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Impact Assessment

Impact assessment of Whole Electricity System Licence Condition [D17]~[7A]

Division:	Systems and Networks	**Type of measure:**	Licence condition
Team:	DSO and Whole Systems	**Type of IA:**	Qualified under Section 5A UA 2000
Associated documents:	Whole Electricity System Proposed Licence Condition: - Statutory Consultation Cover letter - Notice and Licence Text - Guidance Document	**Contact for enquiries:**	flexibility@ofgem.gov.uk
Coverage:	Full		

This impact assessment is written in relation to the proposed licence condition [D17]~[7A], the Whole Electricity System Licence Condition. It sets out the policy objectives, options assessed, and justification of the preferred option to progress the licence condition.

Proposed licence condition [D17]~[7A] obligates Electricity Distributors and transmission owners to coordinate, and to cooperate with network users to advance the efficient and economic operation of electricity networks.

1. Introduction

Background to whole electricity systems

1.1. Under Section 9 of the Electricity Act 1989,[1] individual electricity transmission and Distribution Systems must be developed and maintained in an efficient, coordinated and economical manner. Historically, electricity distribution and transmission licence holders have sought to discharge their duties through focusing almost entirely on their own networks without wider cross-network considerations. The transition to a smart, flexible energy system with a high penetration of renewable generation necessitates that licensees consider cross-network interactions to best meet the needs of network customers.

1.2. The proposed licence condition [D17]~[7A] applies to onshore Electricity Distributors and transmission owners, and clarifies their roles in operating efficient, coordinated and economical networks.

1.3. In 2017, we published our Smart Systems and Flexibility Plan[2] jointly with the Department for Business, Energy and Industrial Strategy (BEIS). This was informed by our 2016 call for evidence.[3] One of the areas in which we received comments related to our expectations on efficient and economical coordination of energy networks and systems.

1.4. In December 2018, we conducted an informal consultation on our proposal to introduce a new licence condition. The responses we received demonstrated broad support for the proposal, and have informed further refinement of the licence condition text.

[1] http://www.legislation.gov.uk/ukpga/1989/29/section/9
[2] https://www.ofgem.gov.uk/publications-and-updates/upgrading-our-energy-system-smart-systems-and-flexibility-plan-progress-update
[3] https://www.ofgem.gov.uk/publications-and-updates/smart-flexible-energy-system-call-evidence

1.5. Our approach is in line with developing policies internationally, including the EU Clean Energy Package.[4]

What are the policy objectives and intended effects

1.6. Our policy objective is for consumers to realise the benefits of whole electricity system outcomes: actions and processes taken involving two or more parties, at least one of whom holds an electricity transmission or distribution licence, that minimises sum expenditure on transmission and distribution electricity networks; and improve, or at a minimum maintain, the services and benefits received by customers of electricity networks.

1.7. We consider that greater coordination and cooperation between electricity network licensees, and between electricity network licensees and network users, is required to achieve improved whole electricity system outcomes.

What are the policy options that have been considered?

1.8. We considered and analysed three policy options:

- Status quo with no change.
- Modifications to support whole systems outcomes on a needs basis.
- Introduction of a Whole Electricity System Licence Condition.

[4] The Clean Energy Package is an update to the European energy policy framework, to facilitate the transition away from fossil fuels towards cleaner energy. The legislation mainly covers the following aspects: (1) energy performance of buildings, (2) rules on the promotion and integration of energy from renewable sources, (3) rules on energy efficiency and (4) rules on the institutional framework.

Impact assessment approach

1.9. We applied the proportionality approach in this impact assessment. The proposed licence condition is a clarification of obligations under Section 9 of the Electricity Act 1989.

1.10. We note that from our own stakeholder engagement, there is broad acceptance that a whole systems perspective of the electricity system is required as the energy system transitions to a smart, flexible, low carbon energy system, and that consumer benefits can be realised from implementing whole electricity system outcomes.

1.11. The analysis is primarily qualitative. This approach was appropriate relative to the principles-based nature of the proposed licence condition, and the requirement not to over-specify or prescribe actions and processes leading to whole electricity system outcomes.

2. What is the problem under consideration?

2.1. Historically, individual electricity distribution and transmission licence holders have sought to discharge their duties through focusing on their own networks, acting in response to regulatory and capital market incentives. Planned changes on individual networks were driven by an expectation that discounted private benefits will be higher than discounted private costs. In a situation where there were only minor spill-overs between Electricity Distributors and transmission owners, there is no appreciable market failure of concern. However, fundamental changes in the energy sector requiring increased connectivity mean that this approach alone is no longer optimal.

2.2. In 2010, in recognition that areas such as innovation featured significant spill-overs, stronger innovation incentives were introduced into our price controls. Since 2010, it has become increasingly apparent that the types of changes required to deliver a smart, flexible and low carbon energy sector may not easily meet the "Private Benefits minus Private Cost" test, for a number of reasons: First, expected benefits of changes may accrue to a wide range of parties, beyond the network company itself. Second, upfront costs of changes may be significant and network companies may have no incentive to take into account the full costs and benefits across the whole electricity system. Third, a pure market solution, in which contractual relations would be established between those bearing costs and wider beneficiaries is unlikely to be tractable.

2.3. Changes in the energy system require that deeper and closer levels of coordination are required between licensees, and between licensees and network users to optimise the energy system and realise whole electricity system outcomes.

Existing mechanisms

2.4. As we noted in our RIIO2 Sector Specific Methodology Decision,[5] the existing Totex Incentive Mechanism (TIM) provides sufficient financial incentive to reward licence

[5] https://www.ofgem.gov.uk/publications-and-updates/riio-2-sector-specific-methodology-decision

holders for delivering cost reductions from cross boundary cooperation. Notwithstanding, we consider that opportunities for whole electricity system outcomes are not being capitalised on, and further regulatory action may be required.

2.5. Given the totex mechanisms function, we consider that choosing to increase the financial incentives to help further cross boundary cooperation should be regarded as uneconomic. Rather, we consider that there is a need to overcome historical and cultural barriers which are inhibiting the full adoption of cross boundary cooperation.

Barriers to whole electricity systems outcomes

2.6. While we believe there are insufficient whole electricity system actions and processes taking place in industry, a view which is supported by many of the respondents to our informal consultation,[6] it is difficult to determine the principal limitation for this.

2.7. We do not consider there to be any legal barriers impeding the development of whole systems actions and processes; therefore, we want to provide clear regulatory certainty to stimulate a culture of whole systems thinking.

2.8. Network data quality and availability was raised as a concern by several respondents to our informal consultation; we expect Electricity Distributors and transmission owners to facilitate whole systems outcomes in their management of network data. Through improved cooperation and coordination, it is expected that Electricity Distributors and transmission owners will enhance their data availability and ensure that data users' needs, including data format and quality, are met.

2.9. We also recognise that network data is being improved by several initiatives, including the work being progressed by the Energy Data Taskforce[7] and multiple other initiatives which have been launched since the informal consultation, including:

[6] Non-confidential responses to our the 2018 informal consultation can be accessed here: https://www.ofgem.gov.uk/publications-and-updates/consultation-licence-conditions-and-guidance-network-operators-support-efficient-coordinated-and-economical-whole-system
[7] https://es.catapult.org.uk/news/energy-data-taskforce-report/

the 'energy data best practice principles';[8] the 'Modernising Energy Data Access Competition';[9] and the publication of Digitalisation Strategies from the Electricity System Operator (ESO), Transmissions Owners (TOs) and Distribution Network Operators (DNOs).[10]

[8] https://es.catapult.org.uk/news/energy-data-best-practice-guidance/
[9] https://apply-for-innovation-funding.service.gov.uk/competition/491/overview
[10] https://www.ofgem.gov.uk/publications-and-updates/digitalisation-strategies-modernising-energy-data

3. Description and assessment of options considered

3.1. Three options for how to manage whole electricity systems were considered.

Option 1) Status quo

Option 2) Needs basis modifications

Option 3) Introduction of a Whole Electricity Licence Condition

3.2. These covered the range of options available, and are described in turn below. We have assessed them against four main criteria, described in the summary.

Option 1) Status quo

3.3. Under Section 9 of the Electricity Act, Electricity Distributors and transmission owners are required to maintain and develop efficient, economical and coordinated networks. This obligation has historically been interpreted to relate directly to each licensees own network, which was appropriate when there were very limited interactions. As we have previously stated, we do not believe this approach is sufficient to meet the challenges that now face the electricity system.

3.4. The existing TIM under the RIIO1 network price control encourages Electricity Distributors and transmission owners to underspend/reduce overspend against totex allowances. This is achieved through an incentive rate that shares the cost of underspend/overspend between companies and consumers. Simultaneously, incentives on outputs ensure that cost reductions should not lead to a deterioration in service quality.

3.5. The TIM covers whole systems actions; however, the limited implementation of such actions suggests that there may be wider factors prohibiting the delivery of whole electricity system outcomes. Based on feedback to our informal consultations and calls for evidence, we believe that there are cultural barriers within Electricity Distributor and transmission owner organisations that are limiting the delivery of whole systems actions and processes under the status quo arrangement.

3.6. Whilst there have been a number of examples of valuable coordination activities by networks and network users, we believe that the lack of guidance and clarification on

expectations will hinder the development of whole electricity system outcomes. We therefore believe that the status quo would restrict benefits realisation for network customers.

3.7. This option is regarded to have no impact on monetary benefits, environmental benefits, compliance costs or regulation costs.

Option 2) Needs basis modifications

3.8. A selection of actions and processes that could result in whole electricity system outcomes could be implemented through modifications to existing individual codes and practices. This type of approach could function on an 'as needed basis', with Ofgem considering the merits of modifications, specifically factoring in whole electricity systems outcomes in our judgements. This type of approach would vary from the status quo, given our specified support for whole electricity systems outcomes.

3.9. This approach, however, has significant drawbacks. First, it takes a piecemeal approach to action and process improvements in support of whole electricity system outcomes. Accordingly, there is limited scope for significant behavioural change in the near-term, with cultural changes requiring a weight of modifications before large-scale changes can be expected. It is probable that it will take a long time for large-scale improvements in whole electricity system outcome delivery.

3.10. Second, this approach does not account for 'known unknowns'; that is to say, we are aware there are likely changes in the future that would contribute to whole electricity system outcomes, however, we do not know the detail of what these may be, and therefore cannot account for them through specific modifications. We will therefore have to judge each case against its merits at a given time, which may lead to regulatory inefficiencies.

3.11. Third, this approach is standards based, and does not include any target or principles-based obligations. This means there are no behavioural expectations made clear to licensees at the outset, limiting the ambition of actions and processes that are likely to result in whole electricity system outcomes.

3.12. This option is regarded to result in some monetary and environmental benefits, though the realisation of these benefits is expected to be slow, and the onerous

nature of case by case implementation means that compliance and regulation costs are expected to be higher than necessary.

Option 3) Introduction of a Whole Electricity Licence Condition [D17]~[7A]

3.13. The introduction of a new, principles-based, licence condition would provide for a clear obligation on Electricity Distributors and transmission owners to undertake and facilitate processes and actions that contribute to whole electricity system outcomes. A principles-based licence condition would set parameters and expectations on licensees, whilst maintaining sufficient flexibility and freedom for licensees to apply their preferred methodologies to meet these requirements. Such a principles-based approach would also account for future changes in the rapidly changing electricity system.

3.14. The proposed licence condition [D17]~[7A] refers to actions that "advance the efficient and economical operation of their networks" and… "will not negatively impact its network; and are in the interest of the efficient and economical operation of the total system". By the nature of such stipulations, it is not feasible for actions pursuant to the licence to have a negative effect on energy networks. All actions under the licence are therefore innately in the interests of energy networks, and as such, cannot be considered to be significant or onerous expectations.

3.15. Proposed licence condition [D17]~[7A] refers to coordination between electricity network licensees. Section 9 of the Electricity Act 1989 refers to coordinated Distribution Systems, and a coordinated national electricity transmission system. The proposed licence condition [D17]~[7A] clarifies the expectations on Electricity Distributors and transmission owners under Section 9 by clearly stating that coordination with other licensees and network users is expected. Accordingly, the proposed licence condition [D17]~[7A] is a clarification of terms under which they already operate, and is not expected to create new or onerous expectations on licensees.

3.16. This option is regarded to result in significant monetary and environmental benefits realised in the near-term. There are small compliance and regulatory costs, which we expect to be outweighed by the benefits, resulting in net benefits for consumers.

Preference and justification

3.17. The preferred option is option 3, the introduction of a Whole Electricity System Licence Condition.

3.18. Requiring Electricity Distributors and transmission owners to coordinate with other electricity network licensees and consider proposals from network users only when they are capable of advancing the efficient and economical operation of their networks means that there is no risk of negative actions being taken forwards and having detrimental effects on network customers. Effectively, all actions and processes taken forwards by Electricity Distributors and transmission owners are expected to result in network benefits, and therefore should contribute to positive network performance against their outputs. As such, the costs of compliance in meeting such a licence condition are expected to be limited, and are instead outweighed by the network benefits resulting from the action or process improvement. A licence condition is therefore not considered an onerous obligation on Electricity Distributors and transmission owners.

3.19. Based on the analysis, the introduction of a licence condition is the only course of action likely to result in significant changes in the near-term, and account for the range of actions and processes that could lead to improved whole electricity system outcomes in a consistent and futureproof manner. A principles-based licence condition will allow Electricity Distributors and transmission owners the flexibility to implement actions in the most appropriate and efficient manner, whilst providing clarity on expectations Ofgem place on them.

Summary

3.20. In undertaking the options assessment, we have considered the following components:

Unquantified monetary benefits

3.21. These are the system benefits that we anticipate from reducing duplication in infrastructural build or processes, and the avoidance of counterproductive actions being taken across networks, for example turn down in response to flexibility procurement turn up.

Environmental benefits

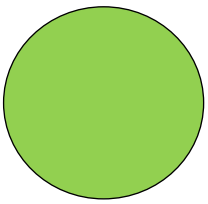
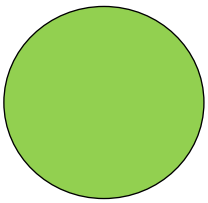
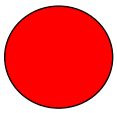
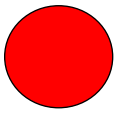
3.22. Environmental benefits first and foremost are the reduction of Greenhouse Gas (GHG) emissions as a result of building and operating the network. These may be emissions associated with the infrastructure itself or of the opportunity to use energy more efficiently, thus reducing the total emissions associated with each kWh of energy supplied. Environmental benefits also arise from the reduction of land use change and avoided ecological damage related to infrastructure.

Compliance costs

3.23. The cost of compliance for licensees arise primarily from the reporting requirement, but also includes consideration of overheads, and the cost associated with the discovery of new ways of planning and operating their networks.

Regulatory costs

3.24. This is the cost that is borne by the Authority and is in relation to the cost of resource allocation, in staff time, to the development and implementation of policy as well as the cost of ongoing monitoring and compliance.

	Option 1, status quo	Option 2, needs basis modifications	Option 3, Whole Electricity System Licence Condition
Unquantified Monetary System Benefits			
Environmental benefits			
Compliance costs			
Cost of regulation			

Key:

Green = benefits
Amber= neutral
Red = monetary costs

The size of circles provides an indication of relative significance, this is for illustrative purposes only and is not intended to be comparable. Note that benefits can be foregone by delays in implementation.

4. Licence condition impacts

Environment

4.1. The challenges that are driving the need for greater coordination across network boundaries are primarily derived from Distribution Systems becoming increasingly actively managed. The increasing number of intermittent renewables that have connected to the Distribution Systems in recent years has driven this by creating complex power flows, and increasing interactions and reactions across network boundaries. By improving the coordination between Electricity Distributors and transmission owners, it is reasonable to expect that the capacity share of renewables will be able to increase as better use of flexibility and network resources are made. Renewables that connect to the grid typically replace traditional fossil fuel based generation and therefore, contribute towards the UK's target of achieving net zero GHG emissions by 2050.

4.2. In addition, better use of network resources for the provision of flexibility, and reduction of infrastructural build will reduce associated GHG emissions from construction and maintenance.[11] Further, limiting the need for physical asset build may reduce indirect emissions by reducing the time taken for low carbon technology connections. New infrastructure build also comes at significant ecological costs as land is built over.

Compliance

4.3. Part B of proposed licence condition [D17]~[7A] requires licensees to maintain a register of actions that have been undertaken relevant to the licence condition. An update must be published at least every twelve months on the licensee's website,

[11] The Tyndall Centre for Climate Change, the University of Manchester, has undertaken detailed analysis of carbon benefits of reinforcement deferral, Whilst this analysis was relative to the Customer Load Active System Services (CLASS) project, the underlying environmental valuation of deferred reinforcement are valid here for other whole systems actions and processes. https://www.enwl.co.uk/globalassets/innovation/class/class-documents/class-carbon-impact-assessment-final-report.pdf

allowing licensees to decide to update this more frequently should they determine that this is more cost effective.

4.4. The coordination register features only actions that have already been undertaken. Licensees have a high degree of expertise in reporting on actions taken in compliance with licence conditions. We believe that licensees have sufficient existing resources to ensure that this is a marginal additional action and not an onerous requirement.

4.5. We have not mandated a consultation process, although we do expect licensees to ensure that they are able to incorporate constructive feedback from their stakeholders. This negates the need for a costly consultation processes for both the licensee and for respondents.

Risks

4.6. The key risk of not proceeding with the licence modification is that an appropriate level of coordination and cooperation across network boundaries is not forthcoming. This may result in certain benefits being forgone entirely, because of duplicated infrastructure.

4.7. The proposed licence modification creates a risk that by working together across network boundaries, licence holders may be able to use their market power in ways that are not in the best interests of consumers. The licence condition requires that licence holders cooperate in ways that benefit consumers. Should we determine that a licence holder has failed to comply with this requirement then we would take remedial action. The risk is further mitigated by existing licence conditions relating to doing business with affiliates and the provision of cross subsidies to non-licenced activities. We therefore consider that this risk is extremely low and that many tools exist to deal with it should it materialise.

Business Impact Target

4.8. We consider that the proposed licence changes is a Business Impact Target (BIT) Non-Qualifying Regulatory Provision (NQRP) as it falls under the de minimis rule, namely those measures that have an Equivalent Annual Net Direct Cost to Business (EANDCB) of less than ± £5 million.

5. Conclusion and next steps

5.1. Increased coordination between electricity network licensees, and between electricity network licensees and network users, is required to realise customer benefits of whole electricity system outcomes.

5.2. Our assessment of the current situation, in the absence of a licence obligation, is that licence holders are not engaging as effectively as they should be in cross boundary coordination and cooperation. Having reviewed, analysed and assessed the policy options, we support the introduction of licence condition [D17]~[7A].

5.3. It is our considered view that proceeding with the proposed licence condition [D17]~[7A] is in the best interest of consumers. Statutory obligations require that we provide Electricity Distributors and transmission owners with the opportunity to make representations to us on both the proposed licence condition and the impact assessment, and that we consider the implications of the representations we receive.