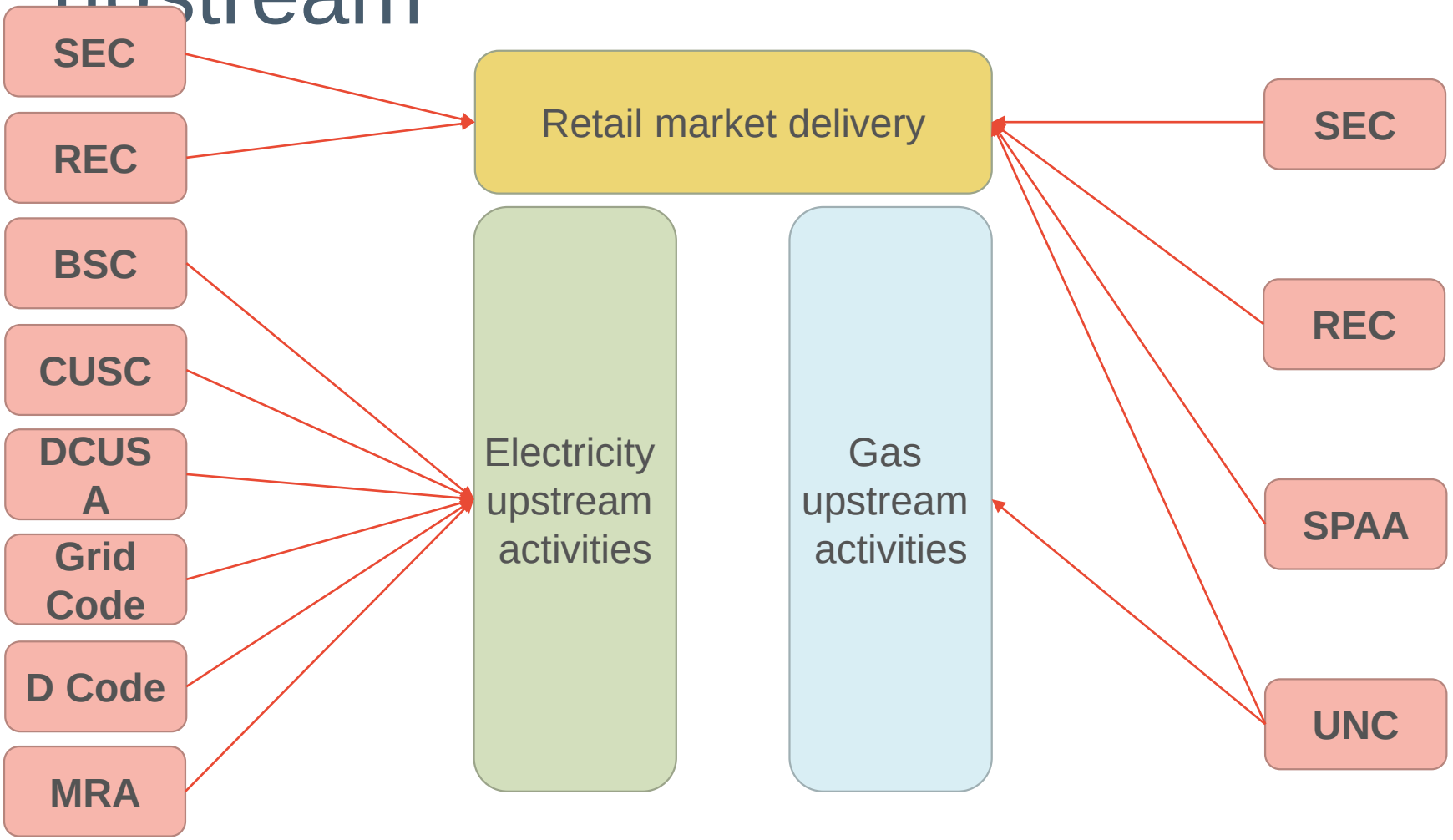
Two single-fuel Codes to deliver all upstream functions – namely those relating to the wholesale market and network activities.

This would include trading, metering requirements and dataflows, imbalance and settlement, charging arrangements to recover network costs, technical and engineering and metering requirements for connections and operations, and planning and management of the network.

Electricity upstream activities

Gas upstream activities

Dual fuel retail, single fuel upstream



Assessment of Code models

Assessment criteria

- The six potential Code models have been assessed against the current baseline (as delivered by the current 11 Codes)
  - Objective is not to determine the 'best' option, but to assess the strengths and weaknesses of the different structures and how current arrangements would map across
- The assessment criteria have been taken from the Ofgem/ BEIS statements regarding what the future of Code governance and structure needs to deliver
  - These have been chosen as they concisely define the key criteria for a future Code structure
  - For any change to Code structure, BEIS and Ofgem are the key decision makers, so alignment with their assessment framework is key
- Structures have been assessed against the baseline as either:
  - Positive – the structure would deliver this key criteria noticeably better than the current situation
  - Neutral – the structure would not have a notable impact on this criteria compared to the current baseline, or the positive and negative impacts are expected to balance
  - Negative – the structure would be materially less suitable to deliver this criteria than the current situation
- This assessment has not taken into account the potential impact of a single Code manager
  - This allows the assessment of the "core" functionality of the different potential Code structures
  - The impact a single Code manager may have on the arrangements is considered separately later in the report
- Cost and time to implement are considered to be outcomes as opposed to assessment criteria

Assessment criteria – Ofgem/BEIS approach

Criteria	Definition
1. Rules are clear and accessible	It should be easy for any market participant to understand which rules apply to them and what the rules mean for them
2. Regulatory framework facilitates timely change – both ad-hoc and systemic, and enables innovation	Energy sector rules are important and complex, and change must be carefully considered. However, in order to support the ongoing changes to the market, the regulatory framework should be: • Forward-looking and in line with wider industry/government strategic direction • Agile and responsive to change • Streamlined and coordinated, to enable transition to a clean, smart, and consumer led energy system
3. Right expertise driving rule design and change process	The regulatory framework needs to accommodate: • A larger and growing number of market participants • An increasingly diverse mix of market participants
4. Robust compliance monitoring and enforcement	With more and more diverse market participants joining an extremely inter - dependent system, compliance becomes increasingly important

Assessment of Code models

Criteria: Rules are clear and accessible
Definition: It should be easy for any market participant to understand which rules apply to them and what the rules mean for them

Code	Ranking	Reasoning
Horizontal alignment	**Positive**	• Alignment of Codes with industry 'functions' would support parties in a clearer understanding where requirements and processes sit • Dual fuel structure supports aligned activities (retail, gas fired generation, system operation)
Vertical alignment	**Negative**	• Creation of two single fuel Codes would undo alignment created under SEC and REC • Potential size of the whole system Codes for each fuel could present a barrier to engagement to newer/ smaller parties • Limited justification and benefit for splitting by fuel, many activities (retail, gas fired generation, system operation) require dual fuel considerations
Single Code	**Neutral**	• Having a single Code document would remove uncertainty/lack of transparency around where specific obligations are contained • Potential size of single Code document covering all Code and market functions could act as a barrier due to real and perceived complexity for small or new entrants engaging with the Code, even if rationalisation occurred in its creation
Upstream/ Downstream Code	**Positive**	• Alignment of Codes with industry 'functions' would support parties in understanding where requirements and processes sit • Combination of market and system operation functions removes need for cross-Code informational flows • Dual fuel structure supports aligned activities (retail, gas fired generation, system operation)
Framework Code	**Positive**	• Single 'body' Code would deliver consistent approach to accession, governance, and change management • Function specific 'arms' would provide clarity on where specific functions it, and what requirements are applicable to different parties
Dual fuel retail, single fuel upstream	**Positive**	• Dual fuel retail Code maintains current simplification (REC and SEC) while single fuel upstream Codes may help ensure parties face only obligations relevant to their role • Alignment of Codes with industry 'functions' would support parties in understanding where requirements and processes sit • Combination of market and system operation functions removes need for cross-Code informational flows

Assessment of Code models

Criteria: Regulatory framework facilitates timely change
Definition: Needs to accommodate: a larger and growing number of market participants; and an increasingly diverse mix of market participants

Code	Ranking	Reasoning
Horizontal alignment	**Positive**	• Reduction of number of Codes and alignment by function should simplify process
Vertical alignment	**Positive**	• Reduction of number of Codes and alignment by function should simplify process
Single Code	**Neutral**	• Single governance and change management approach would simplify and facilitate regulatory change • Size of the Code and complexity could hinder timely and efficient changes
Upstream/ Downstream Code	**Positive**	• Reduction of number of Codes and alignment by function should simplify process
Framework Code	**Positive**	• Single governance and change management approach would simplify and facilitate regulatory change • Ability to focus on specific 'arms' should help minimise unnecessary complexity
Dual fuel retail, single fuel upstream	**Neutral**	• Reduction of number of Codes and alignment by function should simplify process • However, split of upstream activities into electricity and gas may hinder ability to align changes and deliver policy objectives

Assessment of Code models

Criteria: Right expertise driving rule design and change process
Definition: The regulatory framework should be: forward-looking and in line with wider industry/government strategic direction; agile and responsive to change; streamlined and coordinated, to enable transition to a clean, smart, and consumer led energy system

Code	Ranking	Reasoning
Horizontal alignment	**Positive**	• Simplified structure into three Codes linked to market functions should enable targeted flexibility within the Code structure to deliver future outcomes • Grouping of Codes by industry functions and across fuels should help clarify where required clauses sit for policy and future market delivery
Vertical alignment	**Negative**	• Splitting arrangements between gas and electricity removes synergies, particularly around retail and system operations. This could prevent forward looking changes by reducing coordination between the fuels and potentially limiting the ability of qualified parties to utilise their expertise throughout the value chain • Will require changes to be aligned across the two fuels
Single Code	**Neutral**	• Single Code provides aligned governance and user arrangements • As all functions will be contained within a single Code, all impacts from modifications to be considered and changes to enable future business models to be delivered in a holistic manner • Size of Code, and complexity of management risks slowing moves to future systems and frustrating attempts by new parties to engage
Upstream/ Downstream Code	**Positive**	• Simplified structure into two Codes linked to market functions should enable targeted flexibility to deliver future outcomes • Grouping of Codes by industry functions and across fuels should help clarify where required clauses sit for policy and future market delivery
Framework Code	**Positive**	• Unified governance arrangements support objective delivery • Clear distinction between ‘arms’ should provide transparency around where obligations sit and how align with government and market objectives
Dual fuel retail, single fuel upstream	**Positive**	• Simplified structure into three Codes linked to market functions and fuels should enable targeted flexibility to deliver future outcomes • Grouping of Codes by industry functions and across fuels should help crystallise where required clauses sit for policy and future market delivery

Assessment of Code models

Criteria: Robust compliance monitoring and enforcement
Definition: With more and more diverse market participants joining an extremely inter -dependent system, compliance becomes increasingly important

Please note that the compliance and enforcement approach is dependent on the detailed stakeholder and governance arrangements for each Code structure. Therefore we have provided a view, but this will be subject to the determination of the final arrangements

Code	Ranking	Reasoning
Horizontal alignment	**Neutral**	• Limited impact compared to current arrangements • Alignment of gas and electricity performance assurance regimes may improvement approach and lower risk exposure for individual parties and the industry as a whole
Vertical alignment	**Neutral**	• Limited impact compared to current arrangements
Single Code	**Positive**	• Single governance and compliance arrangements should provide benefits through alignment for all parties and transparent compliance arrangements
Upstream/ Downstream Code	**Neutral**	• Limited impact compared to current arrangements • Alignment of gas and electricity performance assurance regimes may improvement approach and lower risk exposure for individual parties and the industry as a whole
Framework Code	**Positive**	• Single governance and compliance arrangements should provide benefits through alignment for all parties and transparent compliance arrangements
Dual fuel retail, single fuel upstream	**Neutral**	• Limited impact compared to current arrangements

Assessment summary

Code model	Clear and accessible rules	Facilitates timely change	Expertise driven	Robust compliance	Overall
Horizontal alignment	Positive	Positive	Positive	Neutral	Positive
Vertical alignment	Negative	Positive	Negative	Neutral	Negative
Single Code	Neutral	Neutral	Neutral	Positive	Neutral
Upstream/ Downstream Code	Positive	Positive	Positive	Neutral	Positive
Framework Code	Positive	Positive	Positive	Positive	Positive
Dual fuel retail, single fuel upstream	Positive	Neutral	Positive	Neutral	Neutral

Code Governance considerations

Code review - governance

- The governance arrangements are a specific area of the Codes review
- Criticisms of the change process identified by Ofgem include
  - Slow to take decisions
  - Reactive to existing problems rather than forward looking
  - Lacking coordination
  - Resource intensive
- One of the objectives of the review is to develop a framework capable of delivering strategic, whole system solutions in the interest of consumer
  - New arrangements must be more forwards looking and less reactive

Current Code administrators

- The current industry Code administrators are a mix of for profit and not-for-profit organisations
  - This reflects the different bodies providing Code administrator functions and how they were established
  - Typically, those which were formed for the purpose of delivering the Code functions (such as Elexon or the Joint Office) are not-for-profit, while those procured externally operate on a for profit basis
- The basis on which any new Code administrator (or Code manager) should operate would need to be determined as part of the reform programme

Code	Administrator	Operating basis
BSC	Elexon	Not-for-profit
CUSC	National Grid	For profit
DCUSA	ElectraLink	For profit
Grid Code	National Grid	For profit
Distribution Code	ENA	Not-for-profit
MRA	Gemserv	For profit
STC	National Grid	For profit
REC	*TBC*	*TBC*
SEC	Gemserv	For profit
UNC	Joint Office	Not-for-profit
SPAA	ElectraLink	For profit

Governance and the modular system

- We do not make any specific recommendations for the governance structure as to some extent specific recommendations flow from the choice of Code model
- However, there are areas of general best practice which should be carried over in all cases as “no regrets” measures
  - Cross Code coordination – make sure existing processes for Code administrators to discuss cross Code impacts are maintained and strengthen where the Codes are not merged
  - Independent panels – continue the practice of independent panels and workgroups with industry and consumer oversight of change
    - This will be particularly important given the increased size of the Codes following simplification and the potential for a single Code manager
  - Third party access – extend the BSC approach to allowing third parties to raise modifications independent of regulator
    - The ability for new market participants, or those outside the energy industry to raise changes will help support innovation, lower barriers to entry, and help future proof the arrangements
  - Sandboxes – the sandbox approach (as contained within the BSC arrangements under the P362 solution) should be implemented in any new structures to test innovative projects
    - As with the third party access arrangements the use of sandboxes will support innovation, lower barriers to entry, and ensure the arrangements are future proofed
  - Critical friend –critical friend support, including analytical support and modification leads, should be provided across all Codes, and the approach standardised to align with the BSC offering

Improvements to change processes

- In addition the following changes should be included in any new Code structure as “no regrets” measures
  - Give Code administrators the power to raise modifications
    - This should be for simple administrative changes and areas of “strategic change” or cross Code change
    - Oversight from industry panel should be maintained to ensure Code objectives are met
  - Aligned alternates across all Codes
    - Limit the number of alternates to a manageable number to simplify process
  - Alignment of Code objectives between industry Codes
    - Consideration of the introduction of new objectives to the industry Codes, including potentially
      - An objective in regards to carbon outputs and climate change impact
      - Explicit consideration of the consumer impacts (potentially costs and experience)
  - Increase critical friend role and requirements and broader support for market parties in engaging with the Code functions
    - Increased analytical support from Code administrators for change impacts and market developments
  - Consideration of impacts/ requirements from non-Code sources
    - The Codes should proactively consider whether a change would impact upon the Codes and require a change to enable prior to it impacting parties
      - For example the reflection of remote island wind in TNUoS charging methodologies, or co-location storage/renewable sites

Single Code manager

- In addition to the Code consolidation work, there are also potential benefits and synergies from the creation of a single Code manager that should be explored
- The specific benefits and synergies include:
  - Improved cross–Code/ fuel/ party coordination
    - Having a single body overseeing the Code arrangements should help ensure that the industry Codes remain aligned across fuels and separate Codes and also provide support for parties in interacting with the Codes and understanding what impacts upon them
    - Improved potential for the extension of industry Codes to cover new market functions, such as “heat” or “transport”
  - Alignment and simplification of common functions across Codes
    - For example this could lead to alignment of credit arrangements, the change process, and governance approach
      - This could deliver both operational benefits, and financial benefits through reduced resource requirements and consolidated credit arrangements
  - Improved risk management and compliance functions
    - A single Code manager could potentially improve the risk management approach for the industry, lower risk exposure and improve the application of compliance actions against parties by ensuring a consistent approach and considering risks across the value chain when identified
    - This benefit assumes the ability of Code manager to share relevant data within itself regarding parties and events to be utilised for risk management and compliance functions
  - Transparency and data usage improvements
    - A single party would provide a ‘one-stop-shop’ for all data items, ensure a consistent data formant, and align the approach for communications

Single Code manager

- As a result of the benefits identified, we consider that a single Code manager would aid in the delivery of any of the proposed models and could help mitigate the weaknesses which have been identified with some of the models
  - The impact of the single Code administrator on the evaluation is set out on the following slide
- If a single Code manager was progressed, the following issues would need to be considered in regards to the party delivering the function:
  - The independence of the Code manager
  - How to ensure the delivery party is qualified to oversee all Code functions
  - Whether the role would be for profit or not for profit
  - The appointment process for the manager

Single Code manager impacts

- The ratings for the Code structures have been reassessed to consider the impact a single Code manager would have upon its delivery
- As a result of the potential cross-Code/party coordination and alignment of approach the single Code manager could mitigate the potential downsides from Code models which deliver limited alignment and coordination via their core structure
  - This is particularly relevant for the Vertical alignment model which separates activities by fuels
  - The potential impact on other Code models may be less pronounced as the limitations for these are as a result of the potential size of the Code documents
- Overall the single Code administrator is expected to have a beneficial impact on the compliance and enforcement criteria
  - This is because the single party could help deliver a consistent approach to enforcement and take a holistic view of compliance risks and support cross Code enforcement and monitoring activities
    - This benefit assumes the ability of Code manager to share relevant data within itself regarding parties and events to be utilised for risk management and compliance functions

Single Code manager impacts

- The ratings for the Code structures have been reassessed to consider the impact a single Code manager would have upon its delivery
- The new rating is shown below with the previous rating indicated in (brackets)

Code model	Clear and accessible rules	Facilitates timely change	Expertise driven	Robust compliance	Overall
Horizontal alignment	**Positive**	**Positive**	**Positive**	**Positive (Neutral)**	**Positive**
Vertical alignment	**Negative**	**Positive**	**Neutral (Negative)**	**Positive (Neutral)**	**Neutral (Negative)**
Single Code	**Neutral**	**Neutral**	**Neutral**	**Positive**	**Neutral**
Upstream/ Downstream Code	**Positive**	**Positive**	**Positive**	**Positive (Neutral)**	**Positive**
Framework Code	**Positive**	**Positive**	**Positive**	**Positive**	**Positive**
Dual fuel retail, single fuel upstream	**Positive**	**Positive**	**Positive**	**Positive (Neutral)**	**Positive (Neutral)**

Considerations for implementation

Applicable case studies

- The energy Codes have not undergone a holistic review and reform since their inception
- However, there are a number of other major workstreams from within the energy industry and other sectors that have been reviewed for project learnings for a change process of this magnitude
  - Project Nexus implementation
  - P272 Profile Class 5-8 half-hourly settlement implementation
  - NETA implementation (note this was primarily an IT change but offers a valuable case study on industry change)
  - Smart meter rollout
  - I-SEM implementation
  - XOSERVEs Funding Governance and Ownership Programme
    - Details of these workstreams are set out in the reference slides
- The following key learnings can be taken from these case studies:
  - The need for “vision” for the project
    - A clear understanding of what the project is looking to achieve, how it intends to deliver this, and why it is important to the industry
  - The need for dedicated and effective project management
    - As demonstrated by the case studies, dedicated project management is a key requirement for successful implementation of complex and large scale rule change
    - This project management should be delivered by a neutral party that will not be captured under the arrangements
    - Potentially a single Code manager could deliver this function as part of work to simplify and consolidate the Codes and their functions
  - Clear and ongoing leadership by official bodies, including Ofgem and BEIS

Applicable case studies

- The following key learnings can be taken from these case studies:
  - The importance of industry buy-in through effective consultation
    - Given the broad applicability of the industry Codes to all parties active in the energy sector, and key role industry parties will have in both delivering the initial Code reform, and its ongoing operation and change through the Code governance process, it is vital that industry parties are broadly supportive of workstream objectives
    - This needs to include well-resourced larger industry parties who will be active in the development of the new arrangements and smaller and less well resourced parties to ensure that final structure is fit for purpose
  - Clearly defined outcomes, objectives, and timelines
    - For a workstream of this size to succeed the project needs to have clearly define outcomes and objectives to ensure that all parties understand what ‘success’ is for the project, and the deliverables required to meet this
    - Additionally agreed, realistic timescales for delivery are important, as energy industry workstreams have a reputation for overrun, which can result in loss of faith in the workstream and further issues and potentially deliverables being de-scoped

Applicable case studies

- The following key learnings can be taken from these case studies:
  - Potential value in regulatory obligations
    - An issue noted with several of the case studies was the lack of requirement for parties to engage as required with major development workstreams, and the negative impact on implementation that this had
    - This could be addressed by a regulatory obligation, potentially through their licences or other routes, on all involved parties, delivered via the energy licences or the industry Codes, for all parties to cooperate and contribute to the workstream
  - Defined delivery responsibilities
    - Given the scale of the workstream to consolidate the industry Codes, and the number parties impacted by the work a set of clearly defined delivery obligations and a party with overall delivery responsibility for the project will be vital for ensuring the project is completed on time and to requirement
    - The overall responsible party would be linked to the delivery vehicle, and could potentially be the Code manager, Ofgem, one or more of the existing Code administers, or an externally precured party

Implementation timescales

- Workstreams of this size are recognised as requiring a significant implementation timeline
  - This is a reflection of the complexity of the project, the need to ensure a quality output, and the requirement for sufficient lead-time for parties to understand and implement the new arrangements
- While it is not possible to directly consider the timeline for implementation that would be required for a Code consolidation workstream, the implementation timeline from other major industry programmes can provide an indicative figure
  - NETA implementation – 36 months from confirmation of terms of reference (March 1998 – March 2001)
  - Project Nexus implementation – 134 months from distribution price control to implementation (April 2008 – June 2017)
  - Smart meter rollout – 145 months from the Energy act 2008 to rollout end date (November 2008 – December 2020)
  - P272 implementation – 71 months from modification raise to implementation (May 2011 – April 2017)
  - I-SEM – 56 months from initial design consultation to go-live (February 2014 – October 2018)

Considerations for implementation

- There are a number of areas which need to be considered regarding implementation options for the different Code structures
- There are two broad potential implementation options:
  - Big bang – implementation of the changes via a single change workstream and in a complete manner on a single date
    - This was the option used for the initial Codes as part of NETA's implementation
    - This option has the benefit of considering the full model holistically during the implementation workstream and allowing the implementation of a fully formed solution
    - However, big bang implementations are typically slower to undertake, given the need to develop the entire model prior to go-live and given the scope of the project has the potential to experience issues and delays due to complexity
  - Phased implementation – implementation in a number of steps
    - This method is being used for the REC's introduction
    - The advantage of this method is a reduced initial complexity and requirements for implementation, and the opportunity to consider aspects as they are delivered ahead of the next stage
    - However, as the industry Codes are living documents this would require to sets of rules to be created and operated during the phased introduction process
- Additionally, need to consider the responsible party for implementing the change
  - Should the governance work be led by market parties or via an official body (BEIS or Ofgem) or the new single Code manager?

Considerations for implementation

- In addition a number of other factors need to taken into account when considering the implementation of the new Code structures, these include:
  - The cost of implementation – regardless of the Code structure progressed fundamentally reforming the Code governance arrangements will incur significant costs
    - Significant resources will be required to map out the new Code arrangements, deliver project management functions, and ensure sufficient industry engagement
      - Will need to determined how these are funded
    - System changes will likely be required to support both central systems and individual market participants systems once the work has been completed and the new arrangements implemented
  - Time – delivery of major reform within the energy industry requires significant time, both to deliver the change and to provide sufficient foresight to parties to ensure they are prepared for the new arrangements
  - Differing interests – given the diversity in industry parties, there will be a significant number of differing views on the correct implementation strategy, methodology, and details
  - Delivery vehicle – the legal vehicle used to progress the Code consolidation workstream will need to be determined, and potentially created
    - Given the scale of the change this may be better delivered by a new entity – potentially an SPV or 'NewCodeCo' – or by one or more of the existing Code administrators
    - Need to consider whether the vehicle is a not-for profit or for-profit entity, how this is constituted, and who has control of it

Project findings, recommendations, and next steps

Code reform and simplification

- In support of the Energy Code Review workstream and the fundamental market changes, Elexon is seeking to leverage its significant experience of Code administration and insight into the electricity market to inform the review
- Cornwall Insight was commissioned by Elexon to examine and assess the potential Code governance structures that could be used, how to transition to these from the current Code structure, and some of the benefits of doing so
- In order to deliver this, the current functions of the industry Code sections have been defined and connections between these mapped, six potential Code simplification structures have been constructed and analysed, and potential options for consolidation and the transition have been considered
- The project, and the move to consolidate the Codes, is the first of several actions needed to deliver the future Code arrangements and structure, including:
  - Simplification of the Code functions and contents
  - Potential Code manager role for Code alignment
  - Consideration of who accedes to the Codes
  - Industry Code objectives
- However, this initial step is key to define the structure and approach around which the other questions and outcomes can be shaped

Key project findings – Code modules

- A key finding for the project is that Code structures should not be considered in market areas or fuels, but instead around the different modules the Codes need to deliver and the groups of arrangements that are needed to enable this
  - These modules provide standard 'sets' of Code functions that are grouped together to deliver specific market functions, such as cost recovery, or enabling the competitive retail market
  - The modules bring together elements that currently sit in a disparate set of Codes, which can be combined via the modular approach to simplify and consolidate Code functions
- We consider that these are a preferable system for considering Code structures because:
  - Provides a core set of Code requirements that can be manipulated at will to test different Code structures
  - Use of existing market roles or fuels risks basing the future Code arrangements on the current market structure rather than delivering arrangements to enable the desired future results
    - Fitting of Code areas to 'ownership' to current market structure rather than allowing flexibility for future arrangements
  - For example consideration by fuel type could deliver a structure designed for current gas markets as opposed to future heat needs
- The modules also provide opportunities for future proofing the Code arrangements
  - Opportunity to create new modules for new requirements as they develop – for example heat or electric vehicles

Key project findings – Code models

- Based on the review of the different potential Code structures, the following conclusions can be drawn:
  - The majority of Code structures examined would deliver industry wide benefits over the current baseline
    - This is a result of the reduced complexity of arrangements, clearer and more transparent rules for market parties, and increased Code coordination
  - However, a vertical Code structure does not appear to provide benefits over a horizontal or framework arrangement
    - Separation into separate fuels negatively impacts retail market delivery by separating the dual fuel REC and SEC
    - The potential size of whole value chain Codes, even for a single fuel, are likely to be unwieldly and difficult to manage
  - In addition to the Code consolidation, a single Code manager would also deliver benefits as a result of
    - Improved cross–Code/ fuel/ party coordination
    - Alignment and simplification of common functions across Codes
    - Improved risk management and compliance functions
    - Transparency and data usage improvements

Next steps and future deliverables

- This project has considered the initial structure and mapping of Code elements onto the potential simplification arrangements
  - This is to support Elexon, BEIS, and Ofgem in identifying a preferred option and analysing the different routes forwards
- Following the choice of preferred option(s) a second research phase should be undertaken to develop the detailed considerations of the chosen model, including:
  - Governance structure – preferred Code Administrator and Panel membership and operating arrangements
  - Voting and signatories – how are the voting arrangements determined for significantly wider Codes
  - Code administrator funding model – to what level will the Code be funded in order to provide support and administration functions, and how will this be recovered from parties
  - Change management – how will the change control process be delivered, are there limits on alternatives, what level of support will be provided by Code Administrators
  - Examples/scoping of simplification within current Code sections to demonstrate approach
- Additional research also needed to quantify the potential costs of implementation against cost savings – from simplified systems and reduced resource requirements

Reference slides

Project Nexus implementation

- Project Nexus was the major reform of the gas industry central settlement systems
- It was primarily intended to update the settlement processes to allow them to take advantage of the capabilities of gas smart meters and to ensure the processes continued to be fit for purpose
- The work was originally progressed by the gas industry, after being first mooted in the mid-2000's with implementation originally intended for 1 October 2015
- The project was delayed a number of times, initially to October 2016, and then implementation in June 2017 with a reduced scope
- Following concerns regarding the project management and delivery of the workstream PwC was appointed to provide management services
- Key learnings from Project Nexus include:
  - The need for clearly defined and strong project management and governance arrangements
  - The importance of managing a diverse stakeholder mix – particularly with mix of objectives, resources and engagement between gas distributors and the range of shipper providers

P-272 implementation

- P272 was a modification to the BSC raised to implement half hourly (HH) settlement for medium sized businesses (profile classes 5-8)
- Was raised following the rollout of advanced meters to enable the usage of HH data from these
- The modification was raised in May 2011 and was delayed a number of times, before being implemented on 1 April 2017
  - These delays were a result of a number of factors, including the difficulties in developing the enduring solution and issues with aligning the cross Code changes to the CUSC and DCUSA for network charging that resulted from P272
- The key findings from P272 include:
  - A significant driver for delay was the lack of cross-Code coordination for consequential impacts from the change
  - The need for clearly defined and strong project management and governance arrangements for the total change process, rather than being delivered by separate bodies

Smart meter rollout

- The smart meter rollout is requires suppliers to take all reasonable steps to install smart electricity and gas meters in all domestic and small businesses by the end of 2020
- The workstream was originally intended to be completed by the end of 2019, and there are now discussions about whether the rollout will completed by 2023
- There have been a number of barriers to the rollout, including:
  - Delays to the central communications network by the DCC
  - Delays in the approval of the SMETS2 specification and in sourcing these meters
  - Lack of customer engagement
  - Disparate supplier community with varied resources and customer bases
- The key findings from the smart meter rollout include:
  - The importance of managing a diverse stakeholder mix – particularly with mix of objectives, resources and engagement between the different suppliers
  - The reliance of the workstream on major central outputs (DCC and SMETS2) being delivered on time

I-SEM implementation

- I-SEM was the introduction of a new set of wholesale market arrangements for the island of Ireland
- It was intended to increase competition in the wholesale market, and provide alignment with EU electricity market requirements
- The arrangements were developed over a number of years, with the high level design principles published in September 2014
- Implementation was originally scheduled for October 2017, and was delayed to May 2018 and then implemented in October 2018
    - This was due to concerns regarding ongoing IT issues with the central industry systems

NETA implementation

- The implementation of NETA and BETTA was a major reform to the GB wholesale market arrangements to move from a Pool system to a bilateral trading market
- It was intended to increase competition in the wholesale market, better reflect generation costs, and ensure the arrangements did not provide market power
- The transition was originally set for 21 November 2000, but was delayed until 27 March 2001
  - This was due to legal and IT systems developments

XOSERVE FGO

- Xoserve's Funding, Governance and Ownership (FGO) Program was established to define and deliver a blueprint for the future funding and governance of Xoserve's Central Data Services
- During 2012-13 Ofgem undertook a review of the FGO arrangements of Xoserve
  - It determined establishing a co-operative governance model would be best solution
  - The gas industry was given the responsibility of delivering these changes
- To deliver these objectives the industry established the FGO Program Overview Board (POB)
  - Comprising GT's, Shippers, Xoserve and Ofgem
  - The POB tendered for services to enable program delivery
- The POB undertook pre-market engagement to gather views of scope and natures of required activities and effective approaches to meeting goals