

Regulating Energy Networks for the Future: RPI-X@20

Emerging Thinking – Embedding financeability in a new regulatory framework

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Target audience: Consumers and their representatives, those with sustainable development interests, energy transmission and distribution companies, generators and offshore producers, suppliers, shippers, Government, investors, academics and other interested parties.

Overview:

RPI-X@20 is Ofgem's detailed review of energy network regulation. We are looking to the future on behalf of consumers by considering how best to regulate energy network companies to enable them to meet the challenges and opportunities of delivering a sustainable, low carbon energy sector whilst continuing to facilitate competition in energy supply. There is considerable uncertainty about how best to meet these challenges whilst maintaining value for money for existing and future consumers.

This consultation paper, published in parallel with our main Emerging Thinking consultation paper, provides a straw man proposal on how we could embed our 'financing duty' in the new regulatory framework. We focus at a high level on what we mean by financeability, the issues raised by our current assessment of it, and a set of principles for embedding financeability into the regulatory framework. The straw man is presented to spur debate. These and other ideas will be considered further for our summer 2010 recommendations to Authority. This paper has been issued as a separate consultation paper as the issues discussed relate to a significant aspect of the regulatory framework.

We welcome views on this paper, alongside views on the Emerging Thinking consultation.

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Context

This consultation paper is being published alongside our main RPI-X@20 Emerging thinking consultation document and should be read in parallel. The main document sets out, for consultation, our emerging thinking on a potential new regulatory framework for electricity and gas transmission and distribution companies. This consultation document sets out our ideas on how we might embed our financeability duty into a future regulatory framework.

Given the depth and breadth of issues covered, we are allowing interested parties almost twelve weeks to review the papers and we welcome comments by April 9th 2010.

RPI-X@20 is Ofgem's two-year review of how we regulate energy networks. We are looking to the future on behalf of existing and future consumers, asking whether the existing 'RPI-X' frameworks will remain fit for purpose.

The energy industry stands at a cross roads; facing considerable challenges and opportunities. These are primarily driven by the need to decarbonise Britain's energy sector, while maintaining a safe, secure and affordable system for existing and future consumers. As the physical link between those producing energy, those selling energy services, and businesses and households who use energy, energy network companies have a key role to play, working actively with others in the industry and more widely.

We, and network companies, have been tackling these challenges in recent years and the regulatory framework has adapted and evolved. This is most apparent in our recent electricity distribution price control review and in our work on enhanced investment incentives to connect renewables for the electricity transmission networks. But concerns remain that the nature and pace of change is not enough and there is much more to be done. Our review has asked whether the current frameworks can facilitate delivery of a sustainable energy sector at the required speed. Any changes will be proportionate and transparent and we will not make change for change's sake.

We have adopted and will maintain an open and consultative approach to the review. Since our February consultation paper on the principles and process for the review, we have published a series of working papers setting out our current thinking and consultancy reports on key issues, held numerous workshops and seminars and facilitated industry working groups that have focused on core issues for the review. We have also discussed key issues with our High Level Advisory Group, the Consumer Challenge Group set up for the electricity distribution price control review, and other regulators in GB and overseas. We have also tested out some of our ideas with our Consumer First Panel. This engagement has provided us with valuable insight and ideas on the benefits of the existing framework and the need for change to meet the challenges of the future.

Associated documents

See Appendix 3 for details of all associated documents.

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1. Introduction

Chapter summary

We present an overview of the issues discussed in this consultation paper.

There are no consultation questions on this chapter.

1.1. RPI-X@20 is Ofgem's comprehensive review of the RPI-X framework that has been used to regulate Britain's transmission and distribution gas and electricity networks for the past 20 years. We published our first "Principles, Process and Issues" consultation document in February 2009¹. The "visionary" phase of the project is now coming to a close. This paper is one of three consultation papers published in parallel on a potential new regulatory framework. The other two are:

- The main Emerging Thinking consultation document; and
- Emerging Thinking - Third-party right to challenge our final price control decisions, which will be published shortly.

1.2. The consultation papers together present our ideas on a future regulatory framework for the four energy network sectors (electricity transmission, electricity distribution, gas transmission and gas distribution). They should be read in parallel, alongside the series of supporting papers referenced in Appendix 3, including our glossary of technical terms. The main document attempts to provide an accessible overview of our emerging thinking. It is aimed at a wide range of interested parties. This paper and our parallel series of supporting papers provide a more detailed and technical exposition of the issues and are aimed primarily at the network companies, investors and other stakeholders who require a more in depth understanding of our thinking and the rationale underpinning it in some or all areas.

1.3. All proposals and ideas in the Emerging Thinking papers are for consultation. We welcome views and comments on the principles and practicalities of the ideas presented.

1.4. Our recommendations on the future regulatory frameworks for electricity and gas transmission and distribution will be provided to the Gas and Electricity Markets Authority (GEMA) in summer 2010. For these final recommendations we will develop the detail of what the future regulatory frameworks will look like, considering whether to implement, and how best to design, the aspects of the framework considered in this suite of consultation papers. As part of this, we will consider in more detail the issues presented here, and other ideas that develop in the course of the consultation.

¹ Our 'Principles, process and Issues' consultation is available on our website: http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/Principles%20Processes%20and%20Issues%20con%20doc_final%20-%20270209.pdf

1.5. In our first working paper², which looked at what we want a future regulatory framework to deliver, we recognised that the framework must ensure that energy networks receive sufficient revenues to finance delivery of their obligations under the Gas Act and the Electricity Act. This consultation paper considers how a future regulatory framework might embed our duty to secure that network companies are able to finance the efficient delivery of their regulatory activities. It focuses at a high level on the properties of the financeability assessment and, in particular, on:

- what we mean by financeability;
- the issues raised by our current approach; and
- a set of principles for embedding financeability into the new regulatory framework.

1.6. The issues covered here are particularly relevant given the backdrop of the economic downturn, the financial crisis and concerns over the availability and pricing of debt and equity in recent times (and in the future) and the development of increasingly complex financial instruments. They are also relevant given concerns about overleveraging of companies. The regulated networks are much lower risk than typical, listed companies, and may therefore be able to support a higher rate of leverage than an average, unregulated company. But concerns have been expressed about whether the existing regulatory framework allows or encourages network companies to become too highly leveraged and whether this could harm consumers' interests.

1.7. In this paper we consider the principles that might sit behind our approach to financeability. These include the cost of capital, depreciation, capitalisation policy, the use of financial ratios and the way in which we calibrate the regulatory package as a whole.

1.8. Ultimately capital markets should be indifferent to the speed of money and /or the rate at which the RAV is repaid as long as the cost of capital is appropriate. But this will not necessarily be true for individual investors. Some investors – such as pension funds – who have long-term liabilities and generate cash in the short run may be attracted to cash negative businesses with growing RAVs. But income investors may not. We recognise that changes to the way in which we approach financeability in the regulatory framework may lead to a change in the sort of equity investors in these businesses and that any transition would need to be managed appropriately.

1.9. There are a number of related methodological issues that are not covered in this paper but that we will consider and consult on for our summer 2010 recommendations to Authority. These include:

² Available here:

<http://www.ofgem.gov.uk/NETWORKS/RPIX20/FORUM/Documents1/RPI-X20%20Working%20Paper%20-%20What%20should%20a%20future%20energy%20regulatory%20framework%20deliver%20-%20Final.pdf>

- cost of capital methodology and the use of 'return on regulated equity' (RoRE)³;
- depreciation methodology; and
- methods for reflecting particular components in assessing financeability, e.g. inflation or tax.

1.10. We welcome views on the principles and practicalities of the ideas presented here, including our straw man model. We also welcome views on how the ideas presented in this paper interact with our other ideas on a future regulatory framework presented in the two parallel consultation papers.

³ Return on Regulatory Equity (RoRE) is a regulatory metric that we have developed to understand the returns available to shareholders in regulated networks from our price control packages. We include the effects of all material incentives, drivers and true-ups, even where adjustments take place in a subsequent price control period. We maintain our notional gearing assumption, though, which may lead our results to differ from what companies achieve in practice.

2. What do we mean by financeability?

Chapter summary

We set out here how we interpret our financing duty, including how we consider implications for existing and future consumers.

Question 1: Do you have views on our ideas on how we might interpret financeability in a new regulatory framework?

2.1. Our principal objective is to protect the interests of existing and future consumers.

2.2. Consistent with this duty, efficient, well-managed network companies should be able to finance and be appropriately remunerated for delivering their activities under the terms of their regulatory settlement as well as those relating to their duties and obligations with respect to the provision of reliable, secure and safe networks. We consider that efficient operation includes what activities a network company does and how it carries them out as well as the corporate and financial structures it chooses.

2.3. It is also in present and future consumers' interests that the regulatory framework does not provide excess returns, reward inefficiency or effectively 'bail out' a network company that has encountered financial difficulty as a result of its own actions (or inaction); for example because of an inappropriate financial structure or poor management. To do so would weaken or even remove the disciplines that capital markets place on all companies, reducing or removing the effectiveness of the incentives we place on network companies under the regulatory regime to the detriment of consumers. The primary responsibility for the financial integrity of a network company lies firmly with that company's management and owners.

2.4. This is fully consistent with our duty *'to have regard to the need to secure that licence holders are able to finance the activities which are the subject of obligations on them'*.

2.5. Where a network company does face financial distress as a result of its own action or inaction, there are provisions in place to protect consumers. These are set out in our guidance document on our arrangements for dealing with network financial distress and include, in extremis, arrangements for special administration.⁴

2.6. A key part of the current regulatory framework is to make sure that the revenues, profits and cash flows available to efficient network companies are such that they can secure financing in a timely way and at a reasonable cost to meet the efficient costs of delivering on their regulatory obligations.

⁴ Available here:

[http://www.ofgem.gov.uk/Networks/Policy/Documents1/GUIDANCE%20DOC%20\(DECISION%20DOC\)%20-%20FINAL.pdf](http://www.ofgem.gov.uk/Networks/Policy/Documents1/GUIDANCE%20DOC%20(DECISION%20DOC)%20-%20FINAL.pdf)

2.7. We think that this definition remains relevant for any future regulatory framework.

2.8. Within this definition, there is then a question for us about how to balance the interests of existing and future consumers. Given the long asset lives of the networks, we have always had to make judgements about how much of the investment cost should be paid for by today's consumers and how much by future consumers. However, there is increasing uncertainty about the useful life of network assets. This means that this judgement is becoming more complex for both companies and the regulator. In the case of gas, this uncertainty is for two reasons: Uncertainties around future global gas demand and supply (the UK currently has very high per capita gas consumption compared to other countries because of the proximity of the North Sea but supplies from the North Sea are now in steep decline) and, perhaps more significantly, the need to move to a low carbon economy which may require the phasing out of gas in domestic heating (which accounts for a significant proportion of both flows across the network and the UK's CO2 emissions).

2.9. For electricity transmission, while assets can have lives of forty years and beyond, the new generation technologies that they are built to serve may not. For example, the estimated life of offshore wind turbines is only 20 years because of the harsh conditions they face. Therefore, consideration of the appropriate asset life for the transmission infrastructure needs to take into account the likelihood of the turbines being replaced or that new technologies might emerge over the next twenty years.

2.10. We have not, to date, set out clear principles for how we make judgements on balancing current and future consumer interests, for example in setting depreciation policies. As part of RPI-X@20, we are considering whether there is merit in establishing a set of principles.

3. The current approach to financeability

Chapter summary

We set out here an overview of how we currently embed our financing duty in the regulatory framework, including interactions with other aspects of the framework.

Question 1: Do you have views on our overview of how financing is considered and assessed in the current regulatory frameworks? Are there other aspects of the current approach that we should be considering?

3.1. Our current approach to embedding our financing duty in the regulatory framework can be summarised as setting price controls such that an efficient, well run company should be able to:

- Earn a return on its regulatory asset value (RAV) that is at least equal to our estimate of the cost of capital for that class of network, and
- Raise any financing (debt or equity) from the capital markets readily and on reasonable terms and thereby avoid passing unnecessary costs to consumers.

3.2. The current regulatory frameworks provide companies with an allowed return on their RAVs that is intended to reflect the cost of capital of a notional efficient network company⁵. To date, this allowed return is set at the same level for all companies within the same class/sector (e.g. electricity distribution).

3.3. This cost of capital is then “sense checked” by assessing whether certain financial ratios that result for a notional efficient company⁶ are consistent with a those typically sought by capital markets/rating agencies to achieve a comfortable investment grade credit rating. We apply judgement in making this financeability assessment. We have not required that our notional financial model should meet pre-specified target values for defined ratios in all years.

3.4. The regulatory settlement should therefore provide a financeable package. In the event that a licensee has concerns, it may decide not to agree to final proposals. If a licensee does not agree, the Authority can refer the matter to the Competition Commission (CC).

3.5. Companies can also make an application to have their price control ‘disapplied’, or effectively reopened⁷ during a price control period. We would expect this to happen if there was a significant, external shock outside of the company’s control

⁵ An efficient company is defined as one that is delivering an acceptable level of performance and service and meeting all of its statutory and licence obligations at an efficient level of costs.

⁶ Historically, we have tended to focus on funds from operations (FFO)/interest, retained cash flow (RCF)/debt, and debt/RAV.

⁷ We have also included in DPCR5 a number of specific reopeners where Network Operators apply to recover the cost of meeting new legislation (e.g. Traffic Management Act and the Electricity Safety, Quality and Continuity Regulations 2002)

and/or that was not foreseen at the time the control was set.⁸ To date, no company has made such an application. However, we have effectively reopened or reset controls for the transmission companies on two occasions to fund a number of specific network enhancement projects⁹.

3.6. A company's cash flows, and therefore modelled financial ratios, also depend on other components of the regulatory settlement; in particular the depreciation profile and the capitalisation policy (i.e. the rules for adding expenditure to the RAV).

3.7. To date, we have not provided 'financeability uplifts', i.e. additional cashflows, in any of our price controls to companies where financial ratios fall short of those deemed to be required for a comfortable investment grade credit rating. However, we have put in place other measures that have a similar effect. In particular, we have tilted the depreciation profile in both electricity and gas price controls. This approach is elaborated on below. We also allow 50% of the cost of gas distribution mains replacement (a requirement put in place by the Health and Safety Executive) to be recovered as an operating expenditure.

Capitalisation policy and equalising incentives

3.8. The RAV reflects the value of network assets that must be remunerated. These assets do not have any value to customers on their own. Customers value the network services that the assets in the RAV are used to deliver. To deliver these network services, companies have operating costs associated with, for example, the staff and systems needed to maintain and operate the networks. In this broader context, distinctions between operating and capital expenditure can be blurred.

3.9. The rules for expensing expenditure and recovering it from customers as it is incurred versus adding it to the RAV (i.e. the capitalisation policy) impacts on the 'speed of money'¹⁰. 'Fast' money is expenditure recovered in the year it is incurred. 'Slow money' is expenditure recovered over a longer period (with an allowed rate of return) through the RAV. The decision has historically been driven by whether the expenditure is deemed to be capital expenditure (capex, added to RAV) or operating expenditure (opex, recovered in year of expenditure).

3.10. We discuss in our Emerging Thinking consultation paper, and our supporting paper 'Incentivising efficient long-term delivery of desired outcomes', how we could provide network companies with incentives to deliver efficiently in a new regulatory

⁸ The indicative criteria the Authority would have regard to in considering whether to re-open are set out in our Guidance Document 'Arrangements for responding in the event that an energy network company experiences deteriorating financial health':

<http://www.ofgem.gov.uk/Networks/Policy/Documents1/GUIDANCE%20DOCUMENT%20-%20FINAL%20OCT%2009.pdf>

⁹ (i) Transmission Investment for Renewable Generation (TIRG) - TIRG provides funding to connect a large volume of renewable generation that was not forecast at the time that the relevant price controls were set for the transmission licensees and (ii) Transmission Increased Incentives (TII) - provides funding for transmission companies to anticipate future demand from renewable generation by building connections in advance of their requirement.

¹⁰ In the context of DPCR5, we have used the term 'speed of money' to refer only to capitalisation policy. Here we use it in a wider context.

framework. This includes proposals to have equal incentives for different types of expenditure. In DPCR5, we introduced a mechanism that does much to remove the distortions in incentives between capital and operating expenditure¹¹. As part of this, in DPCR5, future additions to the RAV will be determined as a fixed percentage of all costs excluding business support, non-operational capex and pension deficit repair costs. The level of capitalisation (around 85%) results in a similar proportion of costs being added to the RAV, on average, as that capitalised in DPCR4. Costs that are not capitalised will be funded in the year of expenditure. However, we have not yet established clear principles for determining what the appropriate capitalisation rate (or percentage) for the level of capitalisation should be.

3.11. Although this mechanism is not aimed at financeability, it does have implications for financeability. In particular, it has the effect of fixing the 'speed of money' for all DNOs, directly impacting some company cash flow ratios.

3.12. In gas distribution, the capitalisation policy is affected by the significant gas mains replacement programme. This replacement expenditure (repex) is to meet HSE requirements for all iron mains within 30 metres of a domestic property to be replaced within 30 years. We allowed the gas distribution networks more than £700m for this work in the current price control period. This replacement expenditure benefits present and future consumers as the new pipelines will have asset lives of up to 60 years. But half of this expenditure enters the RAV, while the other half is expensed. This means that present consumers fund the majority of the costs of mains replacement.

Depreciation

3.13. The rate at which the RAV is depreciated has significant implications for the cash flows a company receives.

3.14. In electricity distribution, the depreciation profile has been tilted by reducing assumed asset lives so that revenues are advanced. We have done this in a way that is neutral to consumers in net present value terms but brings cash flows forward, meaning that a greater burden is placed on present rather than future consumers.

3.15. DPCR4 was a case in point. In essence, the assumed average asset life was reduced to around 20 years for assets that are likely to last on average at least 40 years with an acceleration of depreciation over 15 years for expenditure already incurred. This was done to overcome the so called 'cliff face' issue¹². This accelerated depreciation profile has been maintained for DPCR5.

¹¹See, for example, chapter 2 in http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/DPCR5/Documents1/FP_1_Core%20document%20SS%20FINAL.pdf

¹² Companies faced a large reduction in their depreciation allowance at the point that their vesting assets (i.e. the assets held at privatisation) became fully depreciated.

3.16. Maintaining this policy in DPCR5 significantly boosts the cash revenues to DNOs in the DPCR5 control period.

3.17. In electricity transmission there was a similar 'cliff face' issue which was dealt with in a similar manner, although with varying periods (15-50 years) of depreciation.

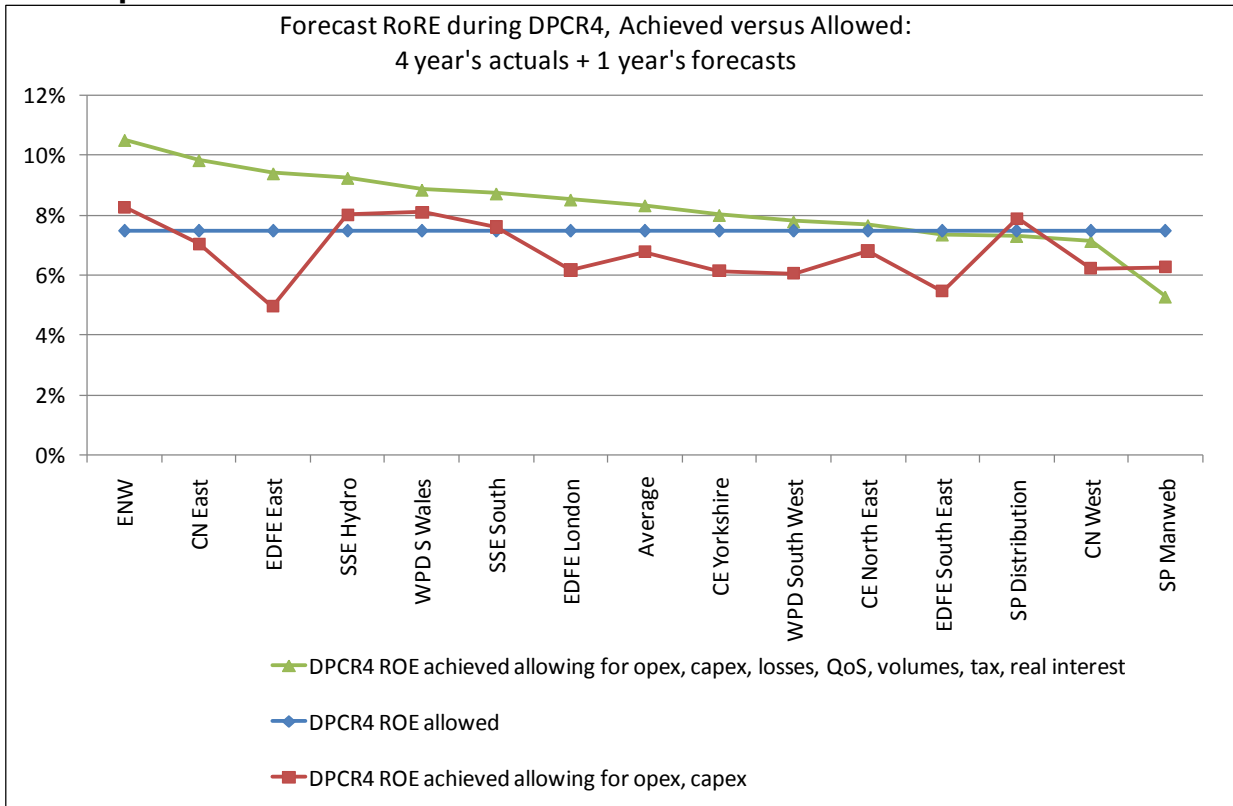
Calibrating the rate of return

3.18. Actual shareholder returns in a network company shareholders under a given price control will differ from company to company. They will vary widely from the return on equity assumption factored into the allowed return embedded in the price control. This variation is driven by a number of factors including: whether the company out (or under) performs the cost allowances, the company's actual financial structure, its performance against the various incentive mechanisms in the control. We try to set the controls so that the shareholders of the most efficient, best performing companies receive the highest returns while those of underperforming companies should receive the lowest, and generally receive returns below those assumed in the settlement.

3.19. As part of DPCR5, we have developed a measure of the return on regulatory equity (RoRE) and have been monitoring DNO performance in the current price control period (DPCR4 period). As illustrated in figure 1, this shows that in practice DNO earnings have varied significantly from the DPCR4 assumed return on equity, with the majority of DNOs earning substantially in excess of the assumed return. Our analysis also suggests that it is not always those DNOs that are the best performing – measured by their relative efficiency, network reliability and customer service – that have earned the highest returns.¹³

¹³ See, for example, chapter 4 in our recent final proposals for electricity distribution price controls: http://www.ofgem.gov.uk/Networks/ElecDist/PriceCtrls/DPCR5/Documents1/FP_1_Core%20document%20SS%20FINAL.pdf

Figure 1: RoRE analysis for electricity distribution companies for current control period



3.20. In DPCR5 we took a more holistic view of all elements of the price control settlement in order to ensure that overall it provides a fair balance of risk and reward for customers and DNO shareholders. To do this, we used RoRE analysis to understand and calibrate the full range of factors that could impact on shareholder returns over the price control period, including:

- Likely performance against our cost baselines;
- Likely performance against our allowed return, including as a result of companies’ decisions on gearing;
- The ability for DNOs to earn additional revenues via our incentive packages (e.g. the losses incentive); and
- DNOs’ exposure to changes in corporate taxation and payments under the guaranteed standards.

3.21. This should mean that those DNOs earning the greatest returns for shareholders over the period are those that have performed best for consumers. Conversely, those that underperform the regulatory settlement should earn returns below those assumed in the settlement.

4. Issues arising with the current approach

Chapter summary

We set out here a range of potential advantages and disadvantages of our current approach to embedding our financing duty in the regulatory framework.

Question 1: Do you have views on our Emerging Thinking assessment of the potential issues with our current approach to embedding our financing duty in the regulatory framework?

Question 2: Is there merit in determining a set of clear and transparent principles that guide our judgements on financeability and related policy issues for price controls?

Question 3: How should we strike an appropriate balance between the interests of current and future consumers in determining the approach to depreciation (and assumed asset lives) and capitalisation? What are the potential implications of changing our approach on asset lives?

Question 4: How much weight should we place on ensuring that aggregate revenues reflect the economic costs of running the network to expose consumers to signals about the cost of providing network services?

Question 5: Does the approach taken in DPCR5 of using RoRE analysis to calibrate the regulatory package as a whole remain appropriate going forward?

Question 6: Is there merit in providing differentiated allowed rates of return for companies within a given class/sector?

Question 7: Are there other issues with the current approach that we should be considering?

4.1. Our existing approach to financeability has worked well in allowing companies to finance their activities and invest substantially in their networks. As discussed in our February supporting paper on 'Performance of energy networks under RPI-X'¹⁴ capital investment in the electricity networks is higher on average than the period immediately prior to privatisation. There has also been significant investment in the gas distribution and transmission networks, including the recent programme to replace cast iron mains. The network companies have been able to secure sufficient financing on reasonable terms for this investment and we have been able to lower the allowed cost of capital progressively over successive price control periods reflecting, delivering real and significant benefits to consumers.

4.2. Our approach to financeability has contributed to a significant reduction in the allowed rate of return over the last 20 years, which has reduced the cost of financing the RAV (existing investments) and financing new investment, thus benefiting consumers. The evolution of rates of return allowed in energy network price controls is illustrated in figure 2.

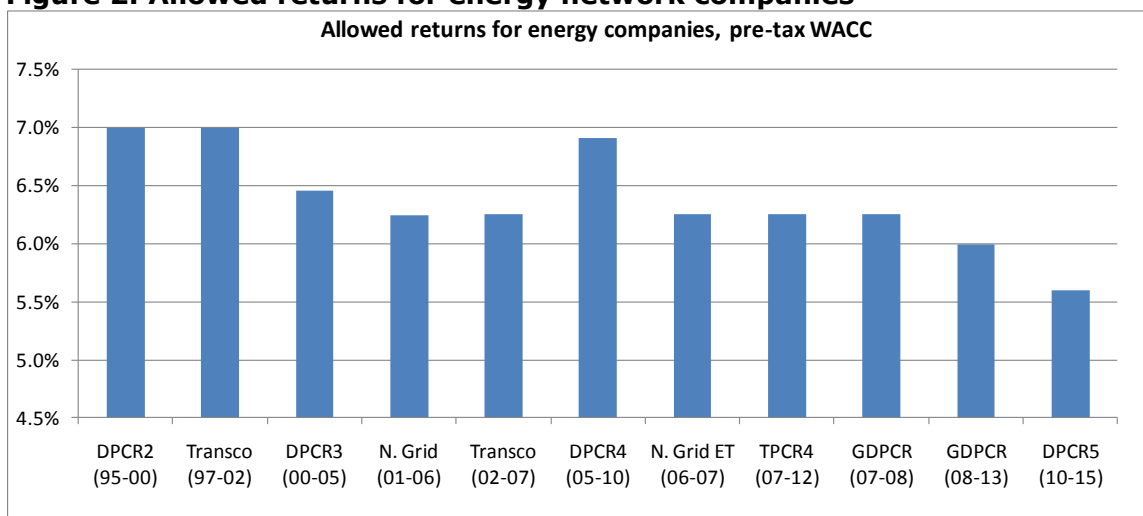
¹⁴ For details see Chapter 4:

http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/Performance%20of%20the%20Energy%20Networks%20under%20RPI-X%20FINAL_FINAL.pdf

4.3. Further, no network company has been through energy administration and network companies have continued to be able to access finance on reasonable terms throughout the recent credit crunch.

4.4. Our duties, in particular the specific inclusion of the ‘financing duty’, together with the companies’ ability not to agree to final proposals and the power open to the Authority to refer a regulatory package to the CC, provide companies with certainty that their regulated activities should be financeable provided they operate economically and efficiently. The ability to request a dis-application of the price control mid period also provides comfort that financeability concerns can be addressed where the company concerned has operated economically and efficiently.

Figure 2: Allowed returns for energy network companies



4.5. The RoRE analysis conducted for DPCR5 provides a useful tool for calibrating the overall scope for earning higher or lower returns than those assumed in the settlement and helping to ensure that these correlate with the actual performance of the company from a shareholder perspective.

The main issues with our current approach

4.6. Our existing approach does raise a number of issues. These are discussed here.

Transparency and predictability

4.7. The framework for embedding financeability within our price controls is common across the four network sectors. However, we have not established a clear set of principles that is transparent to investors or that enables us to take consistent decisions on its detailed application from one price control review to another in a predictable way. As a result, the application of the framework – particularly the way in which we balance our decisions on the allowed rate of return, depreciation,

capitalisation policy and the calibration of returns - varies across sectors and across time.

Balancing the interests of current and future consumers

4.8. Our duties mean that we need to strike an appropriate balance between the interests of present and future consumers.

4.9. Our approach of shortening the assumed asset lives for the DNOs and expensing 50% of gas mains replacement for the GDNs are largely to ensure that modelled cash flow ratios are consistent with those required for a comfortable investment grade credit rating. However, arguably, these measures mean that current consumers may be bearing too much of the cost of assets that have useful lives well beyond those assumed.

4.10. Conversely, there is a question about how we handle the uncertainty regarding the long-term use of parts of the networks, e.g. new investment in the gas distribution network and connections to off-shore wind farms. One option for dealing with this would be to shorten the assumed asset lives, for example by bringing them into line with the current best view of the life of the assets connected to them and/or the demand for the services they provide (such as space heating). Faced with uncertainty, it may be appropriate for current consumers to bear a greater proportion of investment costs than future consumers where the useful life of investments is below the underlying asset's expected physical life.

4.11. The depreciation methodology used also has implications for the balance between current and future consumer interests. The current regulatory frameworks depreciate the RAV on a straight line basis¹⁵. This is consistent with accounting convention, but other approaches may be fairer in balancing current and future consumers' interests. The methodology used is neutral in net present value (NPV) terms from the companies' perspective. However, it is not necessarily so for consumers, who may have a different discount rate, and it does have implications for the profile of allowed revenues and therefore for financeability. In particular, under a straight line approach, allowed revenues are higher initially than they would be under an annuity approach¹⁶, but then fall over time. Depreciating on an annuity basis has the effect of smoothing the charges over time and spreading costs more equally across current and future consumers.

Price signals

4.12. If network users and consumers are to make appropriate decisions, for example on the location of new generation or on investment in energy efficiency

¹⁵ A method of calculating the depreciation of an asset which assumes the asset will lose an equal amount of value each year. The annual depreciation is calculated by subtracting the salvage value of the asset from the purchase price, and then dividing this number by the estimated useful life of the asset.

¹⁶ This method entails first obtaining the Internal Rate of Return (IRR) of the asset's cash flows. The asset's beginning book value is multiplied by the IRR and this amount is subtracted from the cash flow for the period to determine the periodic depreciation charge.

measures, it is important that they face appropriate price signals. The aggregate level of charges that can be collected by a network company is determined by its allowed revenues, which then feed through into the absolute level of charges. We discuss the interactions between charging and price control incentives further in our main Emerging Thinking consultation paper and in our supporting paper on 'Incentivising efficient long-term delivery of desired outcomes'.

4.13. The depreciation allowance feeding into aggregate revenues should reflect the expected useful life of the asset base, taking into account the uncertainties surrounding this. However, as companies were sold at privatisation at below the replacement cost of their assets, accelerating depreciation may be necessary to avoid pricing well below true network costs and therefore sending inappropriate price signals to customers about the true cost of providing different network services over the longer term. Whilst pre-vesting assets are now fully depreciated in electricity distribution and transmission¹⁷, RAVs in these sectors have been affected by the decision to accelerate depreciation. In gas distribution and transmission the RAVs are still affected by the privatisation discount on pre-vesting assets. In practice, the charging models based on models of forward looking incremental costs often require an uplift factor to be used to allow recovery of price controlled revenues. It is therefore an empirical question of whether a change in the depreciation allowances would reduce the cost reflectivity of charges.

Incentives

4.14. Accelerating depreciation boosts companies' cash flows in the near term. Where this results in cash flow ratios significantly above those required for a comfortable investment grade credit rating, companies may be able to absorb significant underperformance of the regulatory targets before financeability issues arise. This will weaken the incentives placed upon them by the regulatory regime.

Reliance on cash flow ratios

4.15. As noted above, we typically sense check our regulatory settlements against the financial ratios assumed by credit rating agencies to be consistent with comfortable investment grade credit ratings. Where modelled cash flow ratios have fallen short of those required during the price control period, we have tended to advance cash flows by tilting depreciation as set out above.

4.16. However, given the risk profile of regulated companies and the recent difficulties that credit rating agencies have had in anticipating financial distress, there is a real question as to whether this is necessary or appropriate.

4.17. The risk profile of regulated utilities is very different to that of unregulated companies. In particular, their revenues are secure in the long term and the scope for revenue (and cost) volatility is much more limited than for unregulated

¹⁷ Except at Scottish Hydro Electric Transmission where pre-vesting assets will be fully depreciated in March 2012

companies. Energy network companies also face less revenue volatility than some other regulated companies such as airports. We have, for example, removed revenue drivers that directly link revenues to throughput on the system but in other regulated sectors revenues are often still linked to measures of demand.

4.18. . There may therefore be a rationale for placing less, or no, emphasis on short-term cash flow ratios and the levels assumed by the ratings agencies and either ignoring ratios or considering a set of ratios that more accurately captures the particular features of energy networks and considering the level of these over the long term rather than a five-year price control period.

4.19. The argument against this, which companies have already raised, is that the premium that the financial markets may demand to fund companies that are cash flow negative for a number of years may be higher, to the possible detriment of consumers. This is an empirical issue, which we will investigate.

4.20. Recent experience – both generally on the back of the credit crisis and in the energy sector, e.g. Enron - has also shown that credit rating agencies are not infallible. This raises the legitimate question as to how much emphasis we place on them. Indeed, the FSA is asking similar questions in the context of financial regulation.

Should we differentiate the cost of capital?

4.21. As noted above, we have, to date, set the cost of capital at a common level for all companies within a particular network sector. However, it may be that different networks within a sector do face different risks. For example where companies operate in very different topographical areas (e.g. large urban areas versus small rural ones) or operate on a very different scale, as in the case of the electricity transmission companies. This may justify setting different allowed returns for companies within a particular sector.

4.22. Further, in our main Emerging Thinking consultation paper and our supporting paper on 'Incentivising efficiency long-term delivery of desired outcomes', we set out our idea on how we might treat network companies in a sector differently at future price reviews. Were we to differentiate between companies in terms of the regulatory process and /or the balance of risks and rewards provided by the settlement, there may be an additional rationale for setting correspondingly differentiated allowed returns would be increased. For example:

- Should we decide to take a proportionate regulatory approach whereby the degree of regulatory scrutiny is dependent on a company's track record for planning and delivering efficiently, those companies that have established such a track record might be able to secure a small premium on their allowed return, say of the order of 5-10bp.
- Should we decide to offer companies options on the balance of risk and reward provided in a settlement, there would need to be correspondingly differentiated allowed returns associated with these.

Questions for RPI-X@20

4.23. These issues raise a number of questions that we are exploring as part of RPI-X@20. These includes but are not limited to the following:

- Is there merit in determining a set of clear and transparent principles that guide our judgements on financeability and related policy issues for price controls?
- How should we strike an appropriate balance between the interests of current and future consumers in determining the appropriate assumed asset life behind the depreciation profile?
- How should the views of future consumers be taken into account?
- How should these views be embedded in our approach to capitalisation and depreciation?
- If balancing the interests of current and future consumers implies longer assumed asset lives, what does this mean for the financeability assessment (particularly if cash flow ratios in the short term are below those assumed by the rating agencies to be consistent with investment grade credit ratings)?
- If depreciation is accelerated, what happens when the RAV is largely depreciated but the assets still remain useful?
- How much weight should be placed on ensuring that aggregate revenues reflect the economic cost of running the network so as to ensure that consumers and users face appropriate price signals?
- Does the approach taken in DPCR5 of using RoRE analysis to calibrate the regulatory package as a whole remain appropriate going forward?
- Is there merit in providing differentiated allowed rates of return for companies within a given sector?

5. Embedding our financing duty in a new regulatory framework

Chapter summary

We present, for consultation, a set of straw man principles on how we might embed our financing duty in a future regulatory framework.

Question 1: Do you have views on our suggested straw man principles for embedding our financing duty in a new regulatory framework?

Question 2: Are there other issues and models that we should be considering for our summer 2010 recommendations?

5.1. Any future regulatory framework will need, consistent with our financing duty, to continue to enable networks that are operated efficiently to finance their activities. We consider that having regard to this approach will, amongst other matters, be best calculated to further our principal objective to protect existing and future consumers.

5.2. As part of RPI-X@20, we want to consider whether we can determine a set of clear and transparent principles that appropriately balance the interests of current and future consumers and guide our judgements on financeability and related policy issues for future price controls.

5.3. In this section, we set out a 'straw man' set of principles for consultation. This is designed to encourage debate, and therefore does not constitute a proposal at this stage. We think that the straw man is consistent with our proposals on a potential new regulatory framework set out in our main Emerging Thinking consultation document.

5.4. We welcome views on the straw man and alternative ideas on how to embed our financing duty in a new regulatory framework.

Straw man principles

5.5. We set out here straw man ideas for consultation on the principles to consider when embedding our financeability duty into a future regulatory framework. We break the straw man down into different aspects of financeability.

Allowed return and depreciation

5.6. Under the straw man:

- The allowed return would be set to reflect the riskiness of the network company's revenue and cost streams, based on that company operating in an economic and efficient manner and assuming a notional capital structure. The allowed return

could vary across companies within a sector depending on the risk profile of the particular company, which is driven by factors such as required investment and the incentive structure provided by the regulatory regime;

- The depreciation allowance would be set to reflect the average expected useful life of the asset base. This means assumed asset lives would be shorter than their physical lives where there is uncertainty about long-term utilisation. For example, where climate change and /or resource availability considerations mean that it is difficult to justify a business case for the full expected physical life of the asset, the expected life used could be shortened in line with the foreseeable business need; and
- We would continue to assess the expected financial health of an efficient network company under a proposed price control. As part of this, we would specify what tests should be used, potentially moving away from a focus on those used by credit rating agencies. We would rule out the use of essentially arbitrary adjustments (e.g. accelerated depreciation) to the price control to ensure financeability.

5.7. We recognise that assessing the appropriate levels for each of the above is not straightforward and that the relevant asset life may vary between sectors. We will explore these issues in our future work.

5.8. If both the allowed return and depreciation allowance are set appropriately, the notional company should be financeable.

5.9. The actual network company may not, however, be financeable even if these parameters have been set appropriately. This could be for a number of reasons, including that the company:

- Has chosen a significantly different financial structure;
- Is operating inefficiently; and / or
- Faces a mismatch in its cash flows, which means that its available revenues fall short of the necessary financing costs at a particular point in time, though not on average over time.

5.10. In each case, the issue is at least partially under the regulated company's control, and fully in the case of the first two.

5.11. In the third instance, sense checking the modelled cash flow ratios for the notional business would likely reveal that the ratios fell short of those required by rating agencies to support comfortable investment grade credit ratings in the short term but not on average over time. Given the negligible revenue risk faced by regulated networks and the limited cost risk, this should not raise financeability issues.

5.12. Under the straw man, no adjustment to revenues would be made to compensate where the actual company faced financing difficulties associated with one or more of the above reasons.

5.13. A company may also encounter financing difficulties as a result of changes in financial market conditions – the cost and / or availability of finance. However, these are considered to be issues associated with setting and updating the allowed return rather than the way in which we consider financeability per se. As such we will consider them in greater detail in future work.

5.14. We recognise that a move to such an approach may have a significant impact on network charges and therefore affordability, particularly where there is a marked divergence between the asset life embedded in the depreciation profile used currently and that applied by the approach set out above. However, the precise effect would depend on other elements of any regulatory settlement. Where the impact is significant we would need to consider whether a phased approach to making any changes is appropriate.

Capitalisation policy and equalising incentives

5.15. As set out in our main Emerging Thinking consultation paper and our supporting paper on 'Incentivising efficient long-term delivery of our desired outcomes', we think that the future regulatory framework should not create distortions in network companies' decisions about whether to incur capital or operating costs.

5.16. As we work up our detailed approach to the design of incentives, we will consider whether the approach to equalising incentives used for DPCR5 remains appropriate for the future and, if so, whether appropriate principles for determining the speed of money can be determined.

5.17. One option could be to retain the broad approach adopted in DPCR5 but to establish principles for determining the appropriate capitalisation rate. The appropriate rate could be very different across sectors or for different companies within a sector, for example depending on the rate of investment required in the sector. This may have implications for the appropriate allowed return.

Calibrating returns

5.18. We would continue to develop the RoRE tool developed for DPCR5 to understand and calibrate the risk profile of the overall package and the scope for earning higher or lower returns than those assumed in the settlement. We would seek to ensure that the returns realised by companies are closely correlated with the delivery of desired outcomes that are valued by consumers, both present and future.

6. Further issues and next steps

Chapter summary

We set out the issues that we will need to consider further as we develop the detail of a new regulatory framework and the financing duty embedded within it.

Question 1: Do you have views on the issues that we will need to consider as we develop the detail on financial issues in a new regulatory framework for our summer 2010 recommendations?

6.1. Under our straw man, the allowed return would reflect the riskiness of a company's cash flows. We recognise that assessing this is not straightforward. The methodology for this assessment is not a subject of this paper. However, it is one that we will revisit in depth for our summer 2010 recommendations to Authority. In particular, we will need to consider:

- Whether changes to the regulatory framework proposed under RPI-X@20 change the risks facing networks companies and, if so, how this impacts the cost of capital;
- Whether any change in the level of risk facing network companies is sufficient to mean that a company might need to consider changing its investor base and, if so, the transition arrangements necessary;
- Whether it is appropriate to retain our approach of setting a single allowed return for all companies within a sector;
- Whether it is appropriate to retain the weighted average cost of capital (WACC) approach to setting allowed returns or whether there is merit in alternative methodologies such as a split cost of capital¹⁸.
- Whether there is merit in indexing the allowed return or some part of it;
- Whether there is merit in locking in the allowed return for some investments for the life of those investments;
- Whether the capital asset pricing model (CAPM) framework that currently frames our assessment of the cost of equity remains appropriate;
- Whether our approach to gearing remains appropriate, particularly in light of the highly geared structures observable in the regulated utility sector;
- Alternative methods for equalising the incentives between capital and operating expenditure; and
- How revenues might be profiled over time.

6.2. In assessing the appropriate depreciation profile, we will also need to consider:

- The appropriate assumed average useful economic life for each sector, including whether there are elements of the asset base that should be subject to an alternative depreciation profile;
- Whether the straight line approach to depreciation remains appropriate; and
- The impact that a step change to a depreciation profile that reflects economic asset lives would have on consumer bills and therefore the implications for transition.

¹⁸ See, for example, <http://www.dieterhelm.co.uk/node/476>

Next steps

6.3. This is an important strand of work within the review. As the work in other areas progresses we will continue to consider implications on the financeability assessment.

6.4. We are interested to understand from stakeholders whether they think the straw man approach set out above is workable in practice.

Appendices

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Appendix 1 - Consultation response and questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.2. Responses should be received by 9th April 2010 and should be sent to:

RPI-X@20 consultation - Local Grids and RPI-X@20
Ofgem
2nd floor
9 Millbank
London
SW1P 3GE
Email: RPI-X20@ofgem.gov.uk

1.3. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on our website www.ofgem.gov.uk. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.4. Respondents may request that their response is kept confidential. Respondents who wish for their responses to remain confidential should clearly mark them to this effect and include the reasons for confidentiality. Confidentiality disclaimers within emails will not be taken to represent a request for confidentiality with respect to the response itself. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. We will publish a summary of responses on the website and we will consider comments received during the course of RPI-X@20. Any questions on this document should, in the first instance, be directed to:

Peter Trafford, Head of Regulatory Finance or
Scott Phillips, Manager Regulatory Finance
Ofgem
2nd floor
9 Millbank
London
SW1P 3GE
Email: Peter.Trafford@ofgem.gov.uk or scott.phillips@ofgem.gov.uk

CHAPTER: Two

Question 1: Do you have views on our ideas on how we might interpret financeability in a new regulatory framework?

CHAPTER: Three

Question 1: Do you have views on our overview of how financing is considered and assessed in the current regulatory frameworks? Are there other aspects of the current approach that we should be considering?

CHAPTER: Four

Question 1: Do you have views on our Emerging Thinking assessment of the potential issues with our current approach to embedding our financing duty in the regulatory framework?

Question 2: Is there merit in determining a set of clear and transparent principles that guide our judgements on financeability and related policy issues for price controls?

Question 3: How should we strike an appropriate balance between the interests of current and future consumers in determining the approach to depreciation (and assumed asset lives) and capitalisation? What are the potential implications of changing our approach on asset lives?

Question 4: How much weight should be placed on ensuring that aggregate revenues reflect the economic cost of running the network so as to ensure that consumers and users face appropriate price signals?

Question 5: Does the approach taken in DPCR5 of using RoRE analysis to calibrate the regulatory package as a whole remain appropriate going forward?

Question 6: Is there merit in providing differentiated allowed rates of return for companies within a given sector?

Question 7: Are there other issues with the current approach that we should be considering?

CHAPTER: Five

Question 1: Do you have views on our suggested straw men principles for embedding our financing duty in a new regulatory framework?

Question 2: Are there other issues and models that we should be considering for our summer 2010 recommendations?

CHAPTER: Six

Question 1: Do you have views on the issues that we will need to consider as we develop the detail on financial issues in a new regulatory framework for our summer 2010 recommendations?

Appendix 2 – The Authority’s powers and duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority (“the Authority”), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority’s powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.¹⁹

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly²⁰.

1.4. The Authority’s principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- the need to secure that all reasonable demands for electricity are met;
- the need to secure that licence holders are able to finance the activities which are the subject of obligations on them²¹;
- the need to contribute to the achievement of sustainable development; and
- the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.²²

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

¹⁹ entitled “Gas Supply” and “Electricity Supply” respectively.

²⁰ However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.

²¹ under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.

²² The Authority may have regard to other descriptions of consumers.

- promote efficiency and economy on the part of those licensed²³ under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and
- secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- the effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation²⁴ and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

²³ or persons authorised by exemptions to carry on any activity.

²⁴ Council Regulation (EC) 1/2003

Appendix 3 - Associated documents

Parallel consultation papers and supporting papers

Parallel consultation papers

- Emerging Thinking
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/emerging%20thinking.pdf>
- ***We will also shortly be publishing a separate consultation on 'Third party right to challenge our final price control decisions'.***

Supporting papers:

- Longer-term price controls, Reckon LLP (2010)
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/reckon%20lt%20controls.pdf>
- Enhanced engagement
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20engagement.pdf>
- Incentivising efficient longer-term delivery of desired outcomes
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20ong%20term.pdf>
- A specific innovation stimulus
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20innovation.pdf>
- Greater role for competition in delivery
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20competition.pdf>
- Simplicity of the framework: issues to consider
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20simplicity.pdf>
- Alternative ex ante and ex post regulatory frameworks
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20alternatives.pdf>
- Update on domestic and EU policy context
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/et%20policy.pdf>
- Glossary
<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/glossary.pdf>

Previously published papers

RPI-X@20 February consultation document and supporting papers

- Regulating energy networks for the future: RPI-X@20 Principles, Process and Issues
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=1&refer=Networks/rpix20/publications/CD>

RPI-X@20 working papers

- Regulating energy networks for the future: RPI-X@20, Delivering outcomes: Consumer engagement in the regulatory process
http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/Role%20of%20consumers%20working%20paper_FINAL.pdf
- Regulating energy networks for the future: RPI-X@20, Delivering desired outcomes: Who decides what energy networks of the future look like?
<http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/rpix20%20who%20decides%20what%20energy%20networks%20of%20the%20future%20look%20like%20FINAL.pdf>
- Regulating energy networks for the future: RPI-X@20, Innovation in energy networks: Is more needed and how can this be stimulated?
http://www.ofgem.gov.uk/Networks/rpix20/forum/innovation/Documents1/RPI-X20%20Innovation%20Working%20Paper_FINAL%20DRAFT.pdf
- Regulating energy networks for the future: RPI-X@20, Delivering a sustainable energy sector and value for money - A modified ex ante incentive framework
<http://www.ofgem.gov.uk/Networks/rpix20/forum/for/Documents1/Modified%20ex%20ante%20regulatory%20framework.pdf>
- Regulating energy networks for the future: RPI-X@20, Delivering outcomes: Ensuring the future regulatory framework is adaptable
<http://www.ofgem.gov.uk/Networks/rpix20/forum/do/Documents1/FINAL%20Adaptability%20paper.pdf>
- Regulating energy networks for the future: RPI-X@20, Delivering a sustainable energy sector and value for money - What do we mean by 'efficiency'?
http://www.ofgem.gov.uk/Networks/rpix20/forum/do/Documents1/what%20do%20we%20mean%20by%20efficiency_publish.pdf
- Regulating energy networks for the future: RPI-X@20, Delivering a sustainable energy sector and value for money: enhancing competitive pressures on regulated networks
<http://www.ofgem.gov.uk/Networks/rpix20/forum/cp/Documents1/RPI-X@20%20Working%20Paper%20-%20Enhancing%20competitive%20pressures%20-%20Final.pdf>
- Regulating energy networks for the future: RPI-X@20 - Working paper 1: What should a future regulatory framework for energy networks deliver?
<http://www.ofgem.gov.uk/Networks/rpix20/forum/do/Documents1/RPI-X20%20Working%20Paper%20-%20What%20should%20a%20future%20energy%20regulatory%20framework%20deliver%20-%20Final.pdf>

Consultant reports for RPI-X@20

- Should energy consumers and energy network users have the right to appeal Ofgem price control decisions? LECG (2009)

<http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/Right%20of%20Appeal%20Final.pdf>

- Consumer involvement, ex post regulation and customer appeal mechanisms, response to consultant and contribution documents, Stephen Littlechild (2009)
[http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/Consumer%20involvement%20ex%20post%20consumer%20appeal%2029%20Nov%2009%20\(2\)%20\(2\).pdf](http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/Consumer%20involvement%20ex%20post%20consumer%20appeal%2029%20Nov%2009%20(2)%20(2).pdf)
- RPI-X@20, Technological change in electricity and gas networks, KEMA (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/innovation/Documents1/KEMA%20Technology%20changes%20Final%20Report.pdf>
- The case for ex post regulation of energy networks, LECG (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/for/Documents1/Final%20report%20ex%20post%20regulation.pdf>
- The role of future energy networks, Frontier Economics (2009)
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=Networks/rpix20/forum/for>
- Energy Services Companies – their benefits and implications for regulation and the consumer, Peter Boait (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/cp/Documents1/Ofgem%20RPI-X%20ESCO%20paper%20final.pdf>
- Does Electricity (and Heat) Network Regulation have anything to learn from Fixed Line Telecoms Regulation? Michael Pollitt (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/cp/Documents1/Telecoms%20Pollitt.pdf>
- A review of the rail and water regulatory models – lessons for energy, CEPA (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/lfor/Documents1/Review%20of%20regulation%20in%20rail%20and%20water.pdf>
- New Zealand Gas Industry Regulation – lessons for energy, CEPA (2009)
<http://www.ofgem.gov.uk/Networks/rpix20/forum/lfor/Documents1/NZ%20gas%20regulation.pdf>

RPI-X@20 industry working groups

- RPI-x@20 Consumer Working Group Paper
http://www.ofgem.gov.uk/Networks/rpix20/forum/rocag/Documents1/Consumer%20Working%20Group%20Paper_FINAL.pdf
- RPI-X@20 Working Group Report on Innovation in Energy Networks
<http://www.ofgem.gov.uk/Networks/rpix20/forum/innovation/Documents1/FINAL%20working%20group%20paper%20on%20innovation.pdf>

- RPI-X@20 Finance Working Group Paper
<http://www.ofgem.gov.uk/Networks/rpix20/forum/financing/Documents1/Finance%20WG%20-%20Final%20Final.pdf>
- RPI-X@20 Investment Working Group Paper
<http://www.ofgem.gov.uk/Networks/rpix20/forum/investment/Documents1/Working%20group%20on%20investment%20final%20paper%20public%20version.pdf>

Other sources for RPI-X@20 supporting material

- RPI-X@20 web forum – contains Ofgem, consultant, academic and stakeholder publications and responses to RPI-X@20 related issues.
<http://www.ofgem.gov.uk/Networks/rpix20/forum/Pages/forum.aspx>
- RPI-X@20 workshops
<http://www.ofgem.gov.uk/Networks/rpix20/publications/Presentations/Pages/Presentations.aspx>

Speeches by Alistair Buchanan on RPI-X@20

- Is RPI-X still fit for purpose after 20 years? October 2008
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=8&refer=Media/keyspeeches>
- Ofgem's 'RPI at 20' project, March 2008
<http://www.ofgem.gov.uk/Media/keyspeeches/Documents1/SBGI%20-%206%20MARCH.pdf>

Appendix 4 - Glossary

A glossary of the terms used in our suite of Emerging Thinking papers can be found on our website (<http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/glossary.pdf>).

Appendix 5 - Feedback questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

Andrew MacFaul
Consultation Co-ordinator
Ofgem
9 Millbank
London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk