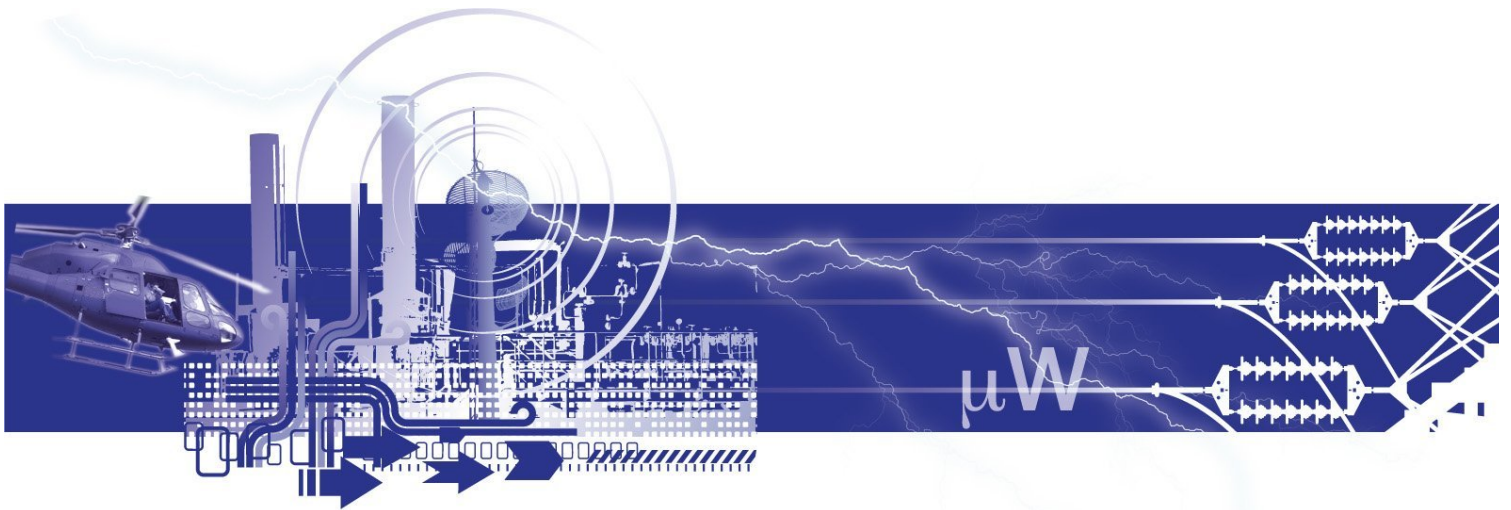


UNRESTRICTED REPORT



RPI-X@20 Principles, Process and Issues

EA Technology's Submission to Ofgem's Consultation

Report No:6383

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1 Executive Summary

EA Technology is one of the UK's leading power asset management companies, based at Capenhurst, near Chester. The business has evolved and developed over the past 40 years to its present status of an independent limited company, working on behalf of clients in the electricity, energy, infra-structural and associated sectors. EA Technology provides a wide range of specialist services to the Distribution Network Operators and network users in the UK and overseas, as well as coordinating a number of specialist technical forums for network engineers. We therefore highlight the following considerations and recommendations for consideration in the next stage of the RPI-X@20 review being undertaken by Ofgem.

i). Long-term vision

We agree with the Consultation document that the energy sector is facing a number of new and uncertain challenges and welcome the review of the RPI-X framework to ensure that the regulatory system is suitably equipped to support the sector in tackling these challenges. We suggest that the networked areas of the sector require a specific directed vision, because given the long lives of many network assets, investment decisions will need to be made within the next five to ten years which will significantly impact on networks in 2050. We therefore believe it is essential to ensure that the regulatory framework is able to assess activities against a long-term vision for the network, whilst having sufficient flexibility to allow for innovative solutions to be incorporated as they develop.

ii). Economic and efficient operation

We believe that it is right that the networks continue to be operated in an economic and efficient manner. We suggest that the RPI-X framework as it currently exists may not, however, be appropriate to ensure the investment that the networks are likely to require to adjust to the challenges that the sector is likely to face between now and 2020 and 2050.

We believe that, moving forward, the distinctions between Capex and Opex may not be the most suitable to incentivise a wide range of solutions to these challenges. Instead, we propose a 'Totex' approach where costs for all activities are treated the same way and the same percentage of all costs are capitalised into the RAV as we believe that this will enable network operators to develop different business strategies, depending on the challenges and opportunities facing their networks.

iii). Further questions

EA Technology welcomes Ofgem's willingness to ask the industry what questions need to be asked as part of this review. We have therefore included, within our response, a number of questions which we believe that answering will help to identify the future direction for the energy networks.

iv). Ongoing work

We recognise that this consultation is one stage in this process and that further work will need to be undertaken. We are happy to be involved in this project and will contribute to it as it moves forward where we are qualified and able to do so.

2 EA Technology

EA Technology is one of the UK's leading power asset management companies, based at Capenhurst, near Chester. Its origins date back to the mid-1960s, when it was established as the UK Electricity Industry's Research and Development facility. The business has since evolved and developed to its present status as an independent limited company, working on behalf of clients in the electricity, energy, infra-structural and associated sectors.

EA Technology provides a wide range of specialist services to the Electricity Distribution Network Operators and network users in the UK and overseas, including surveying and monitoring of asset condition; consultancy services on strategic asset management for ageing networks; failure investigation and analytical services, and supply of specialised instrumentation for condition assessment and fault location for cables and switchgear. We also coordinate a number of forums which the DNOs participate in, enabling them to develop common approaches to tackling shared projects and to learn from each other's best practice.

EA Technology is pleased to provide its response to Ofgem's consultation on the Principles, Process and Issues that will be required to regulate energy networks for the future in the following pages.

3 Responses to the Consultation's Chapters and Specific Questions

EA Technology's responses to specific questions raised by the consultation are provided in the following pages. Our response takes the form of a broader discussion of some of the topics contained within the chapters, rather than direct responses to individual questions posed by Ofgem. Given that the purpose of the present consultation seems to be to identify the questions that the review of the RPI-X framework needs to address, we have posed further questions where we believe this will help to shape the review being undertaken.

Throughout our response, we have targeted our comments to those areas where we are best qualified to contribute and have therefore not responded to those questions outside our expertise. It should therefore be noted that our responses relate predominantly to the regulation of the electricity distribution networks, as this is where our experience and expertise predominantly lies. Some of the principles underpinning our response, however, may be applicable to the gas networks and the electricity transmission system.

3.1 Chapter 1: Introduction

EA Technology agrees that the future holds many new and uncertain challenges for the energy networks. We therefore agree with both the rationale for and the scope of the review.

The RPI-X approach to regulation, pioneered in the UK as a proxy for the pressures felt by companies operating in a fully competitive market, has demonstrably led to increased efficiency. Regulation based on the RPI-X approach has been adopted by many countries around the world. However, over the period since privatisation of electricity networks, it has become increasingly clear that RPI-X has tended to stimulate a behaviour of focus on changes to achieve improvements in the short run rather than in the long run. Examples of this short-term focus include the aging workforce across the industry, a reduction in training and the decline in technical innovation prior to the introduction of DPCR4.

One way to deal with unexpected consequences of the regulatory system is to introduce modifications to the detail of the structure. Over time these modifications result in a structure which is significantly more complex than the original form. It is appropriate, if the structure is felt to be becoming difficult to understand, to review with the aim of simplification whilst broadly achieving the same outcomes. We therefore suggest that it probably would be appropriate to hold a root and branch review, even if the environment was the same now as in 1990.

However, the world we live in today is very different from the world of 20 years ago. It is generally accepted that the world needs a low carbon future and the UK Government has a clear commitment to achieving large reductions in UK carbon emissions between now and 2050. In addition, the UK was an energy exporter when RPI-X regulation was introduced but is now an energy importer. In order to maintain the high security in supply of energy we currently enjoy and deliver the CO₂ reductions proposed by the Government for 2020 and 2050, significant changes to the electricity generation mix and the replacement of the use of fossil fuels in all areas, particularly in the transport and domestic sectors, will be required.

It is clear that the energy landscape will be very different in 2050 than it is now, and that this is likely to have profound effect on networks. Network assets tend to have long lives;

therefore decisions taken now will have consequences in 2050. A focus on economic efficiency is still of overall importance. The only difference is that the timescale over which the economic efficiency will be measured is decades rather than years. Actions taken now, which in the short run appear to be inefficient, may prove to be efficient in the long run. The challenge for regulation is to be able to differentiate such actions from actions that are inefficient both in the short and long run, and to develop a framework that stimulates the former and penalizes the latter, whilst ensuring that networks are able to finance their activities.

Given the breadth of the review that is being undertaken, there are many different stakeholders involved. The range of channels being adopted seems appropriate to capture these different stakeholders' views. We recommend that Ofgem stimulates a debate with stakeholders to tease out the relative importance, within this review, of the issues relating to sustainable networks and the wider issues of sustainable development. One point which might usefully be debated is the role of regulation in facilitating the availability of required workforce in the future. We support the use of smaller, focused working groups to do this, where the relevant stakeholders can discuss and inform specific issues. Accordingly, EA Technology is happy to participate in working groups where we can provide a useful contribution to this process.

3.2 Chapter 2: Aims, principles and approach of the review

EA Technology agrees with the aims for this regulatory review, i.e. to develop a regulatory regime that reflects the challenges facing the networks that is appropriate for long-term use, as well as providing certainty as to the principles that will underpin future Price Control Reviews. We also agree with the more specific objectives that the regulatory framework needs to promote, as outlined in paragraph 2.4.

We suggest that it is appropriate to develop a long-term strategic view of what the networks will need to look like in 2020 and 2050 and what will be required of the networks, given a number of feasible scenarios. LENS provides a good starting point to begin this for the electricity networks, for example, as it has already identified five potential scenarios. We suggest that it is only with an agreed strategic plan that the UK can be sure of efficiently developing networks that cater for the mix of future requirements. We recognise that this could be criticised as central planning,. We therefore recommend that such plans are developed that are specific to each network, through engagement with all the relevant stakeholders, so it is a shared vision rather than one planned from a distance.

It may be felt that it is too difficult to create an agreed, common vision for energy networks in 2020 and 2050. In this case we would suggest that the LENS study is used as a starting point to identify the detailed characteristics that electricity networks would require for each of the scenarios and to identify the problems which need to be solved. This would then define targets for technical innovation, which would be required for each scenario. Technical innovation activities would then be undertaken by network operators and others, aiming to achieve the defined targets. Successful completion of these innovation activities would provide options which are ready to be deployed for the scenario (or combination of scenarios) which develop. We believe that this approach would enable the uncertainties in the future development of networks to be most effectively managed. Although it is possible that some of the options will not be deployed (because the relevant scenario does not play out), many would be. The main benefits of this proposed approach are:

- An agreed roadmap can be produced that can be used both to coordinate activities and to measure success of innovation

- Economic efficiencies will result from producing solutions which are ready for deployment before problems become widespread and serious (by preparing for possible problems before they occur rather than reacting to actual problems as they occur).

It may be possible to develop regulatory incentives for innovation from the roadmap.

RPI-X has worked well to incentivise more of the same for less money. However, it is likely that the future will require a different approach, based on choosing the right solution for the lowest price available, given what can be afforded. Once the long-term view and the associated costs are understood by the relevant stakeholders, there can be discussion of what is required to get to this point and what this is likely to cost. From this, it should be possible to determine what is affordable and how much respective parties should be paid to get us there.

One example of where such a long-term approach would be beneficial is the challenge of developing a network to facilitate the greater use of localised, often renewable, generation. This is a new requirement since the RPI-X methodology was developed and one that is likely to require short-term investment but is unlikely demonstrate its efficiency until after one, or more, subsequent Price Control Reviews.

Many of the network operators are addressing some, or all, of the issues highlighted in this section already, although to varying extents. EA Technology would suggest that in the development of a new regulatory regime, current activities in these areas should be recognised and lessons learnt from the development of successful initiatives such as the Innovation Funding Incentive (IFI), as well as those which have perhaps not achieved their desired result.

3.3 Chapter 3: Setting the Scene

We believe that it is still valid to require network companies to operate in an economically efficient manner. RPI-X is a proxy for competition and, over the last 20 years, has resulted in real reductions in the cost of networks, which have largely been achieved by improvements in operational efficiency without the need for significant technological change. We do not believe that this can continue indefinitely. The question is whether RPI-X can induce the technological shifts which would be needed to further reduce marginal cost but which, more importantly, are needed to enable networks to remain fit for purpose in the future, particularly since the detailed shape of this future is so uncertain.

The evidence of the last 20 years is that whilst RPI-X has resulted in significant and demonstrable improvements in efficiency of network businesses, RPI-X alone does not result in technical innovation and does not result in improvements in quality of service. Additional incentives have been required to stimulate these behaviours. It is therefore reasonable to assume that specific, targeted incentives will be required to drive specific behaviours going forward. In addition, the perceived requirement for significant investment in networks means that RPI-X cannot be maintained in its current form, at least in the short term.

The characterization of network companies, whilst highly stylized, is broadly accurate. It is unsurprising that network companies are risk averse, given the form of the health and safety, quality and economic regulatory framework in which they operate. It is also unsurprising that they are more focused on Ofgem than consumer's needs, because Ofgem acts as a

“surrogate” customer. The “panel” nature of policy interactions between network operators, suppliers and generators will tend to drive a focus on their own business except where interaction with the panels is required.

We think that energy regulation has successfully reduced costs but has also reduced vision of the long term investment requirements by focusing attention on five-year periods. The consequence of this has been behavioural changes to meet the requirements of the regulatory review, which may not necessarily coincide with the long term interests of the customers and wider societal needs.

3.4 Chapter 4: Focusing on consumer needs

Since the regulatory framework determines the level of profit that a particular DNO can make, it is understandable that the Companies are focussed on meeting and, in some cases, exceeding regulatory targets. This situation places a reliance on Ofgem to correctly represent the views and aspirations of consumers when setting the regulatory framework of the distribution price review. For this reason, we welcome and support Ofgem’s engagement with consumers via a number of channels, including the recently established Consumer Challenge Group; we are particularly supportive of the workshops that Ofgem have run during the course of preparing for DPCR5. It is important that consumers are given the full picture on what is achievable and at what cost. This will help to ensure that consumer aspirations are reasonable and that Ofgem is able to strike the right balance across a range of consumer expectations, such as environmental, reliability and cost.

We also welcome Ofgem’s perspective on both current and future consumers in their review, as we would agree that their needs may differ and both need to be considered as part of a long-term review.

In terms of ensuring that network investments represent value for money, are efficient and take advantage of innovation, we at EA Technology are fully supportive of the need to ensure that innovation plays a full part in delivering value to end customers, in both the short and longer term. EA Technology are pleased to have been involved in helping the DNOs research and implement a number of innovative solutions that we believe deliver value to the network operators and consumers.

We believe that the traditional distinction between Capex and Opex can result in decision-making that may not be the most effective or efficient, and therefore not in the best interests of the consumer. As discussed in our response to the DPCR5 Policy Paper, we believe that a ‘Totex’ approach, where costs for all activities are treated the same way and the same percentage of all costs are capitalised into the RAV, provides a simple measure which enables network operators to develop different business strategies, given the challenges facing their network. As identified in the DPCR5 Policy Paper, the challenges facing the networks are likely to require a number of solutions, including some which will be more commercial in nature. It is therefore vital to ensure that the regulatory review does not prefer Capex over Opex, or vice versa, as this has the potential to create misaligned incentives and inappropriate interventions.

The other challenge that the regulatory review will need to ensure it addresses is the barriers that occur within the industry as a result of it no longer being vertically integrated. This is of particular relevance when the benefits of a technical intervention, such as greater use of electrical energy storage, or a policy decision, such as the roll-out of smart meters, have implications across regulated and competitive sectors of the industry. The introduction of

measures that align incentives across the barriers that exist within the industry is likely to be required to ensure such developments deliver the optimal benefits.

3.5 Chapter 5: Delivering a sustainable energy sector

We note that in chapter 5 you have provided a specific definition, within the context of RPI-X@20, for a sustainable energy sector and that this definition goes beyond the definition of sustainability in PAS55 to include some of the aspects of sustainable development. We think this is helpful. However, we believe that it would also be useful to consider whether other aspects of sustainable development could be included in the review, particularly the role of regulation in facilitating a sustainable workforce.

The sustainability challenges facing networks are not new but they have become more widely recognised and therefore more relevant. At a philosophical level, the challenges are the same for electricity and gas, transmission and distribution. However, as always, the devil is in the detail. For example, as Ofgem's work on LENS has demonstrated, there may be very different requirements for transmission and distribution networks, depending on what combination of scenarios develops. The differences in challenges for electricity and gas networks are perhaps more different.

The list of issues within this chapter is wide and the questions asked of each issue are relevant. We believe that it is not appropriate in this response to attempt to provide answers to any of the questions, as this consultation is endeavoring to identify the issues to investigate and the questions to ask.

It appears to be implicit in the consultation that network operators should become less risk averse. Should this question be explicitly asked? Perhaps additional questions are:

- Is the current behaviour of network businesses appropriate for the future?
- Should the network businesses take on a higher level of risk?
- Is society prepared to accept the possible down side of this in terms of network performance? (Especially in terms of the implications for wider economic performance in the event that the risks generate a significant down side).
- If network businesses should not take on this risk, then who should?

It is perhaps appropriate to consider in this review whether a regulated market can deliver the changes which are required. Markets are generally good at incremental changes to drive efficiencies in systems which are close to equilibrium, but are poor at making step changes. It could be argued that belief in the ability of a market to pick the right way forward when revolutionary change is required is the sign of a risk averse government. Hence questions which could be asked are:

- Can the network changes, which are required to deliver the target CO2 reductions in 2050 and to ensure security of supply over that timescale, be achieved by evolutionary development or is a revolutionary change required?
- If a revolutionary change is required, can this be delivered by a regulated market?

Conversely, the difficulty in achieving an appropriate balance in security of supply, environmental targets, social policy objectives and value for money largely arises because agreed monetary values for many of these measures do not exist. If they did exist, businesses could be confidently expected to use conventional, financial decision making processes to identify and pursue likely efficient and effective initiatives. Competition would then identify and reward the most effective and efficient. A useful question here may be:

- Should the RPI-X@20 review identify financial values for “soft” benefits (positive or negative externalities) in order to better enable a free market to develop the required solutions?

However it may be judged that this issue is too big for this review to address.

This issue is highlighted by the question “Is there something different about environment-related capital investment that networks undertake?”. The answer is clearly yes, because otherwise the question would not have been asked. If there was no difference (because the financial value of environmental benefits was known), then the capital investment decision making would be no different for environmental and non-environmental investments. The question implies that there may be, because a conventional financial cost benefit analysis is not able to justify much environmental expenditure that is otherwise considered necessary.

The consultation asks a number of questions about investment, particularly related to guarding against inefficient investment whilst dealing with uncertainty and possibly stimulating anticipatory investment. It asks how costs should be shared between consumers and government. Perhaps a useful additional question to ask is:

- Should the government set expected future cost signals (in order to define the value of “soft benefits”) and then underwrite a proportion of the cost of investments to the extent that these cost signal differ from the expected values?

Chapter 3 of the consultation identifies characteristics of energy networks, which are a legacy of RPI-X regulation. It is worth considering in particular the effect on innovation of the culture of network businesses resulting from past regulation. For example, although the pace of innovation by DNOs is not as great as Ofgem has indicated (in the DPCR5 policy consultation) it would like to see, the level of innovation is significantly greater than at the start of DPCR4 period. EA Technology has observed a definite change in the behaviour of some DNOs. We believe that this cultural change is a direct result of the IFI, but it takes time for the culture of an organization to change. We suggest that an additional issue to consider when assessing how the regulatory framework can encourage innovation is the rate of diffusion of new ideas through an organization. Additional questions which could be asked are:

- What is the characteristic time for cultural change within large, risk averse organizations?
- Are there examples demonstrating how this characteristic time can be shortened?

Overall, we feel the issues that need to be addressed to balance risks and reward have been correctly identified. However, one additional area that is worthy of specific mention is the question of timescales. As a result of very long expected asset lives, risks may be incurred over many decades, which is obviously far longer than the typical regulatory review period. It is therefore important to consider how network operators can be effectively measured and incentivised to manage risk over relatively short timescales when the actual risks will materialise over a much longer period. This will become particularly important if risk-sharing emerges as a viable option. Market participants and end users will need clear, responsive signals to ensure risks are shared fairly and responsibly. Improved risk-management techniques should enable these issues to be addressed in an open and transparent manner.

Delving into the details briefly, we believe there are a couple of important issues missing from this section. The first of these is the potential role that Demand Side Management can play in preserving the UK’s Security of Supply, by ensuring that indigenous energy resources are used as efficiently and effectively as possible. A greater use of DSM, even if not directly by the network operators, will have implications for the operation of the electricity system as a whole and this potential impact on the networks needs to be considered within the regulatory framework. There will also be benefits for the environmental targets and social

objectives that the sector is trying to address which will need to be recognised. We have a number of years experience looking at different DSM technologies and techniques from the perspective of different stakeholders within the industry. Currently, we are coordinating a project, on behalf of the IEA's DSM Implementing Agreement, to assess the potential to engage small customers (domestic and SME) in Demand Response and Energy Saving schemes with a number of stakeholders involved in both the UK and abroad.

Secondly, Section 5.16 identifies issues related to the delivery of environmental targets. These are a useful illustration of the kind of issues that will be faced, but there are undoubtedly others to add to the list. For example, we suggest that the management of oil leakage from ageing oil-filled high voltage cable systems should be highlighted as an issue. Whilst the environmental consequences to date have been manageable, this will not be the case indefinitely and the capital costs, timescales and resources to fully address this issue are likely to be substantial.

3.6 Chapter 6: Ideas for further exploration

We welcome Ofgem's willingness to consider a number of approaches to future regulation of the energy networks sector. As discussed above, we would suggest that such a decision needs to be based on what future networks will be required to deliver, as significant changes to such responsibilities are likely to require an alternative approach to the RPI-X methodology. This may also require different approaches to be taken for different types of network operation.

Innovation is likely to play an increasingly important role in network design and operation. It should not, however, be used to justify a reduction in customer service because of a shortening of the Research, Development, Demonstration and Deployment process. It will therefore be vital that future regulation is able to recognise and encourage the development of innovative solutions, before a problem has a significant impact in the security of the system.

3.7 Chapter 7: Next steps

As mentioned in our response to Chapter 1, EA Technology appreciates the efforts that have been made by Ofgem to engage with the numerous stakeholders as part of this process. The workshops that we have participated in have been well organised and run effectively. We shall continue to follow developments in this area over the remainder of the review period and would be happy to participate in further workshops and/or working groups where our contribution will be of use.

We have endeavoured to ensure that our response to this consultation is a useful contribution to the process and have aimed to keep it concise. We would welcome a discussion on any of the issues raised in further detail, if required. In the first instance, please contact Jen Carter (email: respond@eatechnology.com; or phone number: 0151 347 2449).