CORNWALL INSIGHT

CREATING CLARITY

Code Consolidation Assessment

Ofgem

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Contents

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About Cornwall Insight

Getting to grips with the intricacies embedded in energy and water markets can be a daunting task. There is a wealth of information online to help you keep up to date with the latest developments, but finding what you are looking for and understanding the impact for your business can be tough. That's where Cornwall Insight comes in, providing independent and objective expertise. You can ensure your business stays ahead of the game by taking advantage of our:

- Publications – Covering the full breadth of the GB energy industry, our reports and publications will help you keep pace with the fast moving, complex and multi-faceted markets by collating all the "must-know" developments and breaking-down complex topics
- Market research and insight – Providing you with comprehensive appraisals of the energy landscape helping you track, understand and respond to industry developments; effectively budget for fluctuating costs and charges; and understand the best route to market for your power
- Training, events and forums – From new starters to industry veterans, our training courses will ensure your team has the right knowledge and skills to support your business growth ambitions
- Consultancy – Energy market knowledge and expertise utilised to provide you with a deep insight to help you prove your business strategies are viable

For more information about us and our services contact us on enquiries@cornwall-insight.com or contact us on 01603 604400.

1. About the report

1.1. Background

Ofgem commissioned Cornwall Insight ("we", "us") to assess the different possible approaches to code consolidation as part of its ongoing work to reform energy industry codes (implementation of the proposed Energy Codes Review reforms). In this report, we identify a range of code consolidation options and undertake a qualitative assessment of their relative advantages and disadvantages to support further, more detailed examination led by the regulator.

The codes are the rulebooks for much of the energy industry in Great Britain (GB). Industry parties, consumer groups and academics have provided feedback in a range of forums about the existing code governance framework and proposed reforms. Views included that the current landscape is complex, fragmented, and slow to meet the requirements of a rapidly changing energy system.

As the industry regulator, Ofgem prioritises protecting the interests of consumers. Following consultation with the market, Ofgem and BEIS concluded that a more unified, flexible, and dynamic approach to code governance is needed as part of the transition to a more flexible, data enabled energy system capable of meeting the net zero target. A new framework would ensure that new technologies, new business models and new ways of managing the system are supported by the energy code arrangements which underpin the market's operation.

An important first step will be identifying where consolidating the existing codes would be possible. There are 11 existing codes under consideration (10 listed *here* and the Security and Quality of Supply Standard), which is a reduction following the Supply Point Administration Agreement (SPAA), Master Registration Agreement (MRA) and Smart Metering Installation Code of Practice (SMICoP) being merged into the new Retail Energy Code (REC) in 2021.

1.2. Our approach

We diagrammed and categorised the electricity and gas codes to show areas of common processes and conditions, linkages between functions and highlight potential areas for consolidation. This was then used to define 14 potential code reform options based upon structures put forwards as part of the Code Review workstream, as well as discussions with Ofgem and BEIS and the outputs from our code diagramming exercise. These potential structures have been mapped and examined, and the findings described in the report. Our assessment of these has utilised a set of criteria derived from principles agreed with Ofgem. These are:

- Consumer benefit
- Compatibility with the Net Zero Strategy ambitions and potential future market arrangements
- Code governance implications, including compatibility with future code manager models
- Usability of the resultant codes
- Lack of disruption to central systems and service providers
- Feasibility and ease of implementation

The purpose of the project is not to make recommendations on the 'best' code structure, but to define and assess different models to support more detailed follow-on assessments.

This report is expected to be the first of several actions that would deliver the future code arrangements and structure.

The ongoing reform of the current system of code administration (see BEIS and Ofgem's joint consultation *Energy code reform: governance framework*) will inform timescales and resource

requirements of some of the potential options. This initial step is key to define the structure and approach around which the other questions and outcomes can be shaped.

1.3. Options for code reform

Descriptions of the potential code structures can be found in Section 4 of this report. Based on the review, the following conclusions can be drawn:

- The majority of code consolidation options examined would deliver industry wide benefits over the current baseline option
- These benefits are a result of reduced complexity of arrangements, clearer and more transparent rules for market parties, and increased code coordination
- A purely vertical code structure - aligned by fuel types with separate gas and electricity codes - does not appear to provide consistent benefits over a horizontal or framework arrangement and reduces scope for dual-fuel efficiencies
- Separation into individual fuels would likely negatively impact retail market delivery by separating the dual fuel REC and SEC
- The potential size and scope of whole value chain codes - mass consolidation - are likely to make them unwieldly and difficult to manage, even for a single fuel

BEIS has received wide stakeholder support for their plans to reform codes, announcing its *decision to empower Ofgem with new strategic functions* for codes in April 2022. Ofgem will receive new strategic code functions, allowing it to make changes to codes directly in limited circumstances, direct system delivery bodies, and be granted the ability to establish and regulate code managers by licence.

The timetable for code reform will be subject to the development of any necessary primary and secondary legislation. The earliest these powers would be granted is expected to be 2023. Ofgem will lead on transitionary arrangements.

1.4. Shortlist and longlist for code reform

A longlist of options has been developed to allow the consideration of the widest possible pool of options. Following the initial gating exercise in Section 5, the remaining code options underwent further assessment in Section 6. Based on the shortlisted options taken forwards to the further review stage, we have assessed the most promising code options to be the following:

- **Option 0 – Other reform:** This serves as a counterfactual to more substantive reforms noted below.

  Rather than consolidating codes, other types of reform would be used to achieve benefits in the code regime such as simplification, alignment, or granting code administrators/ licenced code managers the ability to raise code changes. This Option 0 generally scores highly thanks to being much easier to implement than any other option, both in terms of industry time and resource, and minimal potential disruption.

  The fundamental disadvantage is the missed opportunity to make the code regime easier to engage with and better suited to the changing energy system environment. This will negatively impact delivery of net zero, or other consumer focused reforms.

  This option assumes a programme of incremental reforms will continue under each code.

- **Option 1A – Minimal reform (networks code):** This option combines the UNC and IGT UNC into a single gas code, the CUSC and Grid Code into one electricity transmission code,

and the DCUSA and D Code into one electricity distribution code. This is also one of the simplest and least disruptive options to implement while offering advantages from a more streamlined code regime. However, even a limited merging of codes is likely to involve far more work and expense than all but the most fundamental non-consolidation reforms.

- **Option 1B – Minimal reform (technical code):** This option combines the UNC and IGT UNC into a single gas code, and the Grid Code, SQSS, STC and D Code into one electricity technical code. Option 1A scores identically to 1B reflecting their similarities. It is also one of the simplest and least disruptive options to implement while offering advantages from a more streamlined code regime. The focus on splitting arrangements by technical or market activities as opposed to by network level provides different benefits and limitations, but may align more closely with market activity splits.
- **Option 2B – Partial horizontal alignment:** This option restructures all codes into Retail, Communication, Engineering, Charging and Wholesale codes, all of which are dual fuel. It scores adequately overall but is let down in some key areas. We expect it to be one of the most adaptable and user-friendly options but, it would be a lot of work for the industry and cause particular upheaval on the gas side, disaggregating the UNC.
- **Option 4B – Dual fuel retail, single fuel upstream:** This option restructures all codes into a dual fuel Retail Code and separate, single fuel electricity and gas upstream codes that cover the respective wholesale and networks elements. It appears to be one of the less viable of our shortlisted options. Its creation is likely to be very challenging due to the scale of the reform and potential legal issues. Even when complete, the codes it creates may be unwieldy and difficult to engage with, especially on the electricity side. Its strength is that it is unlikely to impact on industry systems much, but this is outweighed by its shortcomings.
- **Option 4C – Dual fuel retail, single fuel upstream v2:** This option is a variation of Option 4B and an advancement on Option 1A. It creates a dual fuel retail code and four single fuel upstream codes: networks and wholesale and electricity and gas. Overall this option is more appealing than Option 4B, but will still be a significant undertaking to implement.
- **Option 6 – Framework agreement:** This approach would see a single overarching “core” code to deliver a consistent approach to the standard code functions, which all parties would accede to. This would be supported by specialised modules for technical and delivery requirements. We consider that Option 6 has some attractive features but would need a particularly robust business case before it could be embarked upon. As a clean sheet design we expect it could be very effective once implemented, cutting down on redundant work while being easy to engage with for market participants. However, the challenge would be putting it into practice, as it would be a very fundamental change.

Our assessment of these options was qualitative and did not include weighting factors of different criteria, which may be significant. For example, Option 0 had the highest overall score due primarily to its ease, but offers limited benefits to the industry once implemented compared to most of the other shortlisted options.

These options, and others if identified, should be progressed to further review and assessment, with potential next steps including stakeholder engagement, Ofgem information requests, Ofgem or BEIS led consultations, examining the shortlist in more details.

2. Current codes landscape

Industry codes underpin the GB gas and electricity markets and systems. They are legal documents which the majority of industry parties are obliged to comply with in order to participate in the GB market. Containing many of the requirements needed to ensure the safe and secure operation of the energy systems, the codes support the functioning of competitive markets. They describe the obligations on parties within the energy market, ensuring consistent standards are met across different roles.

The Gas Act 1986 and The Electricity Act 1989 prohibit certain activities unless the person carrying out that activity is licensed by Gas and Electricity Markets Authority (GEMA). Licensed parties must adhere to a set of standard licence conditions and also comply with certain industry codes. Licensable activities include supplying, transporting, distributing and generating energy.

Breaching the obligations within the codes can also be a breach of licence. Ofgem has powers to take steps where an enforceable act has occurred.

The existing codes we will consider in this report are shown in Figure 1.

Figure 1: GB energy industry codes

Code	Fuel	Description
Balancing & Settlement Code (BSC)	Electricity	Covers the rules for the Balancing Mechanism, settlement and trading
Connection & Use of System Code (CUSC)	Electricity	Concerns connection to, and use of, GB's transmission system
Distribution Code	Electricity	Defines the technical parameters and considerations relating to connection to the public distribution network.
Distribution Connection & Use of System Agreement (DCUSA)	Electricity	Concerns connection to, and use of, the public distribution system.
Grid Code	Electricity	Defines the technical parameters and considerations relating to connection to the GB transmission network.
Security and Quality of Supply Standard (SQSS)	Electricity	Sets out the criteria and methodology for planning and operating the transmission network
System Operator - Transmission Operator Code (STC)	Electricity	Defines the relationship between the three transmission owners and the transmission system operator.
Independent Gas Transporter UNC (IGT UNC)	Gas	Equivalent of the UNC specifically for IGTs' operations.
Uniform Network Code (UNC)	Gas	Main industry code for gas, setting out relationships between shippers and transporters, pipeline operation, settlement, charging etc.
Retail Energy Code (REC)	Dual fuel	Dual fuel code concerning supply-related obligations, e.g. switching, customer metering and theft detection.
Smart Energy Code (SEC)	Dual fuel	Dual fuel code defining the rights and obligations of energy suppliers, network operators and other relevant parties involved in smart metering in GB.

Throughout this report we generally consider the UNC and IGT UNC together due to their similarities. For the avoidance of doubt, we have not assumed these codes should be merged in every instance and recognise that the topic was discussed by the industry in 2018 under IGT review group *RG004*, and no further action was taken at that time.

Code administrators are committed to operating their code administration functions in accordance with the Code Administration Code of Practice (CACoP). We do not consider the future of CACoP within this report, but it will need to be taken into account as part of subsequent code reform work.

2.1. Code introduction and evolution

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. Despite this, the fundamental design and purpose of the industry codes was established at their inception and has continued to feature several core principles:

- 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 code panels and administrators

Traditionally, codes had been organised by fuel, with seven electricity-only codes and three gas-only codes. With the creation of the Smart Energy Code in 2013 the concept of dual fuel codes was introduced. This has continued with the creation of the Retail Energy Code, which merged the gas-only Supply Point Administration Agreement (SPAA) and electricity-only Master Registration Agreement (MRA). Also included in the REC were the Green Deal Arrangements Agreement (GDAA), parts of the Balancing and Settlement Code (BSC), the Smart Metering Installation Code of Practice (SMICoP), and energy theft prevention obligations previously included in the Distribution Connection and Use of System Agreement (DCUSA).

The addition of new codes and new code arrangements – such as those resulting from Significant Code Reviews (SCRs) and the Code Administration Code of Practice (CACoP) have helped ensure the code structure still delivers its original purpose.

However, there has not been a fundamental code wide review since the inception of New Electricity Trading Arrangements (NETA) in 2001. Ofgem therefore believes that further code consolidation may be beneficial, and that it could enable the delivery of wider code governance reform.

Code consolidation has been proposed for a range of reasons. Depending on the approach, benefits could include both time and monetary savings for the industry. Consolidation could lead to running fewer codes overall, and reductions in funding and cost to engage with. If redundant or duplicated elements are eliminated, a more streamlined set of rules could be easier to engage with. Fewer codes could offer benefits to existing industry parties, but also lower the barrier to innovative new market entrants without the risk of lowering standards.

2.2. Changing market landscape

The GB energy market continues to undergo significant changes, including:

- Decarbonisation and technological changes – the transition to net zero will be accompanied by transformation of the whole energy sector, the electrification of most surface transport, moving to low carbon energy sources for heating buildings, and further decarbonisation of electricity generation. Technological innovations are occurring across the energy market, including low carbon generation, small-scale storage, and automation, alongside changes in consumer behaviour and party priorities.
- Changing network usage – interactions between transmission and distribution are no longer one-way. Today, extensive generation assets are added to distribution systems, many demand sites now export energy at times, and the linkages between the gas and electricity systems are becoming even more important as the ESO must increasingly dispatch peaking

plants to respond to variations in renewables output.

- Changes in consumer behaviour – consumers are becoming increasingly engaged with the market, with *switching rates having stayed relatively high* until the recent price spikes. More fundamental changes are also emerging such as future interactions with peer-to-peer (P2P) trades, consumer demand side response actions, and automation of supply. All of these will require changes to industry codes to fully realise, both to the rules and to potentially create new types of code party.
- Diversity in the participant mix – there has been a significant number of new market entrants in both the generation and supply markets since the current regulations were first envisaged. On the generation side, this has been particularly pronounced in low carbon and flexible assets, and is leading to an expert and impartial Future Systems Operator (FSO). These new parties have included those who were not originally considered by the industry governance arrangements, and are as varied as technology companies, asset installers, heat network operators, local authorities, community groups and social energy suppliers. Many do not operate nationally or might not consider energy to be the focus of their business.
- 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. Ongoing programmes include *Energy data and digitalisation* to promote interoperability and more effective data usage, *Full chain flexibility* to support a system where all can respond to capacity signals, *Market wide half hourly settlement* to take advantage of the settlement capabilities of smart meters and support a flexible system, and *Faster switching* allowing customers to move between suppliers in shorter timescales.

The structure of industry regulations mostly reflect the market at the time when they were put in place. However, the above changes mean that the market environment, and its participants are no longer aligned with the structure that the industry codes and governance arrangements were originally designed for.

2.3. The code governance regime

Governance is a key issue in the administration and development of the industry codes. Each code currently has its own administrator, whose role it is to maintain the code, and organise and support the development of the code through the open governance process. While the position and powers of administrators varies between codes, it is generally the case that they are reactive keepers of the codes. Code administrators support and advise code parties rather than taking an active role in code development, although this varies from code to code.

Given the 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 can be:

- Slow to implement decisions, with even straightforward modifications sometimes taking considerable time to be fully developed and implemented
- 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.

In recent years Ofgem has supported the creation of a "code manager" role as a replacement for the current code administrator concept. As the name suggests, these parties would be empowered to:

- Raise code changes
- Develop a delivery plan in line with strategic direction provided by Ofgem
- Make code decisions, rather than these being made by code panels
- Facilitate cross-code co-ordination and change

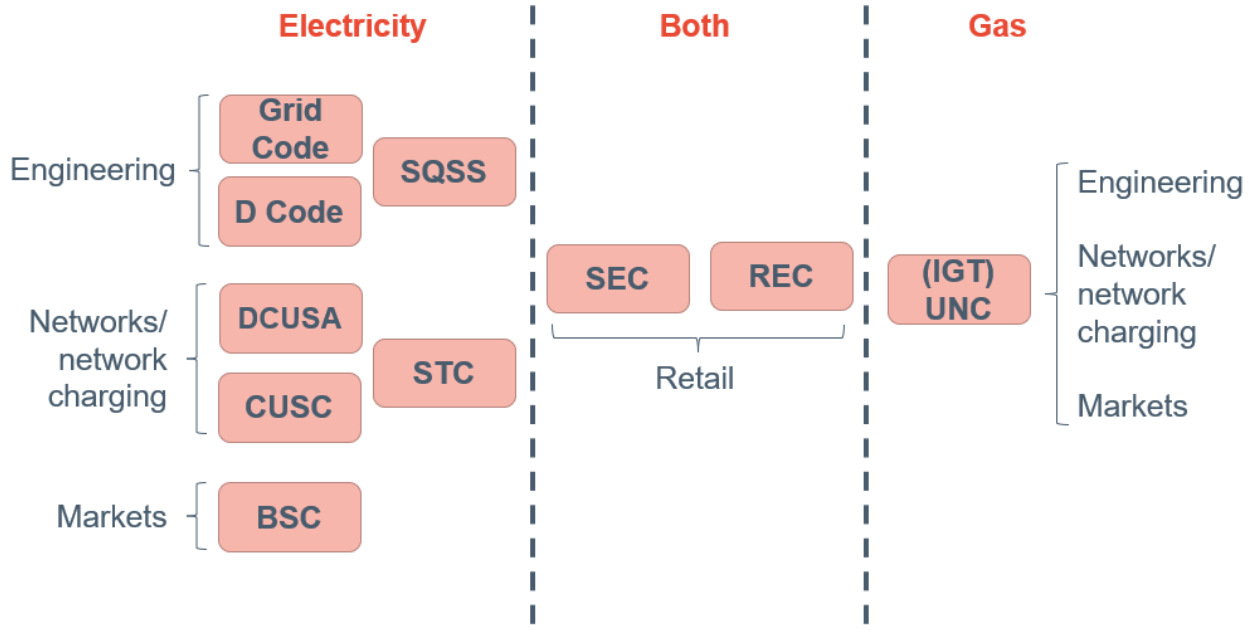
As part of this programme, Ofgem and BEIS launched a *consultation* in July 2021 to seek views on these proposals, compared to the creation of an Integrated Rules Making Body. This was *followed* in April 2022 by a decision to proceed with the creation of code managers while Ofgem assumes the role of setting strategic direction for them.

2.4. Key commonalities of industry codes

Most industry codes follow a similar structure, having been built around the same principles and parties, and they have very similar governance arrangements despite their content and subject matter being quite different. One of the most striking features of the current code landscape is the difference between electricity and gas, which stems from the privatisation approach taken for the two fuels: it was decided 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 landscape is shown in Figure 2. There are five large electricity codes, but in gas there is only the UNC and its IGT equivalent. These gas codes effectively encompass the equivalents of the engineering/ connection rules found in the Grid and Distribution Codes, the network charging rules found in the DCUSA and CUSC, and the trading/settlement arrangements found in the BSC. Despite this, all these codes share some fundamental characteristics. Several of the industry codes are also responsible for governing and defining the requirements for central industry systems, particularly the BSC and UNC, making them fundamental to industry operations.

Figure 2: Grouping of major industry codes



3. Evaluation principles

To frame our evaluation of potential code consolidation options, we have developed a series of key principles based upon Ofgem's objectives. These are expanded upon in Section 6 and the full evaluation. The principles are as follows:.

- Consumer benefit
- Compatibility with the Net Zero Strategy ambitions and potential future market arrangements
- Code governance implications, including compatibility with future code manager models
- Usability of the resultant codes
- Lack of disruption to central systems and service providers
- Feasibility and ease of implementation

3.1. Consumer benefits

Achieving positive outcomes for consumers is a key concern for the energy sector, but we do not consider that code governance reform will have significant direct effects on the consumer experience or customer value. Any benefits that consumers do see are likely to be realised indirectly through the industry more smoothly achieving the net zero target, faster implementation of industry change programmes (on which code governance can often be a limiting factor).

For these reasons, we have not included consumer benefit as a freestanding criteria for evaluating potential reform options. Instead, we consider it as part of our evaluation of an option's suitability for net zero and future market arrangements.

3.2. Net zero and future market arrangements

While the number of codes and their structures does not directly impact the pathway to net zero – being secondary to their content – their adaptability to future market arrangements and ability to support innovation and new business models and technologies is a significant consideration. Throughout our assessment, we consider the code reform options' compatibility with net zero and particularly future market arrangements. This includes their compatibility with different market structures, and openness to cross-cutting issues such as the future of heat, hydrogen, carbon capture or as-yet-undetermined technologies.

3.3. Code governance implications

The current code arrangements are overseen by various governance arrangements, with combinations of boards, panels, groups and individual parties granted different obligations and powers.

As per BEIS and Ofgem's recent announcement, the expectation is that the governance regime will move towards one of licensed code managers. These parties will take an active role in managing and developing their codes, compared to the more passive or reactive facilitation role of code administrators. It will therefore be important for our assessment to take account of how well a code reform option appears to interact with the new code manager arrangements, particularly including how practical it will be for a code manager to run each code, and the number of suitable code managers available if they are to be competitively procured for a new, redesigned code that may combine areas of expertise that are currently held by different code administrators.

3.4. Usability and accessibility

A simple but important consideration will be how easy the resulting codes will be for code parties to interact with and navigate. In practice this is likely to depend heavily on the clarity of the drafting of the codes, the structuring of their schedules, and the effectiveness of their code managers. It will also be influenced by the scope of the codes and the complexity of their subject matter. The more topics (and the more detailed topics) a code covers, the less likely it is to be approachable by parties that lack prior subject matter expertise.

3.5. Lack of disruption to central systems and service providers

One of the ways the industry codes underpin the market is the way they include the rules around central industry systems. These include, but are not limited to:

- Electricity settlement systems provided by Elexon under the BSC
- Systems underpinning the gas industry arrangements (including those contained in the UNC) that is currently undertaken by Xoserve
- Systems underpinning customer switching, such as the Data Transfer Service (DTS) and the under-development Central Switching Service (CSS)
- The DCC's smart meter communications infrastructure under the SEC.

The majority of respondents to Ofgem and BEIS's joint code reform consultation supported better co-ordination between code managers and central system delivery bodies, to ensure the effective and efficient development and delivery of code and system changes. Given the importance of these systems, any significant changes to the industry codes must be carefully considered to ensure there is a clear path for how they transition to new codes and avoid any negative impacts on the industry.

In addition to current industry systems, it is prudent to evaluate how central systems might need to change in future. For example, the new CSS affects the REC, DCC, DCUSA, UNC, IGT UNC, SEC and BSC. The Market Wide Half Hourly Settlement systems are expected to fall under the scope of the BSC, but may also affect other areas.

3.6. Feasibility and ease of implementation

There are a number of areas which need to be considered for major reform workstreams such as code consolidation, including timescales, funding, and the delivery vehicle to be used. While these are not enduring issues unlike the other criteria discussed, they are important when considering the practicality of implementing the new arrangements and ensuring industry buy-in and delivery.

3.6.1. Timescales

It is extremely difficult to estimate timelines for industry change, but major reforms typically have timelines that span several years. All but the simplest code consolidation options are likely to be multi-year projects. The most fundamental reforms are liable to take five years or more when all stages are considered, including option assessment, design, consultation, notice periods and implementation. When considering each option we will assess the overall level of complexity involved in its implementation, but this will necessarily be qualitative.

Broadly speaking there are two potential implementation options, set out below:

- **Big bang** – implementation of the changes via a single change workstream and in a complete manner on a single date. 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 and more exposed to whole-programme delays due to their complexity.

- **Phased implementation** – implementation of the changes in a series of steps. The advantage of this method is reduced initial complexity and requirements, and the opportunity for iterative improvements ahead of the next stage of delivery based on experience with the preceding step. However, this can prolong market uncertainty and requires steady iterative change to market rules and code documents.

Whether implementation of code reforms should use the big bang or phased approach will depend on the characteristics of the chosen reform and the extent to which individual codes within it are changing. For example, the amalgamation of smaller codes may be suitable for a big bang approach, while larger codes within the same option might be better amalgamated in a phased process similar to the creation and development of the REC. This is likely to require detailed consideration of both the codes affected and of the industry's capacity to progress change closer to the time reform is set to begin. However, we have highlighted where we think reform options are suited to a different type of phased implementation – as a stepping stone to another, more in-depth reform option in future – where relevant.

3.6.2. Funding

Major industry reform programmes are naturally expensive during the transition phase, even where the longer term economic benefit is clear. The overall resources needed from stakeholders, the regulator and government to evaluate and implement energy industry wide reform will be significant. Training for employees at affected organisations, system and IT changes will be required.

Implementation of any reform will need to undergo a cost-benefit analysis, and give regard to how changes would be funded. Industry change is typically funded by market participants in the expectation that these costs will be passed through to end users, either directly by suppliers, or indirectly by producers/generators via suppliers. We expect that any future code consolidation would be paid for by the code's signatories in a similar fashion to other code change costs.

It is possible that reform of a code may lead to a type of party — for example, generators — no longer having to accede to it owing to the relevant portions being moved to another code. In this case, Ofgem would have to decide whether these generators would have to pay for the costs of reforming the previous code, their new code, or both. It might be ideal for all parties to bear an equal share of the total code reform costs, but in practice different codes may be consolidated at different times and the whole programme may take too long for this to be practical.

There is also a risk of parties having to pay to maintain legacy or 'rump' codes that are still in the process of being closed down, during the same period that they are funding a newly established code. During the introduction of the REC, some parties were obligated to pay for the new codes as well as the legacy MRA, SPAA and SMICoP codes for an overlapping period. If multiple codes are to be reformed at the same time, funding dual running could become a more significant burden on responsible parties.

3.6.3. 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. There is a 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. Further, the legal ability to reform or remove certain codes will need to be considered. A number of the current industry codes are required under a range of different instruments, including legislation, licences, and other codes. Therefore, a thorough legal and regulatory review would need to be undertaken to ensure that the potential option can be progressed, or if changes to areas such as primary legislation may be required. Ofgem has informed us that some industry codes are currently required to endure under law and therefore changes to remove these codes may require longer timelines and more substantial legislative resource to reform compared to others.

4. Potential code consolidation options

An initial longlist of options has been developed to allow the consideration of the widest possible pool of options. This is intended to ensure that the full range of reform options is considered. The longlist of options was developed based on a range of sources, including options proposed publicly by industry parties, Cornwall Insight's understanding of the code governance arrangements, and Ofgem inputs.

4.1. Option 0 – Improvement through non-consolidation routes

Option 0 is included as a counterfactual example which does not involve the consolidation of industry codes. This allows the comparison of the consolidation options against one another and the current arrangements. Under this option a number of smaller reforms would occur to support the efficient functioning of the code governance arrangements. These could include the below options:

- Simplification and rationalisation of code text where possible, to make them shorter and easier to engage with by non-code experts
- Removal of defunct or unnecessary clauses from existing codes
- Further alignment of the governance processes between codes, such as terminology, Panel composition and powers, steps in the code modification process, and alignment of code modification alternative processes
- Common applicable objectives for all codes
- Alignment of credit arrangements such as good payment history and acceptable forms of credit
- Empowerment of administrators under new code manager roles, helping support swifter code change

These improvements are not mutually exclusive with the other options consider here, and serve more to illustrate that a traditional "no change" counterfactual is not appropriate given the always evolving codes environment. Similarly, these reforms could lay the groundwork for consolidation options to be implemented in future, with cross-code alignment and rationalisation of code content making subsequent amalgamation easier.

4.2. Option 1 – Minimal Reform

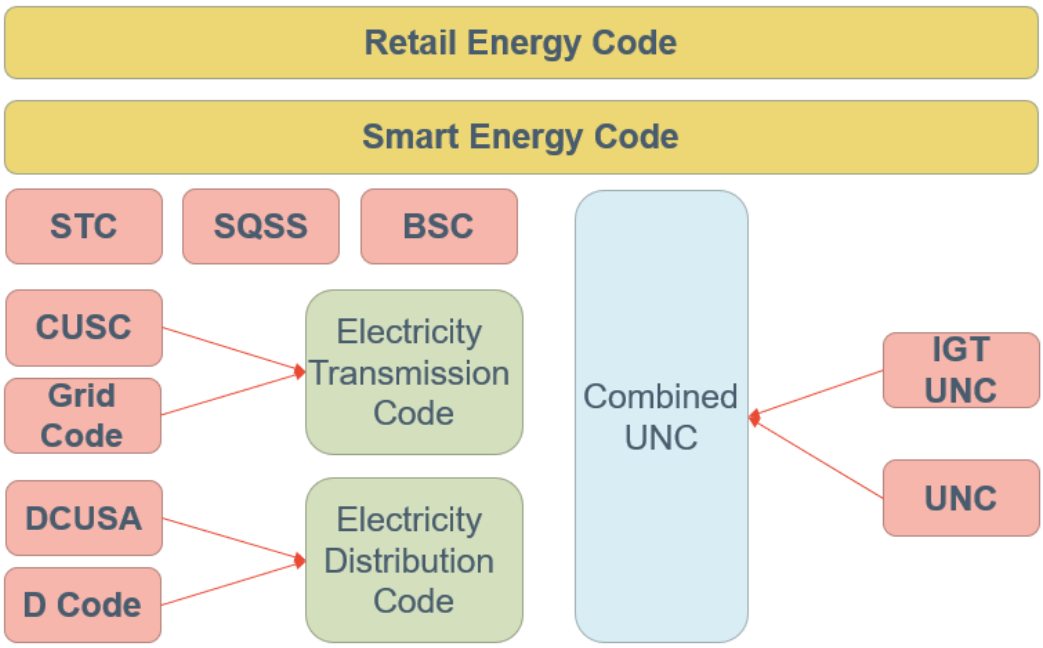
This approach would be based around what could be the "quick wins" of code consolidation, acknowledging that they would still involve a substantial piece of work for the industry that could be similar to the creation of the REC in scale. These options are intended to be relatively light-touch compared to the other options while still delivering tangible consolidation and industry benefits.

In both cases, these options may serve as relatively easy stepping stones towards another, more in-depth reform option, especially 4A, 4B and 4C.

4.2.1. Option 1A – Minimal reform, networks codes variant

Under this option the electricity network codes would be rationalised along the network levels (i.e. transmission and distribution), with the two UNC codes merged and the recently created retail codes retained.

Figure 3: Option 1A Minimal reform, networks code variant



The core rationale is to combine existing codes by the most apparent similarities in subject area. The three changes from the current code structure are:

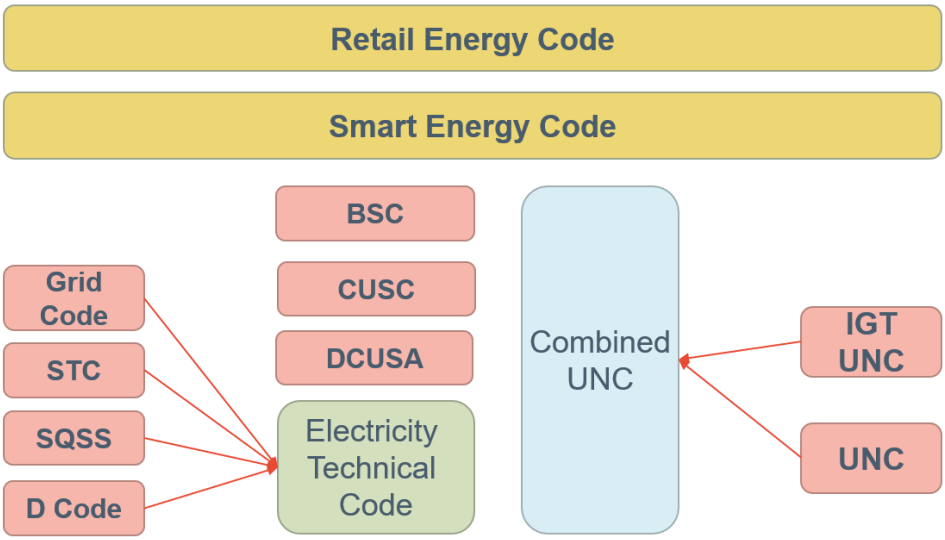
- Combining the UNC and IGT UNC into a new gas code. These codes do have similarities and IGT UNC provisions frequently refer to the UNC, so doing so would potentially cut down on duplication within the text, and of code manager resources.
- Combining the CUSC and Grid Code into a single simplified code for electricity transmission
- Similarly, creating a unified electricity distribution code out of the DCUSA and D Code

Doing so will reduce the total number of codes to eight.

4.2.2. Option 1B – Minimal reform, technical code variant

This is an alternative to the above in which the CUSC and DCUSA are left unaltered, but instead the Grid Code, Distribution Code, SQSS and STC are combined into a single technical code for the electricity industry. The rationale here is that consolidating technical codes will potentially be less disruptive than consolidating commercial codes (as the technical rules that generators, producers and networks follow will not change), while reducing the number of electricity codes by three. The STC and SQSS are also relatively small codes with low numbers of modifications, and so combining them should eliminate resource overlap.

Figure 4: Option 1B Minimal reform, technical code variant



Both UNCs are again combined into a single new code for the same reasons as in 1A. Ultimately this leads to a scenario where there are seven industry codes, though there is also the possibility of a further variation where the CUSC and DCUSA are combined as per Option 2B below.

4.3. Options 2 – Horizontal alignment options

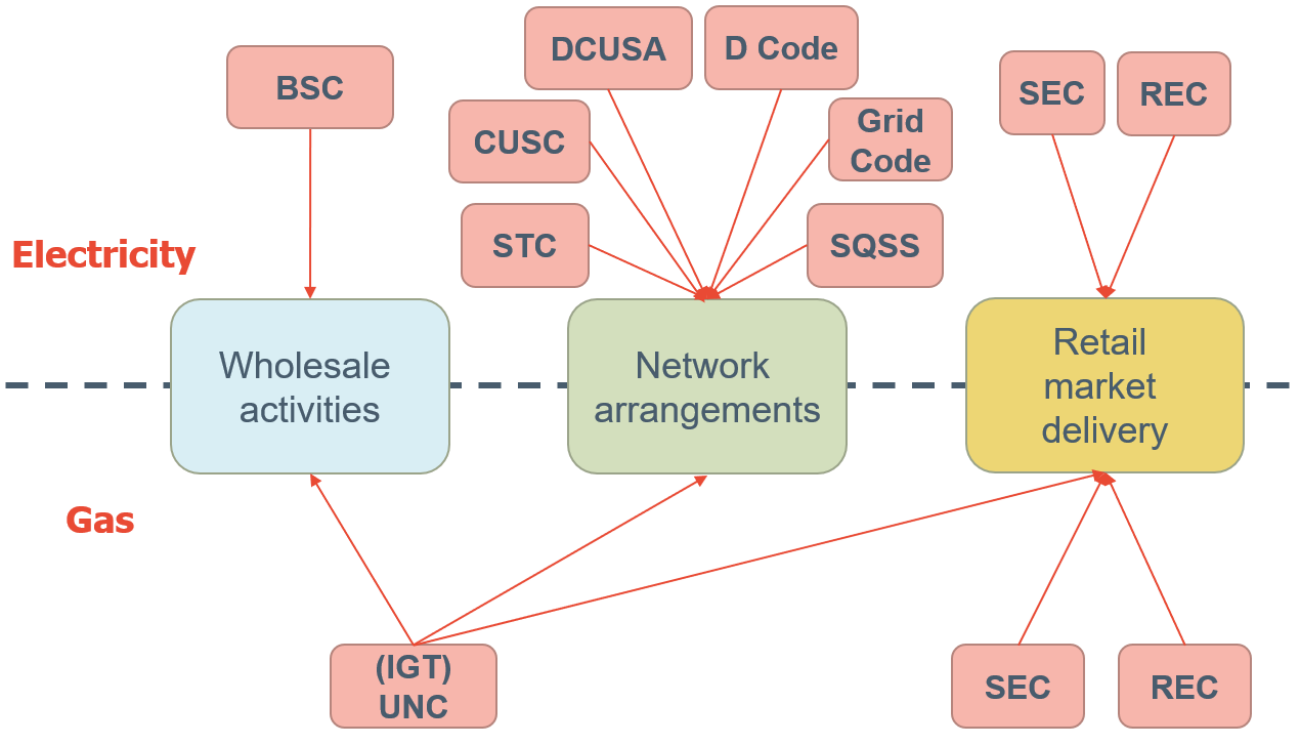
Horizontal alignment would see the industry codes consolidated into codes covering elements across both gas and electricity sectors. This would significantly reduce the number of codes and support alignment for industry areas across both fuels, but could create issues where there are limited similarities between fuels.

4.3.1. Option 2A – Full horizontal alignment

The Horizontal Alignment model would seek to align code structures across the elements of the energy value chain. This would mean consolidating all 11 industry codes into three dual fuel codes:

- The Retail Code would reflect the recent work undertaken to create the cross fuel SEC and REC codes. This code area could either operate by retaining these two codes or consolidate these into a single code
- The Networks Code will combine the charging and technical elements of the DCUSA, Grid Code, D Code, CUSC, and UNC/IGT UNC. This concerns recovery of network costs, engineering requirements and network management and planning. This is because cross-fuel alignment on topics such as network charging principles, credit requirements and technical risk may support the operation of the system given the dual fuel nature of system management (i.e. interactions between electricity supply and demand and gas demand) and increasingly cross fuel considerations for heat considerations
- The Wholesale Code will concern settlement, imbalance, metering requirements, and trading, comprising the BSC and relevant parts of the UNC/IGT UNC

Figure 5: Option 2A Full horizontal alignment

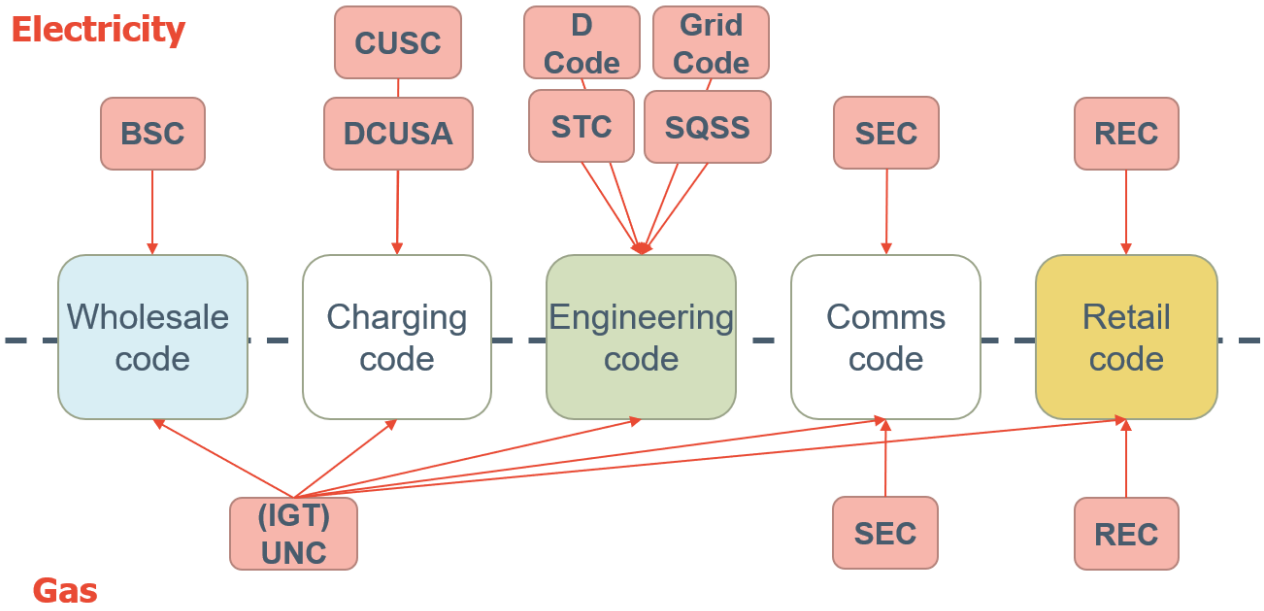


4.3.2. Option 2B – Partial horizontal alignment

This variation on the above sees only partial amalgamation into five dual fuel codes. This variant would still deliver significant consolidation, but by separating the codes into more specific areas it could reduce the risk of codes becoming overly large or complications arising from creating cross fuel requirements. The five code areas would be:

- Retail – reflecting the current REC arrangements
- Communications – primarily the current SEC arrangements, with potential other cross fuel communication considerations included
- Engineering – Concerning the technical requirements for networks, including connections, and network assets
- Charging – Concerning cost recovery for networks for generation and demand users. We see this as supporting cross-fuel alignment on charging principles
- Wholesale – Concerning trading and settlement arrangements

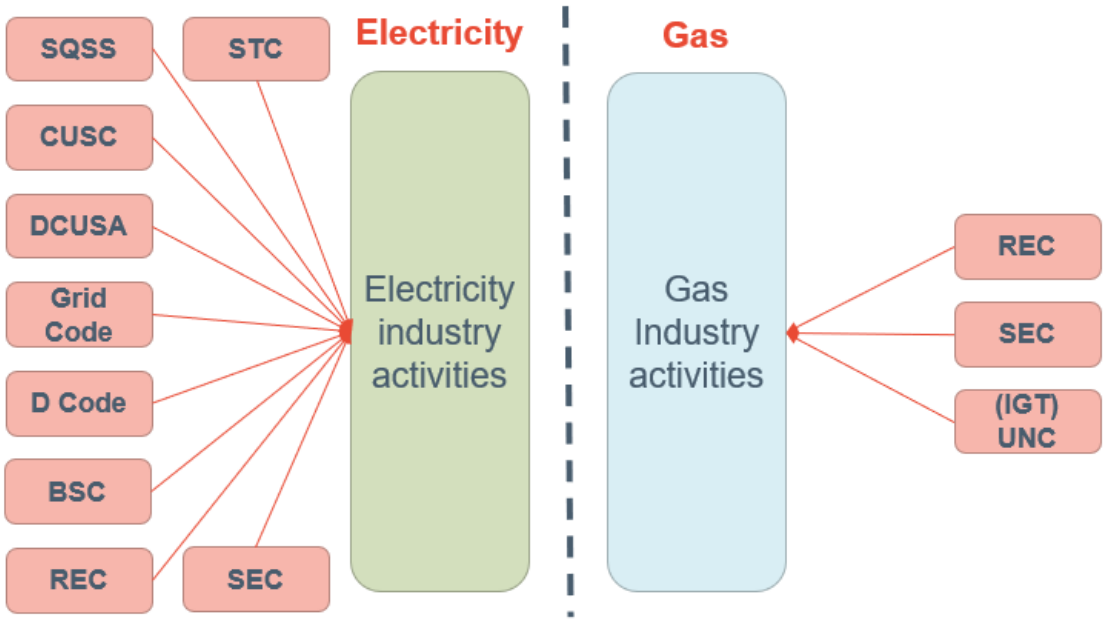
Figure 6: Option 2B Partial horizontal alignment



4.4. Option 3 – Vertical alignment

This approach would amalgamate all codes into two: one each for gas and electricity. This includes the disaggregation of the dual fuel SEC and REC. It would allow for consistency across the whole value chain for each fuel, and greatly reduce the number of codes, enabling strong central control by Ofgem to drive strategic change.

Figure 7: Option 3 Vertical alignment



4.5. Option 4 – Upstream/downstream reform options

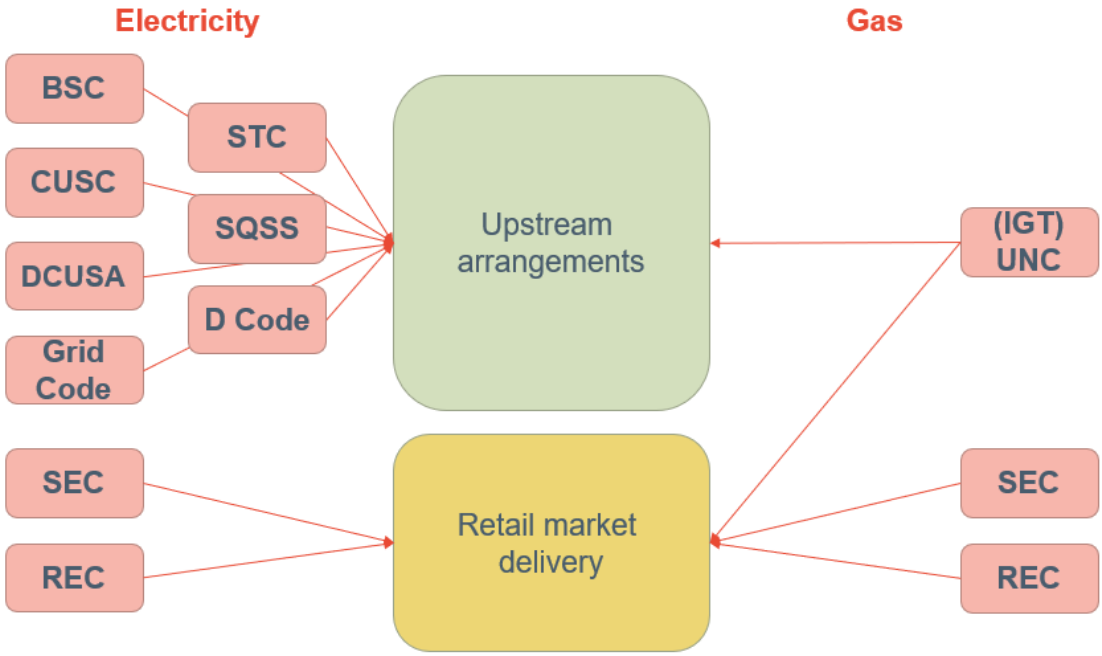
Retail market delivery has been aligned through the introduction of the REC and SEC dual fuel codes. The following options seek to maintain the benefits of dual fuel delivery "downstream" (retail), with differing combinations of "upstream" alignment. Retail market delivery has been stylistically presented as a single group, but in practice this could be either the maintenance of the two retail codes (REC and SEC) given the recent work to create these as forward looking codes or see further consolidation to a single code if required.

4.5.1. Option 4A – Upstream/downstream code

Under this approach all codes would be amalgamated into two dual fuel codes: Downstream and Upstream. The Downstream Code will primarily be a fusion of the REC and SEC, covering arrangements for the delivery and operation of the retail market such as meter installation, switching and theft. The Upstream Code will cover delivery of wholesale market and network activities. For the avoidance of doubt, this would not include oil and gas production.

This approach is similar to our Horizontal Alignment option, but amalgamates the wholesale and network elements in a similar fashion to the UNC in gas.

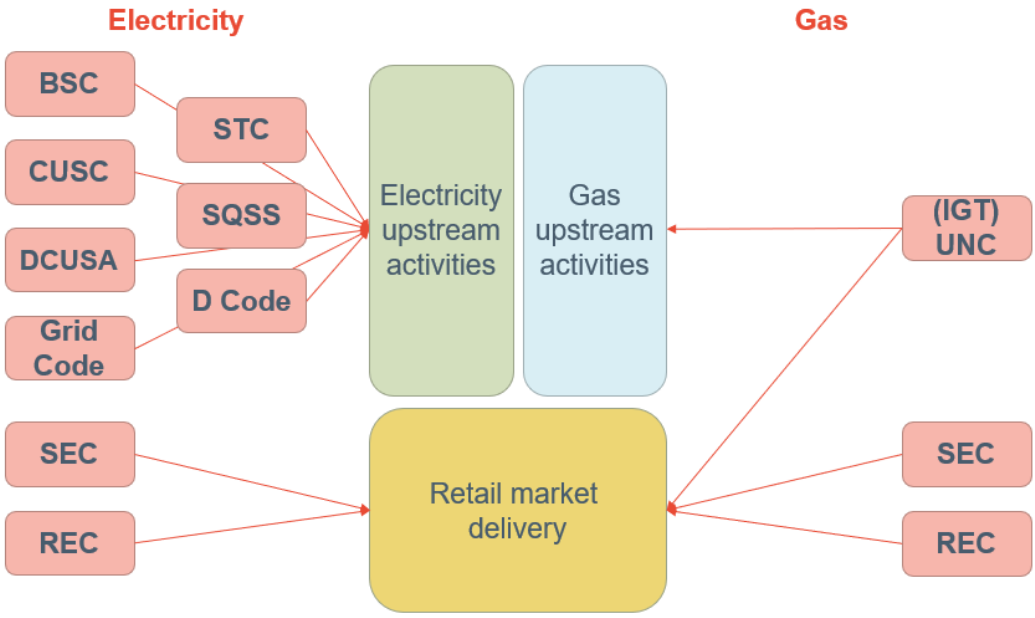
Figure 8: Option 4A Upstream/downstream code



4.5.2. Option 4B – Dual fuel retail/single fuel upstream

This approach amalgamates all codes into three: a dual fuel Retail Code, and single fuel electricity and gas upstream codes. It has similarities to Option 4A (with an upstream split by fuel), and the Vertical Alignment approach (preserving the current dual fuel elements). The small number of codes make it easy for Ofgem to drive strategic change across the industry while avoiding forcing the electricity and gas code arrangements to align in ways they might not be suited to in practice.

Figure 9: Option 4B Dual fuel retail/single fuel upstream code

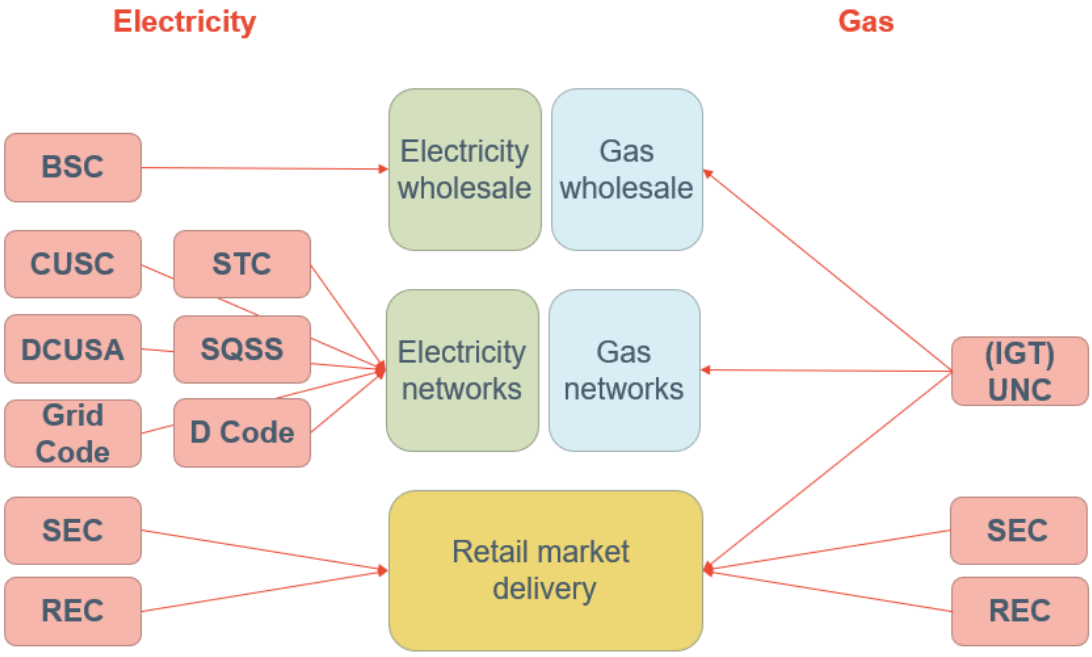


4.5.3. Option 4C – Dual fuel retail, single fuel upstream v2

A variation of option 4B, this maintains a distinction between the electricity network and electricity wholesale rules. It results in five codes: a dual fuel retail market code, and separate electricity/gas wholesale and networks codes. This approach reduces the number of codes and preserves the dual fuel codes. Compared to 4B, the resultant upstream codes will be smaller and contain fewer unrelated elements, so should be less cumbersome to interact with and manage.

An alternative option (which we have not shown here due to similarities to Option 1A) would be to have a single gas code, as splitting the UNC may be counterproductive against the aim of simplifying the number of codes applicable to parties.

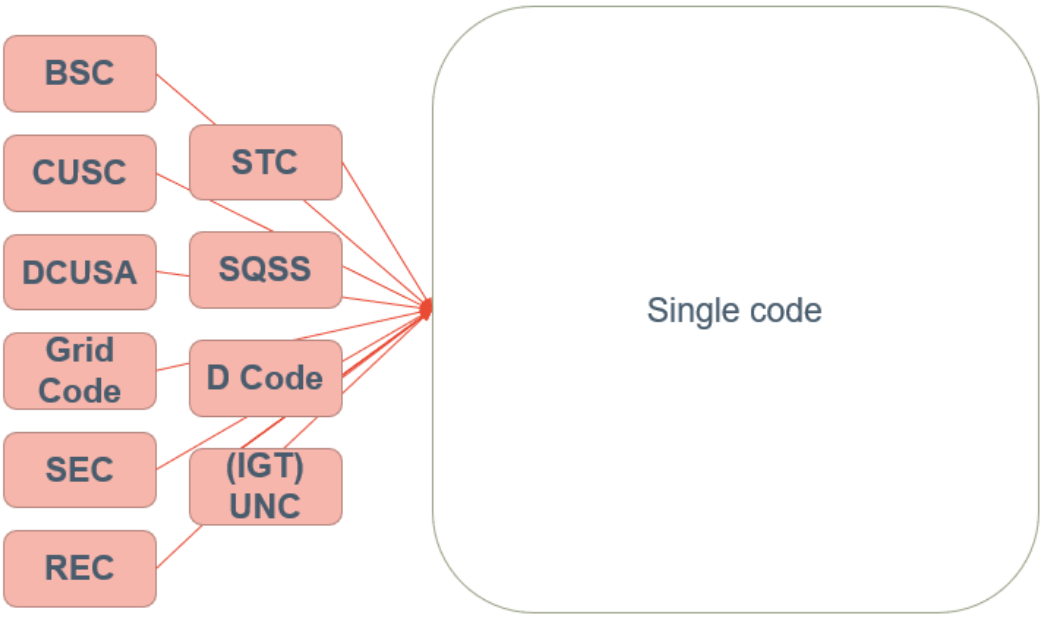
Figure 10: Option 4C Dual fuel retail/single fuel upstream code v2



4.6. Option 5 – Single code

This approach simply amalgamates all current codes into a single unified code. It achieves complete consolidation to only a single code, enabling strong central control by Ofgem and its code manager, and harmonisation between fuels.

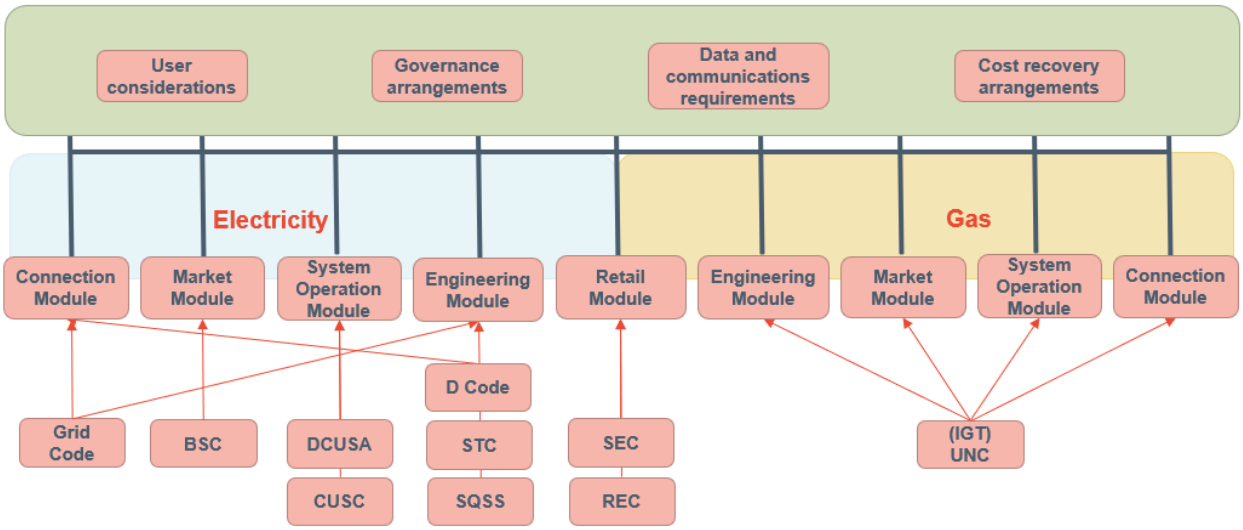
Figure 11: Option 5 Single code



4.7. Option 6 – Framework agreement

This approach would see a single overarching "core" code to deliver a consistent approach to the standard code functions, which all parties would accede to. This would be supported by specialised modules for technical and delivery requirements. Parties would only need to adhere to the modules that are relevant to their own industry roles. The retail arm would be dual fuel (to reflect the current dual fuel nature of the REC and SEC) while the others would be single fuel so parties may only accede to the code elements relevant to them.

Figure 12: Option 6 Framework agreement



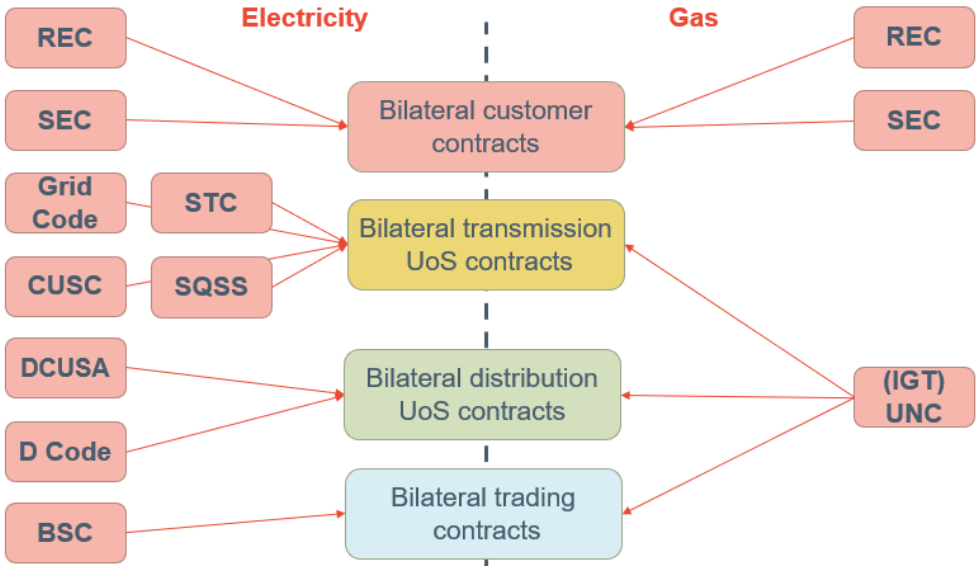
4.8. Wider code reform options

In addition to the code consolidation options set out above, some more radical reform options were considered, examining significant changes to the traditional code structure. These have been included in order to capture a wide range of potential options. The practicality and relevance of these options has been considered as part of our subsequent assessment in Section 5.

4.8.1. Option 7 – Self-regulation

This option would see "complete consolidation", taking the number of codes to zero. Doing so would require the codes to be replaced with bilateral contracts, such as between suppliers (for switching purposes) and between networks and suppliers, shippers and generators (for use of system).

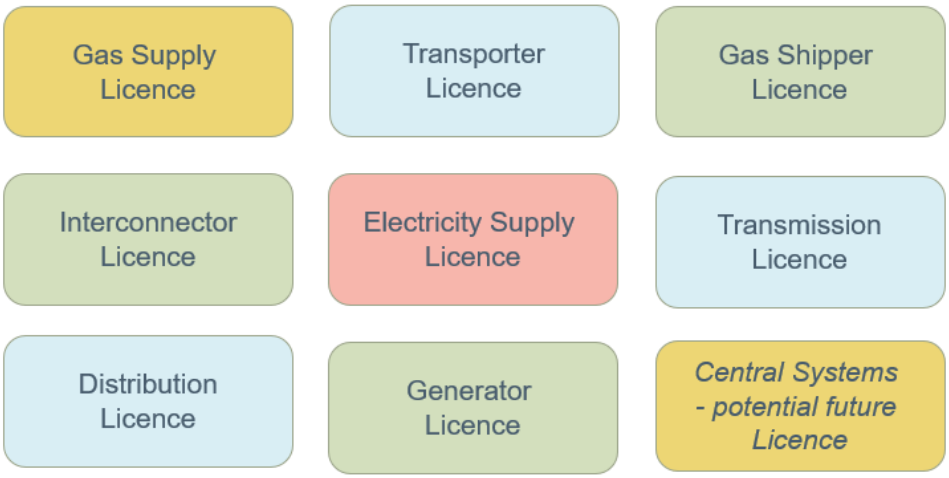
Figure 13: Option 7 Self-regulation



4.8.2. Option 8 – Centralisation under licences

Similar to the above, this option is an alternative governance approach. Under this the codes are again dissolved, this time being replaced by amalgamation of the relevant parts into the various industry licences. The main advantage to this would be that it provides Ofgem with strong central control, with which it can easily provide strategic direction to the industry and drive change.

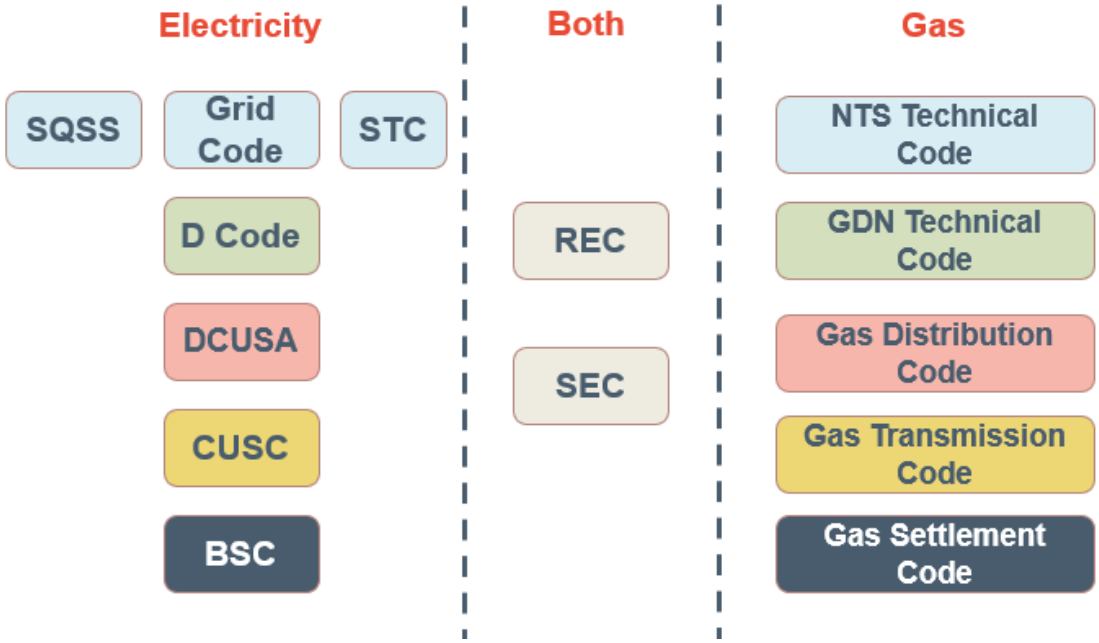
Figure 14: Option 8 Centralisation under licences



4.8.3. Option 9 – Disaggregated alignment

Another alternative approach to code reform, this option is the inverse of Option 4B. Instead of the electricity wholesale, technical and charging codes being amalgamated into a mirror of the UNC, this sees the UNC disaggregated to create direct equivalents to the different electricity codes. This achieves greater alignment between the structuring of electricity and gas codes, though naturally is the opposite of code consolidation.

Figure 15: Option 9 Disaggregated alignment



5. Initial screening assessment

In this section we consider the options from Section 4 against a series of simplified assessment criteria in an initial gating exercise to reduce the longlist to a shortlist. This is followed in Section 6 by a more detailed assessment of the shortlisted options against expanded criteria.

For our gating process the simplified set of criteria we have used is intended to captures the key elements of the principles listed in Section 3 without requiring a complete assessment, enabling the identification and elimination of any options that are clearly unsuitable. These are:

- **Feasibility and practicality of implementation** – How challenging the option will be to implement, including disruption to industry systems.

  This considers aspects such as cost and complexity of re-writing codes, the level of legal support required, considering the codes form part of legal contracts, the time investment for the industry and Ofgem, interaction with other workstreams, and a consideration of whether the proposed structure would prove feasible for the GB market. The more difficulties a code presents here, the worse it will score on the Red/Amber/Green (RAG) scale.

- **Usability and operability** – How easy the proposed codes will be for parties to interact with, for code managers to administer, and their adaptability to future market arrangements.

  This takes account of the size and complexity of the new codes, how challenging this makes them for a suitable code manager to operate and for market participants to understand, and initial consideration of central system capabilities to deliver.

  Options resulting in a very small number of codes will score poorly here as they are likely to result in codes that are complex, require a very broad range of knowledge for a manager to oversee, and include many sections that will be irrelevant to certain market participants, making them confusing. However, this can be compensated for by breaking down barriers between fuels and improving efficiency through aligning common code elements. This is assessed on a RAG scale.

- **Achievement of consolidation** – Whether or not the option reduces the number of codes.

  Given the core objective of this review was to achieve code consolidation this has been scored on a pure Yes or No basis for this initial assessment. The number of codes and alignment between them is considered further in the detailed assessment.

Our initial assessment of the code options is shown in Figure 16 below. Where a RAG score has been applied, this has been assessed in relative terms to the other options as to whether its attributes are a net negative (Red), a net positive (Green), or a moderate/mixed outcome (Amber).

For the purposes of comparing the merits of each option, an assessment of G or Y is equivalent to +1, R or N is equivalent to -1, and A is 0. Options with an overall positive score will be brought through to the next phase.

Figure 16: Initial screening of options

Option	Name	Feasibility and Practicality of implementation	Usability and Operability	Achievement of Consolidation	Score
0	*Other reform counterfactual*	***G** – The quickest, simplest, and least disruptive option to implement*	***G** – Current code structure is familiar to parties*	***N** – Does not reduce number of codes*	*1+1-1 = **1***
1A	Minimal reform (networks codes)	**G –** Joint second easiest option to implement with little to no change to several codes	**G –** Electricity transmission and distribution codes would be large, but otherwise this aligns with parties' current understanding	**Y** – Reduces number of codes to 8	1+1+1 = **3**
1B	Minimal reform (technical code)	**G –** Joint second easiest option to implement with little to no change to several codes	**G –** Electricity technical code would be large, but otherwise this aligns with parties' current understanding	**Y** – Reduces number of codes to 7	1+1+1 = **3**
2A	Horizontal alignment	**R –** A significant undertaking in time and money that may also present legal difficulties in merging BSC and UNC	**A –** Reducing to only 3 codes means they will be very large and could be difficult to engage with, but economies of scale may improve admin efficiency	**Y** – Reduces number of codes to 3	-1+0+1 = **0**
2B	Partial horizontal alignment	**A –** A significant undertaking in time and money that may also present legal difficulties in merging BSC and UNC, but leaves some unchanged	**G –** Each code is relatively specialised, some are unchanged, and barriers between fuels are broken	**Y** –Reduces number of codes to 5	0+1+1 = **2**
3	Vertical alignment	**A –** A significant undertaking in time and money that includes unpicking the REC and SEC	**R –** Both codes will be very large and any cross-fuel synergies are lost	**Y** – Reduces number of codes to 2	0-1+1 = **0**
4A	Upstream/ downstream	**R –** A very significant undertaking in time and money given the extensive consolidation of all upstream codes. May also present legal difficulties in merging BSC and UNC	**R –** Upstream code will be extremely large, partly mitigated by more usable downstream code	**Y** – Reduces number of codes to 2	-1-1+1 = **-1**

4B	Dual fuel retail/ single fuel upstream	**A –** A significant undertaking in time and money but with relatively little change for gas and REC/SEC	**A –** Reducing to only 3 codes means they will be very large and could be difficult to engage with	**Y** – Reduces number of codes to 3	0+0+1 = **1**
4C	Dual fuel retail/ single fuel upstream v2	**A –** A large undertaking in time and money that also splits the UNC, but less work than 4A or 4B	**A –** Most codes remain relatively specialised and not too long so not too hard to engage with, but electricity networks code will still be very large	**Y** – Reduces number of codes to 5	0+0+1 = **1**
5	Single code	**R –** A very significant undertaking in time and money. May also present legal difficulties in merging BSC and UNC	**R –** Single code will be extremely large, being difficult to navigate and manage change for	**Y** – Reduces number of codes to 1	-1-1+1 = **-1**
6	Framework agreement	**A –** A fundamental restructuring of the system of codes that will take a lot of time and money, though many current code elements will directly translate to new modules.	**A –**Parties may have to engage with more modules than they currently do codes, but these will be specialised and streamlined to make them more accessible	**Y** – Reduces number of codes to 1	0+0+1 = **1**
7	Self-regulation	**R –** Dissolution of the industry codes would be a huge undertaking and replacing with bilateral contracts would need extensive legal review	**R –** Many codes already exist as common industry contracts. This would multiply the number and add risk of drift through lack of commonality	**N –** Replaces existing 11 Codes with a very large number of bilateral agreements	-1-1-1 = **-3**
8	Centralisation under licenses	**R –** Dissolution of the industry codes would be a huge undertaking, with extensive legal review for splitting of code obligations into licence conditions (and special conditions for certain parties)	**R –** Would probably mean the end of open governance and make all change much more laborious. Could also ingrain current market structures	**Y** – Reduces number of codes to 0	-1-1+1 = **-1**
9	Disaggregated alignment	**A –** Splitting the UNC into multiple codes is not infeasible but would require significant work	**R –** Option increases the number of codes, increasing admin requirements and reducing economies of scale	**N –** Does not reduce number of codes	0-1-1 = **-2**

Based on our initial assessment, our shortlist of options to consider further is as follows:

- **0 – Other reform**, this option is the quickest, simplest, and least disruptive to implement, despite not reducing the total number of codes. Further it represents the gains to code governance efficiency that can be made outside of consolidation, regardless of if that is progressed alongside broader consolidation, as a phase 1 step prior to consolidation, or alongside consolidation.
- **1A – Minimal reform (networks codes)**, this option presents a high cost/benefit in terms of relatively easy implementation, limited disruption, and reduction in number of codes.
- **1B – Minimal reform (technical code)**, this option presents a high cost/benefit in terms of relatively easy implementation, limited disruption, and reduction in number of codes.
- **2B – Partial horizontal alignment**, this is a balanced option that seems somewhat feasible while reducing and aligning codes without making them so large as to be unwieldy.
- **4B – Dual fuel retail/ single fuel upstream**, as this option presents a high level of consolidation and is acceptably feasible, despite a risk of becoming unwieldy.
- **4C – Dual fuel retail/ single fuel upstream v2**, similar to the above this option scores acceptably across the board.
- **6 – Framework agreement**, while this would be a fundamental reform it is a streamlined clean sheet design that may be easier for parties to engage with and could be considered as a long-term project.

We will not take forward the other options for the following reasons:

- **2A – Horizontal alignment**, the challenges outweigh the promise of feasibility and usability.
- **3 – Vertical alignment**, would be very challenging to implement, including the unpicking of the REC, and would create large, unwieldy codes.
- **4A – Upstream/ downstream**, would be very challenging to implement and merge almost all non-retail codes into a single one that would be very unwieldy.
- **5 – Single code**, condensing all codes into a single one would be an extremely large task and is likely to produce a code so large that it would be unmanageable.
- **7 – Self-regulation**, this would be both very challenging to implement and would likely lead to inefficiencies across the industry, and progressive reduction in alignment between use of system agreements as bespoke network contracts diverge over time**.**
- **8 – Centralisation under licences,** this would be very challenging to implement and lead to major operational and usability issues through the loss of living governance, slowed change and considerable extra resourcing costs for Ofgem.
- **9 – Disaggregated alignment**, this would increase the number of codes rather than reducing them, losing some economies of scale that currently exist. It would also be a significant task with limited clear benefits.

6. Detailed assessment of Shortlist options

Following the initial gating exercise set out in Section 5, this section provides a more detailed assessment of the remaining code options in order to support Ofgem in exploring the most viable options to progress.

In order to subject the options to a greater level of scrutiny, we have assessed the shortlist codes against a set of criteria that more directly mirrors the evaluation principles in Section 3:

- Adaptability to future market arrangements and compatibility with net zero
- Code manager considerations
- Usability and accessibility
- Interaction with central systems
- Feasibility and ease of implementation

Each of the reform options has been scored on the following basis:

- **1 – Very Low**: performs very poorly in this regard, with few mitigating features and very high likelihood of negative outcomes
- **2 – Low**: performs quite poorly in this regard, lacking in several areas and a high likelihood of negative outcomes
- **3 – Moderate**: performs adequately in this regard but with room for improvement
- **4 – High**: performs quite well in this regard, with several positive features, and a high likelihood of positive industry outcomes
- **5 – Very High**: performs very well in this regard, with strongly positive features, and a very high likelihood of positive industry outcomes

6.1.1. Option 0 – Other reform

This option assumes a programme of incremental reforms will continue, and serves as a counterfactual to more substantive reforms examined below. Rather than consolidating codes, this option uses other types of reform to achieve benefits in the code regime such as simplification, alignment, or granting code administrators/licenced code managers the ability to raise code changes.

Feasibility and ease of implementation

Very high (5/5): This option is by far the easiest to implement as it avoids any fundamental restructuring of the industry codes. There would likely still be an element of redrafting to simplify and rationalise code text, but it would be within the existing code structures and therefore have an easier implementation pathway in comparison to the other options considered.

Code manager considerations

Very high (5/5): This option can easily be aligned with future code manager arrangements as the codes will not be fundamentally restructured. Given the code manager arrangements have been developed for the current code structure, this is not expected to present any barriers to code manager implementation.

Adaptability to future market arrangements and compatibility with net zero

Very Low (1/5): Without significant reform to code structures, this option presents limited advances over current arrangements to help align with net zero, support future market reform, or respond to innovation or changing consumer need. Note that this score should not be interpreted as a judgement on the current code structure, but as a reflection of the relative merits of the reform options being assessed.

BEIS have announced that Ofgem will be granted the ability to change the codes directly in a limited range of circumstances where the normal processes would not be appropriate: where the change is urgent; where the relevant code manager may have an adverse conflict of interest; where the change is particularly complex; or where the change is related to code consolidation. The impact of this change will not be clear until the necessary legislation has progressed, and Ofgem's resource capacity to act more proactively is established.

Usability and accessibility

Moderate (3/5): Based upon prior programmes of code reform, this option would be expected to lead to usability improvements through simplification of codes. Without any consolidation it is unlikely to unlock significant efficiency advantages, such as through economies of scale or improvements to code transparency or market alignment.

Interaction with central systems

High (4/5): This option would likely see minimal to no disruption to central industry systems as it will not fundamentally change the codes that the services support, but the current approach is not necessarily optimal. Ofgem will have the power to issue directions to in-scope central system delivery bodies to ensure that they do what is required by a code or what is reasonably necessary to facilitate the ongoing efficient operation of the codes. Newly licensed code managers will have obligations to cooperate with the central system delivery bodies for the purposes of delivering the strategic direction. BEIS have not discounted the option of licensing central systems' providers, although it is not expected to occur in the near term.

Overall evaluation

High (18/25): This option generally scores highly thanks to being much easier to implement than any other option, both in terms of industry time and resource, and minimal potential disruption. The fundamental disadvantage is the missed opportunity to make the code regime easier to engage with and better suited to the changing energy system environment.

This option represents easy to do, quick, simple wins, rather than being the endpoint of code consolidation. Regardless of whether this is followed by more radical reform, Option 0 could deliver improvements in the near term. Due to this, if progressed it should be either as initial phase prior to more fundamental wide ranging reform or delivered as part of one of the wider consolidation options considered.

6.1.2. Option 1A – Minimal reform (network codes)

This option combines the UNC and IGT UNC into a single gas code, the CUSC and Grid Code into one electricity transmission code, and the DCUSA and D Code into one electricity distribution code.

Feasibility and ease of implementation

High (4/5): This option is joint second easiest to implement as it leaves several codes (the BSC, SEC and REC) untouched. Amalgamation of the UNC and IGT UNC is also likely to be the simplest merger of the remaining codes (recognising that it will not be "simple" in absolute terms), owing to these already being aligned in several areas. Merging the DCUSA with the D Code and CUSC with the Grid Code, STC and SQSS will definitely be a significant undertaking, but not insurmountable and aligns codes which are, conceptually at least, close in nature.

Code manager considerations

High (4/5): This option is also relatively easy to mould to the future code manager requirements as only some of the codes will be fundamentally restructured. There will still be room for a significant number of current code managers to continue to operate. The biggest risk we identify would be that the electricity distribution and transmission codes may be too large for a single code manager to easily administer, but we do not consider this to be an insurmountable challenge.

Adaptability to future market arrangements and compatibility with net zero

Low (2/5): Without significant reform to code structures, this option presents limited advances over current arrangements to help align with net zero or support future market reform. Particularly, maintaining an extensive electricity/gas split may limit the discussion of cross-cutting issues and ingrain current market structures, alongside maintaining the separate treatment and consideration of distribution and transmission arrangements.

Usability and accessibility

Moderate (3/5): While the electricity distribution and transmission codes and combined UNC this option creates would be large codes, the structure will mostly be very familiar to market participants and give fewer codes to have to engage with. Merging the transmission codes into one will result in a very large code, but could save on administrative work and improve clarity to users compared to the current four codes, further there is the potential for efficiency gains to the transmission arrangements from consolidation, particularly when combined with the new FSO role. A combined gas code would be a one stop shop for that industry and would help parties track changes between the current two codes. The benefits for electricity distribution are less clear though.

Interaction with central systems

High (4/5): This option would likely see minimal to no disruption to central industry systems as it will not fundamentally change the codes that interact with them – the BSC, REC, SEC, and UNC.

Overall evaluation

High (17/25): Option 1A scores similarly to Option 0 due to being one of the simplest and least disruptive options to implement while offering advantages from a more streamlined code regime. However, even a limited merging of codes is likely to involve far more work and expense than all but the most fundamental non-consolidation reforms.

6.1.3. Option 1B – Minimal reform (technical code)

This option combines the UNC and IGT UNC into a single gas code, and the Grid Code, SQSS, STC and D Code into one electricity technical code.

Feasibility and ease of implementation

High (4/5): This option is joint second easiest to implement as it leaves several codes (the BSC, SEC, REC, DCUSA and CUSC) untouched. Amalgamation of the UNC and IGT UNC is also likely to be the simplest merger of the remaining codes (recognising that it will not be "simple" in absolute terms), owing to these already being aligned in several areas. Merging the D Code, Grid Code, STC and SQSS will create a single engineering focused electricity code and may present opportunities for alignment and simplification across the different technical requirements.

Code manager considerations

High (4/5): This option is also relatively easy to mould to the future code manager requirements as only some of the codes will be fundamentally restructured and the majority of 'core' electricity codes will be left as is. There will still be room for a significant number of current code managers to continue to operate. The biggest risk we identify would be that the electricity technical code may be too large for a single code manager to easily administer, particularly as its coverage of both distribution and transmission requirements may extend beyond the current single system focused parties' areas of expertise.

Adaptability to future market arrangements and compatibility with net zero

Low (2/5): Without significant reform to code structures, this option presents limited advances over current arrangements to help align with net zero or support future market reform. Particularly, maintaining an extensive electricity/gas split may limit the discussion of cross-cutting issues and ingrain current market structures. However, the combined technical code may present opportunities to align technical requirements and consider whole system implications for engineering requirements and system management which will become increasingly critical as the system continues to decarbonise and decentralise.

Usability and accessibility

Moderate (3/5): While the electricity technical code and combined UNC this option creates would be large codes, the structure will mostly be very familiar to market participants and mean they have to engage with fewer codes. This approach also creates two one-stop shops: one for the gas industry, and one for all electricity technical requirements, which are currently spread over four codes. Additionally, with the sole electricity engineering code this maintains the split between market and technical requirements which we typically observe is how market parties divide their activities.

Interaction with central systems

High (4/5): This option would likely see minimal to no disruption to central industry systems as it will not fundamentally change the codes that govern them – the BSC, REC, SEC, and UNC.

Overall evaluation

High (17/25): Option 1A scores identically to 1B owing to its similarities. It is also one of the simplest and least disruptive options to implement while offering advantages from a more streamlined code regime. The focus on splitting arrangements by technical or market activities as opposed to by network level provides different benefits and limitations, but may align more closely with market activity splits.

6.1.4. Option 2B – Partial horizontal alignment

This option restructures all codes into Retail, Communication, Engineering, Charging and Wholesale codes, all of which are dual fuel.

Feasibility and ease of implementation

Low (2/5): This option would be challenging to implement due to the level of restructuring undertaken. On the electricity side this would be similar to Option 1A, but on gas it would involve splitting the UNCs and merging them with corresponding electricity elements. This merging of fuels would require significant work to understand the other fuels arrangements sufficiently to support consolidation and to identify where arrangements can be merged and areas of conflict to resolve.

Additionally, Ofgem has highlighted expected legal difficulties in closing the BSC and UNC, which would need to be carefully evaluated and potential workarounds identified.

Code manager considerations

Low (2/5): This option would lead to five industry codes, creating several positions for existing code administrators to tender for, alone or in conjunction with others, and for new parties to come forward. Similarly, having several codes should help reduce the chances of any one code being too large for a single party to effectively manage. However, the dual fuel nature of the codes could prove a challenge for code managers to resource given the current single fuel situation and industry experience.

Adaptability to future market arrangements and compatibility with net zero

High (4/5): By moving all codes to a dual fuel basis, we see this option as being quite open to the changes that may become necessary as the energy system develops, and the discussion of cross-cutting issues. For example, a unified electricity and gas transmission code may create more space for consideration of the system operation implications of gas-fired generation and hydrogen electrolysis, while a unified distribution code might be a better vehicle for addressing issues related to hybrid heat pumps. Further, the grouping of codes into a limited number of operational areas may support specialism developments and support ownership of delivery in each sector.

Usability and accessibility

Moderate (3/5): We see this as one of the most user-friendly code options as the codes it results in are still relatively specialised without there being an overwhelming number for parties to keep track of. Aligning the codes with industry functions would support parties in a clearer understanding where requirements and processes sit. At the same time, the REC and SEC are essentially unchanged, which would make the transition easier for suppliers. However, the dual fuel nature of the codes and relative size following consolidation may limit parties' ability to engage constructively with the new arrangements.

Interaction with central systems

Low (2/5): Due to fundamentally reforming the UNC and BSC, this option would have particular implications for the governance of central systems. While electricity settlement systems could potentially pass to the wholesale code relatively smoothly, gas settlement is currently handled under the UNC alongside gas transmission flow nominations. These could therefore be split, with nominations arguably sitting most appropriately under a Transmission Code.

Overall evaluation

Moderate (13/25): Option 2B scores adequately overall but is let down in some key areas. We expect it to be one of the most adaptable and user-friendly options with a good balance of reducing the total number of codes while leaving several areas untouched. However, it would be a lot of work for the industry and cause particular upheaval on the gas side, arguably disaggregating a proven and already-consolidated code in the UNC.

6.1.5. Option 4B – Dual fuel retail, single fuel upstream

This option restructures all codes into a dual fuel Retail Code and separate, single fuel electricity and gas upstream codes that cover the respective wholesale and networks elements.

Feasibility and ease of implementation

Very Low (1/5): This option would be one of the most challenging to implement due to the amount of work it would involve. The complete amalgamation of all electricity codes into one would see a total of six codes being combined in an extremely large exercise that would span years. The only mitigating factor is that change to the gas codes would be comparatively limited, seeing the amalgamation of the UNCs and a possible restructuring to be aligned with the electricity code.

Code manager considerations

Very Low (1/5): This option would lead to only three industry codes, leaving very little space for potential code managers. With such "concentrated" codes it may limit the parties which are able to effectively manage the new consolidated code structure due to code's size and complexity. Additionally, the significant level of reform undertaken may lead to a need to re-evaluate the details of the code manager arrangements to ensure they remain suited for the new arrangements.

Adaptability to future market arrangements and compatibility with net zero

Low (2/5): This option may not result in arrangements which are particularly well suited to net zero requirements. The dual fuel retail code provides space for discussing cross-cutting issues, but this is limited to customer-facing aspects, while topics any further up the value chain remain siloed between electricity and gas. This could cause problems for addressing topics such as heat as it moves to Ofgem's jurisdiction, or aligning market processes for gas-fired generation and hydrogen electrolysers.

Usability and accessibility

Low (2/5): We score this option low on usability as the codes it will create will likely be quite large and cumbersome to engage with. The electricity code especially may be several thousand pages and it may be difficult for users to identify if modification proposals are relevant to them, considering they may cover settlement, balancing, network charging or technical specifications. It does not receive the lowest score though, as the gas code will not be much more complex than the current UNC.

Interaction with central systems

High (4/5): We do not see this option as being that disruptive to central industry systems. While the merging of the REC and SEC will require either the CSS or DCC systems to migrate to new governance, the gas code is essentially still the UNC, and BSC systems can migrate to the electricity code.

Overall evaluation

Low (10/25): Option 4B appears to be one of the less viable of our shortlisted options. Its creation is likely to be very challenging due to the scale of the reform and potential legal issues. Even when complete, the codes it creates may be unwieldy and difficult to engage with, especially on the electricity side. This presents issues for both code signatories and code management. Its greatest strength is that it is unlikely to impact on industry systems much. But this is more than outweighed by its other shortcomings.

6.1.6. Option 4C – Dual fuel retail, single fuel upstream v2

This option is a variation of Option 4B and an advancement on Option 1A. It creates a dual fuel retail code and four single fuel upstream codes: networks and wholesale and electricity and gas.

Feasibility and ease of implementation

Moderate (3/5): This option would not be easy to implement and would require a lot of work by the industry, especially on the electricity side. However, we score it above Option 4B here due to it not attempting to merge the BSC into the other electricity codes. This would partly be offset by reforming the gas codes into one for trading and one for networks, which effectively disaggregates the current UNC arrangements to align with electricity. If change for the gas industry is limited to merging the UNC and IGT UNC, we would likely increase this score to 4/5.

Code manager considerations

Moderate (3/5): This option would lead to five industry codes, creating several positions for existing code administrators to tender for, alone or in conjunction with others, and for new parties to come forward. Similarly, having several codes should help reduce the chances of any one code being too large for a single party to effectively manage, though the electricity networks code may push the limits on this given the number of codes being merged in its creation.

Adaptability to future market arrangements and compatibility with net zero

Moderate (3/5): The dual fuel retail code provides space for discussing cross-cutting issues, but this is limited to customer-facing aspects, while topics any further up the value chain remain siloed between electricity and gas. However, the creation of the single network codes may support cross voltage level considerations, and overall simplification could help support market entry and innovation.

Usability and accessibility

Moderate (3/5): We think this option scores acceptably on usability as, while the electricity networks code will be large, the others will be more manageable. Further the codes will be aligned with typical market arrangement splits, supporting understanding and usability.

Interaction with central systems

Low (2/5): Due to fundamentally reforming the UNC and BSC, this option would have particular implications for the governance of central systems. While electricity settlement systems would probably pass to the wholesale code relatively smoothly, gas settlement is currently handled under the UNC alongside gas transmission flow nominations. These would therefore have to be split between gas wholesale and networks codes. If change for the gas industry is limited to merging the UNC and IGT UNC, we would increase this score to 3/5.

Overall evaluation

Moderate (14/25): Overall this option is considered more appealing than Option 4B. It will still be quite a significant undertaking to implement.

6.1.7. Option 6 – Framework agreement

This approach would see a single overarching "core" code to deliver a consistent approach to the standard code functions, which all parties would accede to. This would be supported by specialised modules for technical and delivery requirements.

Feasibility and ease of implementation

Very Low (1/5): We expect this option would be one of the most challenging to implement due to the amount of work it would involve. It would be a fundamental restructuring of the industry code framework, and is therefore likely to require extensive consultation and planning, plus legislative change. However, the actual content of the modules could be partially recycled from existing codes, which may be a mitigating factor.

Code manager considerations

Moderate (3/5): We see this option as being quite adaptable to the future code manager regime. There could be a single code manager for the whole framework agreement, or potentially up to four for the dual fuel, electricity-only, gas-only and shared modules.

Adaptability to future market arrangements and compatibility with net zero

High (4/5): We give this option a score representing the easy adaptability, but the current structure is somewhat siloed in terms of the electricity/gas split. We expect that implementation would be a long-term project, in which case our outline design may need to be changed as the energy system develops over time. We do not think that the creation of a new module (such as for hydrogen, heat or EVs) would be as onerous as creating a new industry code would be today, as it could both draw upon the common elements of the framework and benefit from discrete modules already existing to handle specific topics.

Usability

Very high (5/5): This option was designed to be a clean sheet approach that would maximise usability and accessibility for industry parties, and this is reflected in its score here. By only having to accede to individual modules relevant to them, parties will be able to focus on specific elements without being confused by being presented with sections that do not apply to them. Due to the universal modules, there should also be a great deal of alignment and commonality between all features of the framework so parties do not get confused by different arrangements between codes.

Additionally, the presence of a single code manager should ease parties' interactions with the modules. This is because it is a single point of entry for contact and can provide an integrated view to users that should help them understand what parts of the code are relevant to them. This one-stop-shop approach is expected to be especially valuable for non-traditional energy industry parties, who are expected to become an increasingly important part of the market as the energy transition continues.

Interaction with central systems

Low (2/5): This option would require careful consideration of how the governance of industry systems would be considered. It could be argued – especially in gas – that the current systems governance does not map across well onto the modules, such as the distinction between system operation and markets. We expect that the CSS and DCC systems would be governed under the retail module, but it is less clear how the BSC systems and UK Link would transfer.

Overall evaluation

Moderate (14/25): We consider that Option 6 has some attractive features but would need a particularly robust business case before it could be embarked upon. As a clean sheet design we expect it could be very effective once implemented, cutting down on redundant work while being easy to engage with for market participants. However, the challenge would be putting it into practice, as it would be a very fundamental change.

7. Conclusion

The energy market is undergoing a period of significant transformation, transitioning to a net zero system. The current code arrangements do not encourage dynamic market engagement or facilitate innovation.

We have assessed the GB energy regulatory code landscape to identify opportunities for improvement and reform. This review considered the implications of interactions between central systems and codes, impact on consumers, the complexity of implementation, the new code manager model, adaptability to future market arrangements, compatibility with net zero, and the usability for parties on an operational basis.

- The majority of code structures examined would deliver industry wide benefits over the current baseline option where there was no strategic change
- The benefits are a result of reduced complexity of arrangements, clearer and more transparent rules for market parties, and increased code coordination
- A purely vertical code structure - aligned by fuel types with separate gas and electricity codes - does not appear to provide consistent benefits over a horizontal or framework arrangement and reduces scope for dual-fuel efficiencies
- Separation into individual fuels would likely negatively impact retail market delivery by separating the dual fuel REC and SEC
- The potential size and scope of whole value chain codes - mass consolidation - are likely to make them unwieldly and difficult to manage, even for a single fuel

The longlist of options was evaluated, resulting in a shortlist that can be taken forward for further consideration, as shown in Figure 18.

Figure 17: Summary of detailed assessment of shortlisted code options

Option	Name	Feasibility	Code Manager	Adaptability	Usability	Systems	Overall
0	Other reform (counterfactual)	5	5	1	3	4	18
1A	Minimal reform (networks codes)	4	4	2	3	4	17
1B	Minimal reform (technical code)	4	4	2	3	4	17
2B	Partial horizontal alignment	2	2	4	3	2	13
4B	Dual fuel retail/ single fuel upstream	1	1	2	2	4	10
4C	Dual fuel retail/ single fuel upstream v2	3	3	3	3	2	14
6	Framework agreement	1	3	4	5	2	15

Some code consolidation and simplification models present opportunities for the GB energy market. Any substantial change would require suitably experienced and knowledgeable resource to be provided by code stakeholders, as well as from Ofgem and BEIS.

Most of the options discussed would need to be delivered over a substantial timeline. Other workstreams underway could intersect with the Energy Code Review including energy data and digitalisation, full chain flexibility, market wide half hourly settlement, faster switching and the introduction of the Future System Operator.

Next steps could include stakeholder engagement, Ofgem information requests, Ofgem or BEIS led consultations, examining the shortlist in more details.

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