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RPI-X@20

Regulating Energy Networks for the Future: RPI-X@20 Incentivising efficient long-term delivery of desired outcomes

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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.

In this paper, published in parallel with our main Emerging Thinking consultation document, we provide further detail on the issues that would need to be considered when developing outputs that link to the outcomes that we want network companies to deliver. We also set out our ideas on how network companies could be incentivised to deliver outputs efficiently for the long term. Alongside the general incentive regime we consider ideas on lengthening elements of the price control period.

We welcome comments on the issues discussed in this supporting paper.

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Summary

1. In our Emerging Thinking consultation paper we set out for consultation a potential new regulatory framework that is outcomes led (Chapter 2). We also set out our ideas on how to incentivise efficient long-term delivery (Chapter 4). The main consultation paper attempts to provide an accessible overview of our emerging thinking on a new regulatory framework, for consultation, and is aimed at a wide range of interested parties. Our ideas on 'embedding financeability in a new regulatory framework' are discussed in more detail in a parallel consultation paper. We will also shortly be publishing a related consultation paper on whether we should introduce a third-party right to challenge to our final price control decisions, as some participants in the review have advocated.

2. This is one of a series of technical supporting papers that provide further details on key aspects of the new framework. These supporting papers 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. References for these papers can be found in Appendix 10 of our main Emerging Thinking consultation paper (http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/emerging%20thinking.pdf).

3. The potential new regulatory framework set out in our Emerging Thinking document would encourage energy network companies to:

- play a fuller role in facilitating delivery of a sustainable energy sector; and
- deliver at value for money for existing and future consumers.

3. To deliver these outcomes in the future, a longer term focus is needed. In a new regulatory framework we would focus on delivering outputs associated with these outcomes, rather than primarily on costs. At the same time, we would build on the incentive properties of the existing frameworks to encourage network companies to seek out innovative and efficient long-term delivery solutions.

4. To deliver these outcomes, energy network companies are likely to need to exhibit a number of characteristics that include:

- longer-term thinking (and actions reflecting this);
- taking account of the needs of existing and future consumers, and wider stakeholders, in their long-term plans;
- considering different options for delivery, including infrastructure and non-infrastructure solutions;
- developing new and innovative delivery solutions; and
- thinking through different future scenarios to inform planning.

5. Network companies that plan and operate in this way are likely to deliver outputs consistent with our outcomes and deliver value for money by seeking out

productivity gains that are sustainable over the long term. A new regulatory framework would provide strong incentives to drive this behaviour including real downsides (principally financial) for failing to deliver. We recognise that the strength of financial incentives will need to be consistent with the quality of the output measures and the approach to assessing delivery of outputs. We also recognise the need for both Ofgem and network companies to be flexible to ensure that outputs are adapted over time, to reflect new information where appropriate.

6. This supporting paper looks at the potential different elements of a new regulatory framework that are intended to incentivise efficient long-term delivery:

- focusing on the delivery of outcomes;
- translating desired outcomes into outputs and incentivising delivery of those outputs;
- providing network companies with an opportunity to demonstrate how they intend to deliver outputs and long-term value for consumers in well justified business plans;
- retaining strong incentives for cost efficiency that drive value for money for existing and future consumers but not at the expense of delivery of outputs;
- adopting focused regulatory scrutiny, with potential differential treatment of network companies within a sector, so that regulatory effort is applied in areas where it can add most value for consumers;
- encouraging longer-term thinking, including through decisions on the length of the price control period;
- incentivising network companies to consider the interactions between charging and the wider price control incentives where this facilitates delivery of our desired outcomes; and
- ensuring provisions are in place to manage uncertainty over time.

7. Key elements are summarised in Table 1. These aspects of a new regulatory framework are being presented for consultation. We welcome comments on all ideas presented here. We recognise that the ideas set out here are still at a relatively high level. There is much detailed work to do to develop the framework for our summer 2010 recommendations.

8. These aspects of a new regulatory framework need to be considered alongside our ideas on an additional time-limited innovation stimulus and a greater role for competition in delivery[1]. Together these aspects of a regulatory framework focus on encouraging efficient long-term delivery of our desired outcomes. Interactions with our ideas on embedding financeability into a new regulatory framework also need to be considered[2].

[1] All our supporting papers can be found on our website. A list of weblinks is provided in Appendix 10 of the main Emerging Thinking consultation paper.
[2] See our parallel consultation paper 'Regulating energy networks for the future: RPI-X@20, Embedding financeability in a new regulatory framework'.

9. These aspects of a new regulatory framework are likely to be applicable to all four energy network sectors (electricity transmission, electricity distribution, gas transmission and gas distribution). However, emphasis may be different, in terms of the detailed application and degree of effect. Appendix 6 of our main Emerging Thinking consultation document sets out our initial ideas on how a potential new framework might vary across the four sectors. We will consider the application in each sector, alongside transition arrangements from the existing frameworks, for our summer 2010 recommendations to the Authority (GEMA).

Table 1: Overview of potential framework for efficient long-term delivery

Element	Overview of our ideas
Outputs	Outcomes reflected in outputs which network companies must deliver and can be held accountable for. Output information that can be assessed at price controls would reflect progress against desired outcomes. Outputs both quantitative and qualitative. Material incentives to deliver. Flexibility to enable outputs and incentives to adapt.
Regulatory business plans	Companies provide well-justified business plans that have output delivery at their heart. Plans demonstrate a clear link between outputs and costs. Also demonstrate focus on the long term, an analysis of options available and an awareness of the future needs of stakeholders. Network companies rewarded for well-justified plans.
Determination of baseline revenue in setting price control	Baseline revenue set at price control review in line with the efficient expenditure needed for network companies to deliver agreed outputs. A range of evidence used to determine baseline revenue, with emphasis on minimising the risks of distorting companies' decisions and behaviour.
Incentives on network companies to deliver outputs	The revenues a network company earns linked to its performance in delivering outputs. Failure to deliver outputs would bring material financial downsides to network companies. A range of incentives would be used.
Efficiency incentives	Clear upfront efficiency incentives on the network company to find ways to deliver the required outputs at lower cost. Risk sharing so that both investors and consumers benefit if the network company deliver outputs for less than envisaged and both share the costs if the company spends more. Incentives designed to avoid distorting network companies' decisions between different delivery options (e.g. between capital solutions and operating solutions). Provided outputs are delivered, generally refraining from discretionary adjustments to the company's revenues in light of how much it actually spends.
Longer-term price controls	Option of providing commitment to some aspects of the price control for longer than others, to give network companies clear financial stake in their long-term costs, encouraging innovation and high-quality network planning.
Differential treatment	Transparent framework to accommodate differential treatment of network companies according to their performance over time. Higher returns to better performers on costs, outputs and quality of business plans (as above).
Uncertainty during price control period	Consistent and proportionate approach to use of mechanisms which reduce network companies' exposure to uncertainty.
Charges	Take more account of interaction between price control incentives and charging at price control reviews.
Aligning incentives	Encourage network companies to work with others in sector, and in other sectors, to facilitate delivery of a sustainable energy sector at value for money.

1. Introduction

1.1. RPI-X@20 is Ofgem's detailed review of energy network regulation, enabling us to step back and look to the future on behalf of existing and future consumers. Our Emerging Thinking consultation paper attempts to provide an accessible overview of our emerging thinking on a new regulatory framework, for consultation, and is aimed at a wide range of interested parties. Our ideas on 'embedding financeability in a new regulatory framework' are discussed in more detail in a parallel consultation paper. We will also shortly be publishing a related consultation paper on whether we should introduce a third-party right to challenge to our final price control decisions, as some participants in the review have advocated.

1.2. This is one of a series of technical supporting papers that provide further details on key aspects of the new framework. These supporting papers 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. References for these papers can be found in Appendix 10 of our main Emerging Thinking consultation paper (http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/emerging%20thinking.pdf).

1.3. As set out in our main Emerging Thinking consultation document, a new regulatory framework would encourage energy network companies to:

- play a fuller role in facilitating delivery of a sustainable energy sector; and
- deliver at value for money for existing and future consumers.

1.4. We term these the 'desired outcomes' of the future regulatory framework.

1.5. In this supporting paper we set out how the first outcome could be translated into outputs that the network companies are incentivised to deliver. By outputs we mean a clear understanding of what a network company needs to deliver, incorporating quantitative and qualitative measures.

1.6. In Chapter 2 we explain why an outcomes-led framework would be desirable, we discuss the type and nature of outputs that could be developed and we explain how we could incentivise delivery of outputs in a new regulatory framework.

1.7. In Chapter 3 we explain how outputs could be incorporated in a network company's business plan.

1.8. We explain in Chapters 4 and 5 how the second 'value for money' outcome could be delivered, through an assessment of the expected efficient costs of delivery and through the design of targeted efficiency incentives. These efficiency incentives would be enhanced by other aspects of the framework, namely enabling a greater role for competition in delivery and a time-limited innovation stimulus. These aspects

of the framework are discussed in our supporting papers on 'Greater role for competition in delivery' and 'Specific innovation stimulus'[3].

1.9. Ideas on how the length of the price control might be lengthened are discussed in Chapter 6.

1.10. Incentives to work with others to identify cross-sectoral solutions to delivery of a sustainable energy sector are discussed in Chapter 7.

1.11. The ideas on how to incentivise long-term efficient delivery of our desired outcomes will develop as we assess responses to the consultation and work up the detail of the future regulatory framework for our summer 2010 recommendations to the Authority (GEMA). If the ideas presented here are incorporated in a new regulatory framework we expect that, but for a limited number of areas, they could be implemented at the next round of price reviews. However, in a small number of cases there may need to be transitional changes. These transition aspects are discussed in Chapter 8 of this paper on next steps.

1.12. Appendix 6 of the main Emerging Thinking consultation paper considers how the elements of the framework discussed here may apply to each of the four energy network sectors (electricity transmission, electricity distribution, gas transmission and gas distribution).

1.13. We welcome comments on the ideas presented in this paper.

[3] All papers referenced in this paper can be found on our website. A full list of web links can be found in Appendix 10 of our main Emerging Thinking consultation paper: http://www.ofgem.gov.uk/Networks/rpix20/publications/CD/Documents1/emerging%20thinking.pdf.

2. An outcomes-led framework

2.1. We set out here why a move to an outcome-led framework might be desirable. We then explain how outputs could be defined in a new regulatory framework and set out ideas, for consultation, on how to incentivise delivery of these outputs.

The merits of an outcomes-led framework

2.2. Taking a leading role in facilitating delivery of a sustainable energy sector will require network companies to make choices around decisions that are likely to involve:

- uncertainty about how best to deliver for the long term;
- long-term commitment;
- new challenges and new solutions (the status quo is less likely to always be the appropriate way to deliver);
- working with and understanding the needs of existing and future consumers; and
- working with other parties in the energy sector and in other sectors (e.g. transport) to ensure effective and timely delivery.

2.3. Network companies will need to continue to focus on delivery and maintaining value for consumers. It is likely that they will also need to change in at least some of the following ways:

- be more innovative;
- think longer term;
- be open to a range of delivery options;
- work more effectively with consumers and other stakeholders; and
- consider the impact of a range of future scenarios to inform planning, learning and adaptation.

2.4. Our investment working group, made up of representatives of network companies and one of their direct customers, recognised this challenge in their paper. The paper argues that we should have regard to the various tasks that network companies are going to have to deliver including for example "accommodating new energy sources and new patterns of energy use" and "maintain existing network function by renewing worn out network assets either on a like-for-like basis or with new technology options".

2.5. A new regulatory framework needs to be designed to encourage the network companies to seek out delivery solutions in an open-minded and well-informed way.

2.6. Based on our discussions with a range of stakeholders and our own analysis we think there is merit in encouraging network companies by using an outcomes-led regulatory framework, where delivery would be judged against the required outcomes and rewarded or penalised accordingly. The main potential benefits of an outcomes-led approach are as follows:

- It would allow Ofgem, network companies and stakeholders engaged in the process to have a genuine understanding of what consumers are getting for their money.
- It would promote a focus on value for money in the short term and long term, with an understanding that delivery must be assured and the costs of delivery managed.
- By focusing on what is delivered rather than how it is delivered, the framework would encourage networks to identify the best means of delivering for the long term as they would retain benefits from being innovative and efficient.
- A focus on outputs would also be one of the aspects of a new regulatory framework that could encourage network companies to anticipate the future needs of consumers and network users.
- A focus on outputs would provide Ofgem and network companies with an incentive to be flexible and innovative in considering how best to deliver the outputs (subject to statutory requirements).
- It could lead to a more streamlined price control review process, building on regular monitoring of progress on delivery of outputs.

2.7. We welcome views on these potential advantages of an outcomes-led approach.

2.8. We set out in this paper our ideas on how an outcomes-led framework might be designed to deliver these potential benefits. It would provide clarity on what is going to be delivered for all stakeholders. It is important that the regulatory framework does not choose particular methods of delivery in a way that might be seen as micromanagement of the company or result in stifling innovative ways of doing things or restricting changes in outputs where appropriate, for example when new information comes to light.

Defining outputs in a new regulatory framework

2.9. Our emerging thinking is that the desired outcomes would be the cornerstone of a new regulatory framework, influencing how network companies plan and operate, and how we assess network planning and delivery. A new regulatory framework would be focused on delivery of outputs related to these outcomes. Outputs are used in the existing regulatory framework, across the four energy network sectors, but they are not at the centre of how we regulate, with the focus primarily on costs (inputs)[4]. Furthermore, the outputs that currently exist may not sufficiently capture what is needed to deliver our desired outcomes.

2.10. A new regulatory framework, if implemented, would be focused on delivery of outputs. Network companies, Ofgem and other stakeholders would have an agreed understanding of what network companies are expected to deliver under the price control. There would be a clear link between the revenue that a network company is allowed to earn and delivery of outputs. There would be a set of output categories,

[4] The balance between costs and outputs has shifted in the recent electricity distribution price control review.

with agreed base output measures (qualitative and quantitative) in each category. Network companies could decide to have more output measures than those in the 'base set' required for all in the sector. Ofgem would set the output categories, taking account of information from our enhanced engagement with stakeholders. We would agree base output measures in each category with network companies as part of the price control review process, again taking account of information from our enhanced engagement. We would also review the evidence provided by network companies on the level of each output measure that they expected to meet, looking in particular for information on their engagement with their consumers. Further information on each aspect of the outputs framework is described here.

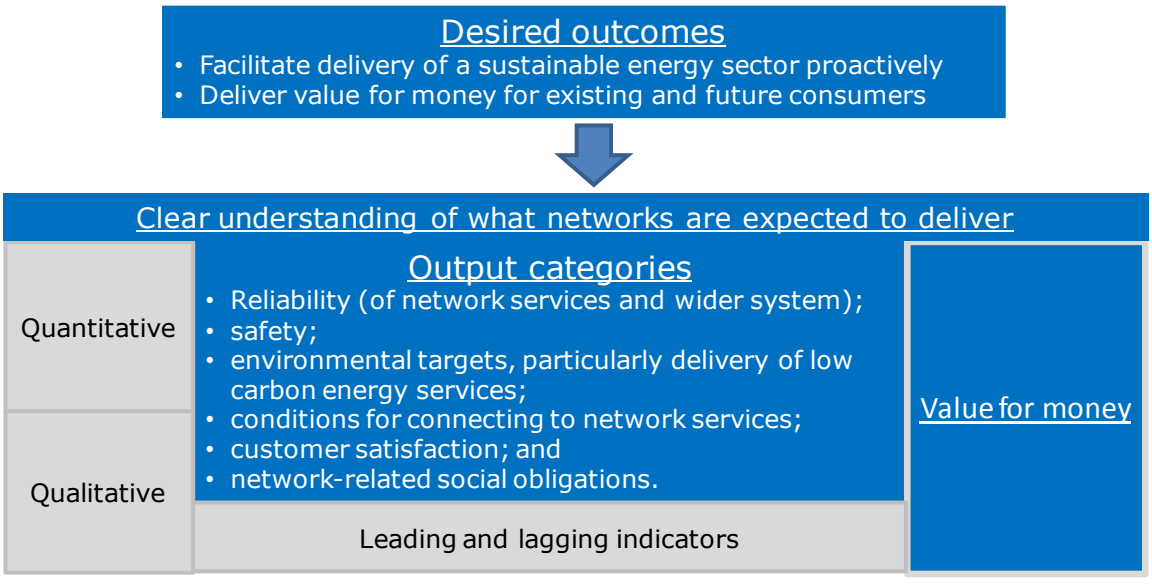
Nature of outputs

2.11. To enable us to understand and monitor whether and how network companies are facilitating delivery of a sustainable energy sector, we would break delivery down into clearly defined outputs. By 'outputs' we mean an understanding of what network companies need to deliver in return for the funding they raise from consumers (constrained by the price control).

2.12. Figure 1 provides an overview of how the outputs aspect of a new regulatory framework might be developed. Outputs would need to be defined at a level of detail that is clearly understood by Ofgem, network companies, and other stakeholders involved in any enhanced engagement processes. The outputs would also need to be set in a way that enables us to assess delivery performance on an ongoing basis, particularly at price control reviews. Under a new regulatory framework network companies would continue to need to meet prevailing legal obligations and operate consistent with prevailing licence conditions.

Figure 1: The relationship between outcomes and outputs

2.13.



2.14. In a new regulatory framework the focus is likely to be on the following six categories of outputs:

- reliability (of network services and the wider energy system);
- safety;
- environmental targets, particularly delivery of low carbon energy services;
- conditions for connecting to network services;
- customer satisfaction; and
- network-related social obligations.

2.15. Together these outputs are likely to capture the network companies' contribution to delivery of a sustainable energy sector. We provide some initial ideas in Appendix 1 on what might be included in the environmental targets output category.

2.16. There would be a common set of base outputs for all companies in a sector in each category. This would facilitate effective benchmarking. The outputs that sit within each category may differ across the four energy network sectors.

2.17. A number of different issues would need to be considered when deciding what type of output measures sit within each category. These include, but are not limited to, the following:

- It would be appropriate to consider both quantitative and qualitative measures. Quantitative measures would be used and developed where credible measures can be defined. In some areas a more qualitative approach may be needed. For example, under the environment output, the business carbon footprint might provide measurable information but wider environmental initiatives and achievements might also be picked up through favourable stakeholder feedback or other achievements.
- Licensee statutory obligations would need to be captured. For example, health and safety requirements on gas networks set out by the Health and Safety Executive (HSE) determine the safety and reliability aspects of delivery of gas network services.
- Network companies may have different target levels for each output and may have additional outputs beyond the base set. They would need to provide a case for these additional outputs in their business plans.
- The relevant timeframes for the output measures may vary; with short, medium and long-term targets. For some outputs, targets could be set which relate to network company delivery beyond the current price control period. For example, a network company could be asked to reduce its carbon footprint by 5% in the current price control period and by 15% by the end of the next price control period. This would encourage network companies to focus on long-term delivery.
- As discussed further in Chapter 7 network companies could be encouraged to work proactively with others to develop cross-sectoral solutions. In this context it may be appropriate to use some outputs that relate to aspects of delivery that are partly outside of the network company control (e.g. meeting sectoral renewables targets).

- When considering the appropriate output measures, it will be important to consider both leading and lagging measures. Leading measures would provide information on risk to future delivery. Lagging measures would provide information on delivery performance, after output targets have been met (or not). For example, the loading and health indicators developed as part of the recent distribution price control (DPCR5) or the capability and condition outputs developed in electricity transmission could be leading measures for the reliability output measure.
- In general we would envisage including specified base outputs that underpin the price control in network companies' licence conditions. For outputs that go beyond the base set, network companies may also develop voluntary service level agreements with their consumers. Delivery may be linked to specific project milestones in some cases.

Who would set the outputs?

2.18. In a new regulatory framework, we would work with network companies and wider stakeholders to identify the appropriate outputs to include in each category. The base set of outputs that all network companies have to deliver would be set by Ofgem as part of the price control package.

2.19. Network companies would propose the target level of each output that they are intending to deliver in their business plan. They would need to show that their proposed level of outputs reflect effective engagement with consumers and network users. We would expect companies to anticipate what is needed for the future, using a range of scenarios of future demands for network services.

2.20. Network companies would need to meet requirements set by other parties, for example the Health and Safety Executive, and their statutory obligations. Outputs would also need to be consistent with wider regulatory requirements, including charging methodology requirements and transmission access arrangements. In these cases network companies would need to give attention to how the outputs are defined and would need to ensure that as the range of outputs is developed, delivery of legal obligations is not jeopardised. We would also need to consider whether the legal requirements are sufficient in themselves or whether additional outputs are needed.

2.21. Building on the companies' proposals, we would set the final outputs taking account of the companies' statutory obligations. We would use our engagement with consumers[5], consumer representatives, network users and government to understand more fully what the appropriate level of outputs are.

[5] Some of the measures, for example customer satisfaction measures and reliability measures, will be informed by market research with end consumers.

Next steps on outputs

2.22. For our summer 2010 recommendations we will set out the principles to consider when establishing the set of output categories and considering how best to determine the set of output measures at a price control review. We will also develop initial ideas on potential outputs in each of the sectors, although the main work in this area will be conducted in relevant price control reviews.

2.23. When working up the detail we will need to consider a number of issues. These include:

- how should the output definition and target level be decided?
- should network companies be incentivised to meet a particular target level or exceed it?
- how can we ensure fair assessment of delivery recognising the differences between the network companies (for example should we compare network companies to each other or focus on individual company performance over time)?
- how do we assess whether differences in output targets across companies are appropriate?
- what guidance or criteria needs to be set in relation to outputs that are not quantitative?
- how might we consider the outputs holistically, potentially with a smaller set of weighted overall measures, to ensure that success in delivery of one output is not offset by failure to deliver others?

2.24. We will build on outputs already developed in each sector.

2.25. We welcome views on other aspects of output design that need to be considered for our summer 2010 recommendations.

Rewards for delivery against outcomes

2.26. An outcomes-led framework would centre on the successful delivery of the outputs underpinning the price control. In particular:

- the level of the price control would be set to finance delivery of these outputs, with a clear connection between the outputs to be delivered and the efficient total costs required;
- network companies' performance in delivering against these outputs would be regularly monitored (for example on an annual basis), and we may use 'traffic light indicators' to provide published updates on performance;
- network companies would face rewards (mainly financial) for delivering outputs, and penalties for non-delivery (including treating network companies differently based on their record); and
- we would refrain from making discretionary adjustments to the revenues that network companies are allowed other than where this can be linked to output delivery.

2.27. We recognise that the strength of any financial incentives would need to be calibrated depending on the quality of output measures used, the approach used to assess delivery of outputs and the strength of any cost incentives. There will need to be flexibility both by network companies and by Ofgem to ensure that the best decisions about what to deliver and how best to deliver are made on an ongoing basis, reflecting that fact that the future is uncertain and new information may come to light about what needs to be delivered. However, network companies do need to be held to account if they do not deliver and they cannot demonstrate that this is in the best interest of existing and future consumers. This is consistent with our approach in the fifth electricity distribution price control review, where we recognised the need to balance the fact that the output measures were new with the need to ensure that network companies face financial consequences if they do not deliver.

2.28. We would also reward companies that provide richer information in their plans on outputs, demonstrating a clear link between output delivery and total costs and demonstrating that the plan is consistent with efficient delivery. We would also, as discussed further in Chapter 4, use delivery performance as a signal of how we would treat individual companies differently in future price control reviews.

2.29. Rewards and penalties would need to be clear and credible, linked to delivery performance that can be observed and monitored. For outputs that are to be delivered beyond the next price control period, we would need to be able to commit to them for the longer term. It is likely that the rewards and penalties would need to be material and largely financial to encourage network companies to deliver and to make changes in how they deliver where needed. The incentives for delivery of outputs would also need to be calibrated alongside other factors affecting network behaviour, most notably incentives to reduce costs over time.

2.30. For our summer 2010 recommendations we will set out our views on the types of incentive mechanisms that might be used to encourage network companies to deliver outputs (on time where relevant). The range of tools that might be considered include:

- specifying the level of a reward or penalty, and when it will be paid, up front;
- determining, after the event, the level and nature of financial rewards and penalties (possibly based on up front criteria);
- discretionary financial rewards based on up front guidelines;
- reputational incentives (non-financial incentives whose focus is on publicising success and failure so that any positive/negative implications for the companies' public reputation are felt); and
- changes more generally to the regulatory treatment as set out in Chapter 4 (this includes subsets of the above but also changes in the regulatory related costs e.g. resource costs associated with liaising with the regulatory body).

2.31. Where outputs are partially or wholly undelivered, and network companies cannot demonstrate that this is in the interests of existing and future consumers, then there would generally be a penalty. The level of this penalty might be influenced by:

- expenditure assessed as being avoided as a result of non-delivery;
- level of challenge involved in meeting the outputs;
- value of the output to consumers (perhaps informed by willingness to pay estimates);
- the extent to which delivery of the outputs is within the network company's control; and
- past performance.

2.32. Penalties might be implemented, where relevant, through direct fines, adjustments to the overall level of allowed revenue or potentially adjustments to a network company's regulatory asset value (RAV).

2.33. As discussed in Chapter 5, provided outputs are delivered, we would refrain, as far as possible from making discretionary adjustments to allowed revenue. Cost savings made would be shared with consumers through an incentive rate but there would not be other adjustments if network companies deliver outputs at lower than expected efficient costs.

3. Outputs at the centre of a well-justified business plan

3.1. In a new regulatory framework, a network company's business plan would continue to be a key document. The nature of the business plans would be different to now. We set out here what the plan might include.

3.2. The focus of the business plans would be longer term than now, recognising that some aspects would be easier to set out for the future than others. We welcome views on what the appropriate length of the business plan period might be. We are mindful of the need to consider interactions with requirements under the third package for ten-year business plans for transmission operators[6].

Business plan design

3.3. We would provide network companies with guidance on what needs to be included in their business plan at each review.

3.4. Our emerging thinking is that we would expect network companies to provide a detailed narrative business case, with supporting evidence, to set out what they intend to deliver, what delivery solutions they have considered and propose to adopt, and what the expected efficient costs of delivery are. We would be looking for plans that are well-justified (see discussion below) and focused on providing quality and targeted information, rather than quantity of information.

3.5. Within a sector, network companies may be delivering different levels of outputs and the range of delivery solutions may vary across companies. We would not provide a formal business plan template for all companies to fill in. This flexibility would allow network companies to consider their own innovative and efficient solutions for delivery, and allow them to identify the best way of presenting their business case to us. Setting a rigid template for the regulatory business plans may limit the extent to which network companies can explain what they propose to do (and why) to ensure delivery of outputs and value for money for existing and future consumers. Indeed a fixed template may limit thinking on alternative ways of delivering more generally. We therefore do not wish to prescribe significant parts of the form of the new business plans and we see the plan as an additional opportunity

[6] Under the EU third package, which is required to be implemented by March 2011, transmission companies will be obliged to undertake a ten-year network development plan. This is to be based on existing and forecasted demand and supply and is required to indicate the main transmission infrastructure that needs to be built or upgraded over the next ten years and to identify new investments that needs to be executed within the next three years. The transmission companies will be obliged to consult upon their development plan and submit it to the regulatory authority, who may request it is amended if it considers that it does not cover all the investment needs identified or that it is not consistent with the EU-wide ten-year network development plan

for the network companies to demonstrate that they are leading the way in proactively delivering our desired outcomes.

3.6. As discussed in Chapter 4, benchmarking company performance and costs is expected to continue to be important in the determination of price controls. It is important that we collect consistent data from network companies in the same sector for this purpose. Network companies would therefore need to complete mandatory data templates alongside their business plans. Where possible we would use data from annual regulatory reporting packs to inform our understanding of historic costs and delivery performance. We may also consider, in a new regulatory framework, undertaking benchmarking exercises outside of the price control review itself. These would be intended to inform our understanding of delivery performance and to inform the focus of activity at the next price control review. We will consider further how best to collect data for these exercises.

What needs to be covered in the business plan?

3.7. For our summer 2010 recommendations we will set out guidance on what needs to be included in the new business plans. An overview of the key areas is presented here and we welcome views from interested parties.

3.8. Our emerging thinking is that the business plans would be well-justified from four perspectives:

- there would be a clear link between outputs and the efficient costs of delivery;
- there would be evidence that alternative delivery options and scenarios of the future have been considered;
- the plans would reflect effective engagement with existing consumers, network users and other stakeholders, and an informed view of what is needed to meet the needs of future consumers, network users and other stakeholders; and
- evidence would be provided to demonstrate that the proposed costs of delivery are efficient over the long term.

3.9. We recognise that different aspects of the business plan would cover different time periods, with a general move towards considering longer-term aspects of providing network services. We think it is important for us to give a signal of our view on the typical length. We will consider further what time period should be covered in the business plans. We expect that it would be longer than now and we will consider experiences in other countries (e.g. New Zealand electricity sector) and other sectors (e.g. twenty five year resource plans in the England & Wales water sector). We will also consider any interactions with requirements in the third package for ten-year investment plans. We welcome views on what the appropriate time horizon should be.

3.10. We are interested in further exploring the benefits of longer-term and well-justified planning as used in the New Zealand electricity distribution sector. Here, companies have prioritised longer term planning, in part to support significant

changes to facilitate smart metering on their network. Companies carry out 'grid planning' incorporating a number of future scenarios and produce a bi-annual statement of opportunities. This involves assumptions derived from a twenty-year plan of priorities.

3.11. Some elements of the plan would be similar to what is required in current business plan questionnaires. Other aspects would be new. We will consider further how best to take account of lessons from the use of existing business plans when developing our guidance on new plans.

Linking outputs and costs

3.12. The plan would focus on output delivery. It would be through the development of the plan that the network companies, stakeholders and Ofgem would consider what the output categories and output measures are. Network companies would also use their plan to set out the target level that they propose to achieve for each output, ensuring consistency with legal obligations where relevant.

3.13. The business plan would also need to set out how the network intends to deliver the outputs and at what cost. We expect the network companies to demonstrate a clear link between outputs, delivery solutions and proposed costs to be recovered under the price control.

Options and scenarios - managing uncertainty about how best to deliver

3.14. We would expect network companies to consider a range of different options for delivery. This includes demonstrating that there is no undue bias towards doing things as they have been done in the past. We do not intend to suggest that network companies should always be doing things differently. What they need to demonstrate is that they are thinking openly about available options and following up on the best available options.

3.15. Where appropriate, network companies would also need to consider whether there is potential long-term benefit from keeping options open for a time (but not at the expense of delivery). For example, it might be clear that over the next x years, the network company would glean important information about a potential delivery solution and could wait until it was better understood before proceeding with an alternative. Network companies may also need to consider whether there is a role for third parties in delivery of particular tasks. For example, developing smart grid capability might be done in a more effective way by or with the help of a communications specialist.

3.16. The plan is also the opportunity for network companies to demonstrate that they have considered a number of scenarios of future demand for network services and implications for output delivery. For example, a gas distribution network would need to consider alternative states of the world where there may be:

- less average demand for gas for heating homes, and/or
- more demand for gas to power combined heat and power stations, and/or
- more biogas being inputted into the network and/or
- variation in gas quality standard requirements.

3.17. Considering a range of scenarios would inform a network company's thinking on what the most effective and efficient delivery options are likely to be for the longer term. It would also inform thinking on where it is appropriate to keep options open and more general contingency planning. It may be appropriate for network companies to make use of joint industry scenarios of the future, or scenarios from other organisations (e.g. DECC's 2050 road map), when developing their own business plan.

3.18. We would also expect network companies to consider whether and how they would adapt their plans over time in response to new information. For example, the plan might include details of key milestones when particular aspects of a delivery project could be reviewed and either shut down, retained at the current pace, or ramped up to enable quicker delivery.

The role of effective engagement

3.19. The development of the plan would require network companies to engage effectively with their existing consumers and network users, alongside other stakeholders. They would also need to anticipate what is needed to meet the needs of future consumers and network users. We would use our engagement with these groups to assess the appropriateness of the base set of outputs and the specific proposals from individual companies.

3.20. It would not be engagement for engagement's sake that would matter. The network companies would need to justify how they have understood and taken account of the engagement in effective planning. This would assist the network companies in being ready and able to meet consumer needs effectively and in prioritising areas that are key for consumers and, where relevant, other stakeholders such as potential generators or shippers. Obtaining this level of information should play a key role in ensuring the network companies do not delay wider energy sector development. Better information and mutual understanding between supply partners would lead to network companies that are better placed in terms of delivering in a timely manner. We would expect the engagement to happen on an ongoing basis, ensuring network companies adapted their plans where the needs of consumers, network users and other stakeholders changed.

Evidence on the efficiency of costs

3.21. The onus would be on network companies to demonstrate in their plans that their proposed costs of delivery are efficient over the long term. To do this, they might provide benchmarking evidence, comparing their costs of particular activities to those of leading comparators. Furthermore, networks may provide information to demonstrate that the costs are consistent with efficient procurement practices. As

discussed in our supporting paper on 'Greater competition in delivery', information from tenders run by the company or by Ofgem might be used to inform our understanding of the efficient level of costs.

Incentivising companies to develop well-justified plans

3.22. We recognise that preparing and developing well-justified plans involves significant resource and effort on the part of the network companies. To a large extent this is effort that we would expect to happen anyway in a well-managed organisation focused on delivery of network services over the long term. However, we recognise that for some companies developing plans that incorporate all the elements described above would require a step change.

3.23. It is therefore important that network companies, and other parties involved through engagement in the development of the business plans, understand that there is benefit in providing us with well-justified plans for the price control review.

3.24. In particular, network companies would need to understand that it is important to demonstrate their readiness for delivery. If they demonstrate that they are focused on delivery they would find that:

- it is potentially easier, as now, to earn regulatory approval for output and cost forecasts if the proposals are well justified;
- it is possible to earn proportionate financial rewards and penalties based on a comparative review across network companies of quality of their business plans;
- a strong case is needed to justify outputs beyond the base set required by all companies, or at higher target levels than other companies; and
- there is potential for more focused and proportionate scrutiny of better quality plans (through the time/resources taken on both the part of the regulator and the company in challenging the plan — see discussion below on differential treatment).

Making the business plans accessible

3.25. As emphasised earlier, effective engagement with consumers, network users and other stakeholders is central to development of a well-justified plan. To ensure this engagement is effective it would be important that the plan, or at least a version of it, is accessible to a wide range of audiences, including Ofgem, consumers and network users, investors, and other stakeholders. When developing our ideas on how to encourage networks to engage with these parties we also need to consider what information needs to be provided by the network companies as they develop and discuss their plans with others.

4. Assessing expected efficient costs of delivery

4.1. Our emerging thinking is that, as now, the ex ante price control in a new regulatory framework would be set to reflect expected efficient costs of delivering outputs over the price control period[7]. We set out here our ideas on how we would use the business plans, and other comparative information, to assess what the long-term efficient costs of delivery might be.

4.2. In Chapter 5 we explain how the networks would be incentivised to seek out innovative and efficient delivery solutions on an ongoing basis. The main change from now is to strengthen the incentives on network companies to reduce and restrain costs, particularly over the longer term.

The link between efficient costs and baseline revenue

4.3. As under our existing price control regimes, we would set baseline revenues at price control reviews to fund the expected efficient delivery of the required outputs. The baseline revenue is an amount of money, set upfront, that the network company is allowed to recover from customers during the price control period.

4.4. Where appropriate, "uncertainty mechanisms" can be used to complement the baseline revenue. These allow the revenue that the network company is allowed to collect to vary, according to pre-specified rules, in light of what unfolds within the price control period. For instance, there may be "revenue drivers" through which the revenue the network company is entitled to collect varies according to measures of the volumes of services it needs to provide. Alternatively, triggers could be applied such that extra revenue is made available to the network company if a certain event takes place. These mechanisms can reduce the financial risks that network companies face and the risks that consumers end up paying network companies more money than they need. They may also reduce the risks that network companies do not deliver what is required.

4.5. As discussed further in Chapter 5, in some cases it might be beneficial to determine baseline revenues for specific projects in a way that is not constrained by the timing and frequency of price control reviews (e.g. when the project is needed, rather than at the time of the price control review).

4.6. The actual revenues that network companies would ultimately be entitled to collect from customers would reflect not only the baseline revenue and uncertainty

[7] We have considered alternative types of regulatory framework that we could apply to encourage monopoly network companies to provide value for money to their customers. These are discussed in our supporting paper on 'Alternative ex ante and ex post regulatory frameworks'.

mechanisms, but also penalties and rewards for performance in delivery of outputs, as discussed above, and the incentive and risk-sharing arrangements around network companies cost performance, discussed in Chapter 5.

Reconciling expected costs with outputs

4.7. In a new regulatory framework, the level of expected efficient costs would be fully reconciled as necessary for the network companies to deliver a series of outputs. We would give more focus, at the price control review, to building up an assessment of baseline revenue from expenditure requirements that are justified against specific outputs. In doing so, we would be taking forward the progress we have made in this area in the recent electricity distribution price control review (DPCR5).

4.8. Our emerging thinking is that this reconciliation process would promote value for money to consumers and give network companies a clear signal of what is expected. It would reduce the risks that, once the price control is set, network companies can profit from cutting back on delivering the things that customers want. For example, a network company would be penalised for delaying asset replacement expenditure if this puts delivery of a specific output, or set of outputs, at risk. A clear link between expected efficient costs, baseline revenue and outputs also allows us to set strong incentives to encourage network companies to find ways of delivering the outputs at lower cost.

Options for assessing expected efficient costs of delivery

4.9. To assess the expected level of efficient costs of delivery, and to calibrate revenue drivers and other uncertainty mechanisms, we would draw on a range of information. The focus would be first on understanding whether the network company had fully justified that their preferred delivery solutions were appropriate and second whether they had fully justified the efficiency of the proposed costs of delivery over the long term.

4.10. We would use a range of tools and information, which is likely to include:

- Business plans and forecasts prepared by the network companies;
- Network companies' own benchmarking analysis;
- Unit cost comparisons and other cost benchmarking analysis (potentially of total costs of delivering network services rather than separate cost categories);
- Information on costs from competitive tenders and contracting out;
- Engineering modelling (e.g. asset replacement volumes);
- Expert assessment of companies' plans and associated models;
- Project-level cost and value for money appraisals; and
- Analysis of cost, productivity and input price trends over time.

4.11. The appropriate mix of techniques may vary by sector.

4.12. We expect that the network companies' business plans and forecasts would be central to our assessment. This is why it is important that a strong evidence base is provided in the well-justified plans.

4.13. As discussed below we would also consider whether and when it might be appropriate to use different types of information, or different levels of detail, when assessing the expected efficient costs of different network companies in a sector.

4.14. In our summer 2010 recommendations, we will provide more information on the types of analysis that might be appropriate in different circumstances, including the role for benchmarking analysis.

Potential impact of our approach on expenditure decisions

4.15. Network companies are likely to take decisions based on views about the impacts of these on their future regulatory treatment. They are likely to consider how their current levels of expenditure would affect the assessment of expected efficient costs at future price control reviews. For example, there are risks that a network company may choose to spend more on capital expenditure than is needed within a five-year price control period if it thinks that this would lead to higher levels of baseline revenue in the next price control period.

4.16. To manage any potential distortions, it is important that we understand, and where possible weaken, the potential links between a network company's expenditure decisions and the approach to setting baseline revenue at the next price control review. This is in addition to setting efficiency incentives that are the same for different types of expenditure.

4.17. Our supporting paper on alternative ex ante and ex post regulatory frameworks highlights the role that cost benchmarking approaches can play in promoting longer-term efficiency by reducing the links between a network company's actual expenditure and the revenue it may be able to collect under the next price control. Considering this there may be merit in continuing to use comparative assessments as part of the set of information used to inform our view on what the costs of a notional efficient network company would be to deliver required outcomes.

4.18. We are likely to predominantly use cross-sectoral and time series data (panel data). In the case of the transmission owners, we would use cross-sectoral, time series information, where possible, and potentially international comparisons. For some categories of benchmarking there may also be scope for using information from other sectors.

4.19. We are also considering whether it is appropriate to develop benchmarking approaches that avoid distinctions between operating and capital expenditure, to limit the risk of distorting choices between different types of expenditure by assessing them separately.

Focused regulatory scrutiny - differential treatment

4.20. Over time, differential performance by network companies in delivering desired outcomes could merit differential treatment in the regulatory process. For a range of reasons, networks are likely to differ in the speed at which they make any changes necessary to enable them to deliver the outputs. Those that do best and establish a good track record would be financially rewarded in a new regulatory framework. The nature and scope of our assessment of their business plans could also vary.

4.21. For example, there could be differences in the:

- degree of resources focused on scrutinising the network company's plan;
- focus of regulatory process, e.g. where particular outputs are not delivered, the priority for regulatory focus would be on how to remedy this and deliver against the relevant output(s) along with the outputs for the next control period; and
- the likelihood of citing the company as an example/model for others to follow.

4.22. We may also use information on performance, as well as other information, when considering whether or not to enable third parties to be involved with some aspects of delivery through tendering opportunities. The governance arrangements for our innovation stimulus may also enable the parties reviewing innovation proposals to consider evidence on a network company's delivery performance alongside other information.

4.23. We would use a proportionate approach to assessing plans and delivery. This is consistent with better regulation. For some aspects of delivery, or for some companies, we would review plans in detail; potentially in a different way to now. For other aspects of the plan or for some companies we would use less detailed or complicated approaches. The level of detail that we would go into when employing these different techniques would depend on the quality of the business plan and the company's reputation for efficient delivery. The degree of variation between parts of the plan and across companies is likely to change over time. This approach would allow us to target regulatory effort where it is likely to be of most benefit.

4.24. Our approach to treating network companies in a sector differently would need to be transparent and based on published principles and criteria. We would need to ensure that we treat all network companies on a non-discriminatory basis.

4.25. The table below shows an indicative example of how this differential approach might work. This is for illustration and we would need to consider further, taking account of stakeholder responses, how to implement this differential treatment. We welcome views on this illustrative example and how such a differential approach might work in practice.

4.26. A reputation for efficient long-term delivery would be hard won but easily lost. We would ensure that a network company is penalised if, after it is rewarded for being a 'star performer', its performance deteriorates. We would retain the right to

take back previous rewards or to impose penalties. We would need to ensure that this threat is credible and transparent, to limit the risk of companies focusing on identifying ways of obtaining benefits for limited periods of time.

Table 2: Indicative example of how differential treatment might work

	Judgement criteria	Impact
Star performer	All outputs delivered, overwhelmingly positive stakeholder feedback, may have specified more challenging outputs delivered, track record for delivery.	High-level regulatory scrutiny, access to all potential rewards; extra financial rewards available for being star performer, significant potential penalty for failure to deliver.
Good performer	All outputs delivered, generally positive stakeholder feedback, potentially looking at more challenging outputs for next control period	Generally high-level regulatory scrutiny, all rewards available apart from specific star performer incentive, focus on what needed to achieve star performer status.
Fair performer	Vast majority of outputs delivered, some negative stakeholder feedback	Medium regulatory scrutiny, focus on outputs where failed to deliver. Some but not all rewards available.
Below-par performer	A number of outputs not delivered, significant negative stakeholder feedback	Intrusive regulatory scrutiny, focus on catching up for output delivery failures, some penalties incurred.
Poor performer	A number of outputs not delivered, previous issues not remedied, significant negative stakeholder feedback, track record of failing to deliver	Very intrusive regulatory scrutiny (base assumption that there might be problems with submissions), focus on recovery plan across range of outputs, significant material penalties possible.

5. Efficiency incentives

5.1. In addition to ensuring the delivery of the outputs specified upfront, a new regulatory framework would provide value for money to existing and future consumers. This is done by incentivising delivery of outputs and incentivising networks to develop efficient and innovative ways of delivering over the long term.

5.2. We set out in Chapter 2 how delivery of outputs would be incentivised in a new regulatory framework. We set out here how we could incentivise network companies to ensure they seek out and adopt long-term efficient delivery solutions. These price control incentives would operate alongside two other elements of a new regulatory framework to encourage efficient delivery of our desired outcomes:

- greater use of competition to deliver the outcomes that we want, potentially including competitive processes that take place outside of the price control review (for example, tenders for delivery run by Ofgem); and
- a separate innovation stimulus, in which network companies and other relevant parties would be able to compete for funding.

5.3. Our ideas for competitive delivery and innovation schemes are discussed in separate supporting papers. This section focuses on ensuring value for money within the price control.

Enhancing the efficiency incentives in a new regulatory framework

5.4. Energy network companies have delivered lower costs, and hence lower network charges, for consumers since privatisation, driven by the efficiency incentives inherent in the RPI-X price control framework. We recognise from our own analysis and from consultation with stakeholders that, despite these successes, there are limitations with the approaches that we have used in setting price controls in the past. For instance, these regimes may lead network companies to focus on a short time horizon, potentially at the expense of opportunities to innovate and restrain costs over the long term. A fuller picture of the potential limitations and risks of the current regimes is provided in Appendix 3 to our Emerging Thinking consultation paper. The successes of the framework were discussed in our February 2009 consultation paper.

5.5. In a new regulatory framework we would build on the successes of the existing framework and address the identified limitations as far as is possible without compromising on the delivery of our desired outcomes. The main features of the framework for efficiency incentives under the price control would be:

- Setting upfront baseline revenues for the price control period that are reconciled with outputs that network companies can subsequently be held to (see Chapter 4);

- Strong, clear upfront efficiency incentives on the network company to find ways to deliver the required outputs at lower cost;
- Risk-sharing so that both investors and consumers benefit if the network company spends less than envisaged and both share the costs if the network company spends more;
- Measures to reduce the risk that a network company's decision-making between different types of expenditure (e.g. operating expenditure and capital expenditure) is distorted by the regulatory regime;
- Provided outputs are delivered, refraining from discretionary adjustments to the network company's revenues in light of how much it actually spends;
- Taking account of the interactions between charging, price control efficiency incentives and delivery of our desired outcomes;
- Setting price controls on a longer-term, or at least partially longer-term, basis (Chapter 6).

5.6. These features build, to varying degrees, on evolutions of Ofgem's current price control regimes, particularly developments in the most recent electricity distribution price control review. The potential for longer-term price controls, discussed in Chapter 6, would represent a change from Ofgem's previous practice in setting five-year price controls.

5.7. We describe these features below and highlight our reasoning for them. Where relevant, we also discuss the alternative options that we considered in the visionary phase of RPI-X@20.

Efficiency incentives and risk-sharing

5.8. We would look to design an incentive framework that focuses on efficient delivery for the long term, building on existing incentives. The price control incentives should encourage networks to make efficient choices between spending what is needed for delivery and seeking out innovative and efficient ways of delivering. The actual expenditure may be higher, lower or the same as what was expected at the price control review, depending, amongst other things, on what turns out to be the best way forward for delivery.

5.9. Network companies would always have a direct profit incentive to find ways of spending less — provided this does not compromise delivery of outputs in the short or long term. Both investors and consumers would benefit from these savings. Similarly, if network companies find that they need to spend more than envisaged, their investors and consumers should share the burden of the extra costs.

5.10. We have heard concerns that, under the current regulatory frameworks, some network companies may treat the allowed capital expenditure under the price control as a budget for the duration of the price control period. That is, they may operate to spend what was allowed rather than focusing on delivering what is needed on a sustainable basis at lowest cost. This is despite the existence of incentives that reward network companies for reducing costs and is primarily a problem because of the absence of output measures that are clearly linked to capital expenditure.

5.11. Building on our final proposals for the recent electricity distribution price control review, we are considering a form of risk sharing between consumers and investors. For every £1 that a network company saves, a proportion (e.g. 50 pence) would benefit investors through higher profits while the remainder would be shared with consumers, through lower prices. This risk sharing would be symmetric. Therefore, for every extra £1 of expenditure that the network company incurs, part of this would be borne by investors through lower profits while they would share the remainder with consumers, through higher prices.

5.12. The symmetry is important. In setting the baseline revenue, we would draw on forecasts and scenarios, which are by their very nature subject to uncertainty. We would not generally expect, over the period of the price control, for well-managed network companies to spend exactly the same as their forecast. To promote longer-term efficiency, network companies should face similar incentives to reduce and restrain costs regardless of whether they are on track to spend more or less than the baseline revenue — provided this is not at the expense of delivery of outputs.

5.13. For some specific areas of network companies' activities, it might not be necessary or appropriate to have risk sharing, with network companies instead bearing full risks around higher or lower expenditure for the price control period. For instance, in the recent electricity distribution price control review, business support costs (e.g. management and overheads) are treated differently to other costs: within the price control period, network companies will bear the full costs of spending more than the baseline and enjoy the full benefits of any savings at least until the next price control review.

5.14. We will consider further the circumstances under which it might be appropriate, as an exception, not to apply risk-sharing arrangements to specific areas of expenditure. For example, where expenditure is deemed to be manifestly inefficient we may decide that consumers should not contribute towards this expenditure. A new regulatory framework would be transparent about the types of expenditure decisions that might be expected to be treated in this way and the criteria we would use to consider what is in the best interest of existing and future consumers.

Alternative options: fixed price and rate of return-style approaches

Our suggested approach strikes a balance between three desirable, but to some degree conflicting, aims:

a) Providing incentives for network companies to reduce and restrain their costs
b) Sharing the benefits of cost reductions with consumers
c) Protecting consumers from the risks of paying network companies more than they need

Alternative approaches are possible. At one extreme, the baseline revenue of the network companies could take the form of a "fixed price" for the duration of the price control, with no risk sharing. The network company's investors would get the full

benefit of any cost savings below the fixed price, and would bear full exposure to costs being higher.

This approach provides strong incentives for a network company to cut costs. Under this approach, consumers would not benefit immediately from any cost savings that the network company makes. Instead, at the next price control review, the baseline revenue can potentially be set at a lower level in light of any lower-cost approaches that the network company has introduced and revealed.

However, consumers would not always benefit under the fixed price approach. Some activities carried out by network companies are to some degree "one-off" in nature (e.g. delivery of a standalone investment project). If a network company finds a way to carry these out at a lower cost than envisaged in setting the baseline revenue, the company may benefit without consumers obtaining a corresponding benefit through lower prices in the future. Under our suggested risk-sharing approach, the benefit would be shared between the network companies and consumers.

Similarly, because of forecasting uncertainties, there is a risk that baseline revenue turns out to be more than a network company needs to deliver over the period of the price control. This risk is sometimes seen to work in the favour of network companies, because the regulator is reliant, in part, on information provided by the network companies when setting the baseline revenue. Under the fixed price approach, the network company gets the full benefit of its actual expenditure being lower than the amount envisaged. Under the risk-sharing approach, the benefit is shared between the company and consumers. This gives consumers some protection against the baseline revenue being set too high at the price control review.

At the other extreme, the revenue that a network company is allowed to collect from customers under the price control might simply be based on what it ultimately spends. This would allow consumers to enjoy the benefits of any cost savings achieved by the network company and would protect consumers against the risks of paying the network company more money than it actually spends. However, this approach would tend to give network companies weak incentives to control their costs, even if complemented with some form of "ex post efficiency assessment". We consider a potential move towards such an approach in our supporting paper on alternative ex ante and ex post regulatory frameworks. We do not believe that we should use this approach for energy network companies because of concerns about providing consumers with poor value for money for the long term.

Strong and clear upfront efficiency incentives

5.15. It is important that network companies understand the incentive regime they face and that the incentive framework is considered credible over time. A company's incentive to seek out efficient delivery solutions may be weakened if the potential value of any savings made is not understood. Similarly, the incentive to seek out efficient delivery solutions may be undermined if there is a concern that proposed incentives will be changed after the savings have been made.

5.16. In a new regulatory framework we would set an upfront "incentive rate" for each network company: this represents a commitment on the extent to which the company's investors are exposed to its actual costs, once the price control has been set. If the incentive rate is 40 per cent, the intention is that the network company makes 40 pence more profit for each £1 that the company saves (e.g. a saving against the expenditure envisaged by Ofgem when the price control was set), and that the company makes 40 pence less profit for each additional £1 that the company spends (all else equal); in each case, the remainder is passed on through lower or higher consumer prices.

5.17. A 100 per cent incentive rate is equivalent to a fixed price arrangement over the period of the price control. A zero per cent incentive rate would amount to full pass-through of actual costs to consumers. Our ideas on risk sharing are for an incentive rate between the two.

5.18. The incentive rate would be known and understood when the network companies are making their delivery decisions.

5.19. The incentive rate would be the same in each year of the price control. This approach reflects the evolution in Ofgem's approach to incentives over time, in particular through the introduction of "rolling incentives" for capital expenditure.

5.20. As far as possible, the rate (or at least the range that the rate would lie within) would also be known when network companies are finalising their business plans during the price control review, to ensure that plans take account of potential incentive benefits. Furthermore, we would consider how to provide credible long-term commitment to the incentive rate, recognising the need to balance the benefits of regulatory commitment to the incentive regime against the benefits of adaptation over time.

Calibration and implementation of the incentive strength

5.21. There are different ways in which the upfront incentive rate can be set. These include using the information quality incentive scheme (IQI) in which the incentive rate for a network company is determined by a set of rules relating to the difference between the baseline revenue determined by Ofgem and the forecast submitted by the network company. If such a scheme is not used, the rate can be determined at the same level for all network companies subject to the price control review (and potentially with the same rate committed to over time) or set on a company-specific basis. We will consider these issues as we develop our ideas further.

5.22. In order to implement the upfront incentive rate, we would need to make adjustments to the revenues that network companies are allowed to collect, in light of data on companies' actual expenditure. The adjustments could be made either at the subsequent price control review or during the price control period as annual cost data becomes available. In either case, the calculation of the adjustment should take account of an appropriate assumption for the network company's discount rate, to

reflect the idea that a promise of £1 in the future is likely to be worth less to the company than £1 today.

5.23. We could use different approaches to make these adjustments, and these approaches may bring different risks of imprecision. As our work progresses, we will explore the case for feeding through the adjustments into the network company's allowed revenues as soon as possible, rather than leaving the adjustments to the next price control review. We will also re-consider how an appropriate discount rate might be determined.

Alternative option: incentives based on specified time lags

Specification of an upfront incentive rate is not the only way to expose network companies to some of the costs of spending more than envisaged at the time of the price control review and to provide them with some of the benefits of spending less.

An alternative is to pass through differences between the nominal values of a company's actual expenditure, and the expenditure it was allowed under the price control, subject to a specified time lag. For instance, if a network company spends £100 more in 2010 than allowed under the price control, we could give it an extra £100 in 2015. Because the promise of £100 in the future is worth less than £100 today, this does not fully compensate the company for spending the extra £100.

In the same way that an upfront incentive rate can be set at different levels, this time lag approach can be used to provide relatively strong or relatively weak incentives. The longer the time lag, the greater is a network company's exposure to spending more or less than envisaged when the price control was set and, in turn, the stronger are its incentives to reduce and restrain its costs.

Ofgem used this approach as part of the introduction of "rolling incentives" for capital expenditure which involved a five-year "retention period". Over time, Ofgem has moved away from this approach towards the use of upfront incentive rates, as described above. The existing price controls across electricity distribution, gas distribution and transmission generally use upfront incentive rates for capital expenditure, rather than incentives based on a five-year time lag or retention period. Even so, this approach has not been phased out completely (e.g. revenue drivers for new gas transmission entry and exit points are based on the time lag approach).

We consider the specification of upfront incentive rates an improvement in the regulatory regime. We see no reason to go back.

The time lag approach does not send a clear enough message to network companies, and other stakeholders, of how companies are exposed to the costs of spending more than envisaged at the price control review and to the savings from spending less.

Strong incentives to reduce and restrain costs

5.24. Ofgem's existing price controls show variation in incentive rates. For instance, the incentive rates in our final proposals for the price controls for electricity distribution network operators from April 2010 lie between 45 per cent and 51 per cent for network expenditure. The main incentive rate for capital expenditure in the current electricity and gas transmission price controls is 25 per cent.

5.25. We want to ensure that, once the price control is set, network companies cannot profit from spending more money than necessary (including expenditure that would subsequently earn investors a return over many years through the regulatory asset value). We also want to ensure that network companies face clear profit opportunities from finding ways of restraining their future costs.

5.26. We want the incentive rate to give strong incentives for network companies to reduce and restrain their costs. We do not plan, as part of the RPI-X@20 review, to set out exactly what incentive rates are used or how these might vary between sectors and network companies. These decisions would be made at future price control reviews. We will focus on providing principles that should govern these decisions. However, we envisage that a strong incentive rate would be needed (e.g. at least 50 per cent).

5.27. We are aware of the risks that, the higher the incentive rate the more network companies can profit from doing less and therefore spending less than envisaged when the price control was set. These risks would be addressed through a greater focus, at the price control review, on specifying outputs and reconciling these with the baseline revenues. We would, as discussed in Chapter 2, have financial implications for non-delivery of outputs. These would need to be calibrated, where relevant, alongside the efficiency incentives.

5.28. The design of the arrangements around the incentive rate is an important part of the regulatory regime, building on the success of the original incentive principles of the RPI-X framework. We have considered a number of different options. We highlight in the boxes below two alternative approaches towards the strength of incentives that we have considered but are not intending to take forward: (i) the incentive strength varying according to network companies' profits; and (ii) seeking to balance the strength of incentives over the price control period.

Alternative options: incentive strength varying with network company profit

Under a new regulatory framework, a fixed incentive rate would be set up front for the duration of the price control. Our consideration of alternative regulatory frameworks has highlighted the possibility of a different approach to efficiency incentives in which the extent of risk sharing between a network company's shareholders and consumers depends on the levels of the company's costs during the price control period. This would reflect ideas on profit-sharing and sliding scale models discussed in the regulatory literature.

It would be possible to make the incentive rate depend on how close a company's actual expenditure is to the expenditure envisaged (by Ofgem) at the price control review. In particular, the incentive rate could be lower the further a network company's actual costs are from what was envisaged. This would have the effect that, if the network company is making relatively low or high profit, further increases or decreases in its costs would have less effect on its profit than if it were making an average profit. This, in turn, could reduce the chances of a network company making very high or very low profit

Compared to a fixed incentive rate, this approach would provide a network with greater protection against costs being much higher than envisaged. It would provide consumers with greater protection against costs being much lower than envisaged.

Such an approach has a number of drawbacks. Most importantly, it risks undermining the clarity of the incentive regime, with networks unsure whether they would face weak or strong incentives on costs. If networks are not confident that they would face strong incentives, they may have little motivation to find ways to reduce and restrain their costs. Furthermore, there is an argument that in cases where a network is spending much more than anticipated at the time of the price control, this is precisely when it needs to face strong incentives to cut its costs — but this approach would give it relatively weak incentives to cut costs in this situation. The regime would also be significantly more complex to implement.

Alternative option: seeking to balance the strength of incentives across the price control period

Many of the activities that network companies perform recur over time (e.g. regular inspections of assets). For a given incentive rate, network companies may face a stronger profit incentive to find ways of reducing the costs of recurring activities at the start of the price control period than towards the end. This is because a network company risks losing the benefit of the cost saving when the price control is reset, at the next periodic review, in light of an assessment of the network company's future expenditure requirements. The further away the next price control review is, the greater is potential profit opportunity from cutting costs of recurring activities today.

For example, suppose the incentive rate is 40 per cent, so that a network company receives an additional profit of 40 pence for each £1 reduction in its costs during the price control. If the company finds a way to cut the costs of an activity it carries out annually by £100 in the first year of a five-year price control, it is effectively guaranteed to profit from this saving by at least £200 (40%*£100*5 years). If it finds a way to cut the costs of that activity by £100 in the fourth year of a five-year price control, it would profit from this saving by at least £80 (£40%*£100*2 years). In either case, the cost reduction may bring the company further benefits in subsequent price control periods, depending on how the next price control is set. But the minimum benefit the company is entitled to under the price control is greater the earlier in the price control period it makes the saving.

Differences in the strength of incentives during the price control period could lead to distortions in how network companies behave. For instance, towards the end of a

price control, network companies might delay the introduction of measures that could reduce costs of recurring activities until the next price control review.

It might be possible to design schemes that explicitly seek to balance the strength of incentives across the price control period. For instance, the effective incentive rate could be higher towards the end of the price control period to compensate for the risks that network companies would otherwise face weaker incentives to reduce costs as the end of the price control period approaches.

Ofgem considered a scheme of this nature for operating expenditure as part of the previous electricity distribution price control review (DPCR4). However, there were practical difficulties in developing suitable "rolling incentives" arrangements for operating expenditure and they were not implemented (these arrangements should not be confused with "rolling incentives" for capital expenditure; the two are quite different).

In order to effectively balance the strength of incentives at different points in the price control period it is necessary to first estimate the magnitude of differences in the strength of incentives that would otherwise apply across the different years of the price control. If a scheme is based on inaccurate estimates of these magnitudes it could worsen, rather than address, any imbalances in incentive strength that exist.

It is difficult to estimate these magnitudes. First, the potential for a company to face weaker incentives to cut costs towards the end of the price control period than at the start depends on the extent to which the company performs recurring activities. Not all of the things a company spends money on will be recurring over time, and there is no clear way to isolate areas of expenditure that cover recurring activities (e.g. both operating expenditure and capital expenditure include expenditure on recurring activities). The extent of recurring activities will also vary from network to network and over time.

Second, the potential for a company to face weaker incentives to cut costs towards the end of the price control period depends on its expectations about how the next price control will be set — in particular, whether actions it takes today to reduce its costs will lead to it being allowed lower revenues under the next price control. The risks of imbalances are lower the less the network expects its actual expenditure to influence the revenues it is allowed under the next price control. Indeed, where Ofgem uses cost benchmarking information, rather than a company's own costs, to set price controls, there may not be any differences in the strength of incentives across the regulatory period. It is likely to be difficult to quantify the impacts stemming from companies' expectations about how future price controls will be set.

We do not anticipate, as part of RPI-X@20, recommending the introduction of a specific scheme to deal with the potential for recurring activities to give rise to imbalances in the strength of incentives during the price control period. We do not rule out the possibility of developing a suitable scheme in the future.

Nonetheless, as we develop our thinking we will consider other ways to limit these risks (e.g. through the use of information from benchmarking analyses and competitive tenders in setting price controls).

Equal incentive rate for operating and capital expenditure

5.29. In a new regulatory framework we would want network companies to find ways to deliver the required outcomes at lowest cost. We would want them to consider different approaches to delivery and to take the approaches that are likely to represent best value for money for consumers. As far as possible, we would want to avoid the regulatory framework distorting network companies' decisions on approaches to delivery.

5.30. We recognise that a network company's incentive to spend one type of expenditure rather than another are likely to be affected by the strength of specific incentives associated with different types of expenditure and by the expected treatment of expenditure categories at future price control reviews. We consider here a range of measures, alongside a focus on outputs and well-justified business plans, that could help limit any distortions arising from the regulatory framework.

Differences in the power of incentives for operating and capital expenditure

5.31. Energy network regulation, along with the regulation of other utilities, has historically taken a different approach towards the financing of network companies' operating expenditure requirements compared to that for companies' capital expenditure requirements (though, as highlighted below, this is less so under Ofgem's final proposals for electricity distribution price controls from April 2010).

5.32. Operating expenditure has typically been funded through an annual allowance for each year of the price control, set in advance at the price control review. This has the effect of a fixed price approach, in which the network company gets the full benefit of any saving from spending less than envisaged when the price control was set, and bears the full costs of spending more than this — at least until the price control is revised at the next review.

5.33. Capital expenditure has typically been funded through the regulatory asset value (RAV). Each year the network company is entitled to collect revenues in respect of depreciation and a return on capital on the prevailing regulatory asset value. Broadly, and at the risk of over-simplifying, a forecast of the company's capital expenditure requirements in each year would be made at the start of the price control period and used as an input to set a profile for the value of the regulatory asset value over the period of the price control. At the end of the price control period, adjustments would be made to the regulatory asset value, in light of information on the difference between the original forecasts and the company's actual capital expenditure over the period. These adjustments to the regulatory asset value then affect the amount of revenue the company can collect in the next price control period. Different approaches have been used to make these adjustments. But the general effect is that consumers ultimately bear a large proportion of the costs of a network company's actual capital expenditure being higher than the regulator's forecast, and also share a large proportion of the benefit of the companies' actual capital expenditure being lower than forecast.

5.34. The combined effect of such arrangements is that, once the price control has been set, network companies would bear the full cost of an additional £1 of operating expenditure (at least until the next price control review) but bear much less than the full cost of an additional £1 of capital expenditure as part of the additional costs would be borne by consumers (e.g. the company might bear something between 50 pence and 25 pence in the pound). These arrangements risk distorting companies' decision-making in favour of capital expenditure approaches, even where operating expenditure approaches could reduce overall costs over the longer term.

5.35. For instance, these distortions could affect network company's decisions in areas such as asset maintenance versus asset replacement. There could be more subtle effects. For example, if we treat procurement costs as operating expenditure, network companies would save proportionately more money from cutting procurement costs than they would from cutting the costs of the capital expenditure projects that they procure. These arrangements risk skewing network companies' resources away from planning and procurement activities in favour of capital expenditure.

Equalising incentives for operating expenditure and capital expenditure

5.36. In line with the step change that we have taken in this area as part of our recent electricity distribution price control review, we would tackle these concerns by setting the same incentive rate for operating expenditure and capital expenditure. This means the network company would bear the same proportion of the costs of spending an additional £1 of operating expenditure as for an additional £1 of capital expenditure.

5.37. Under our final proposals for electricity distribution price controls, the equal incentive rate will be implemented by arrangements which take a different approach to that described above for funding a network company through the regulatory asset value. A fixed proportion (85 per cent) of network expenditure (which excludes business support costs) will be funded through the regulatory asset value, regardless of whether the expenditure is categorised as operating expenditure or capital expenditure. The same incentive rate will apply where a network spends more or less than its baseline revenue, regardless of how this breaks down between operating expenditure and capital expenditure.

5.38. There may be other ways to equalise incentive rates for operating expenditure and capital expenditure. For instance, rather than including some operating expenditure in the regulatory asset value, it may be possible to make annual adjustments to both a network company's regulatory asset value and to other parts of its revenue allowances in light of its actual expenditure in the previous year. The adjustments would be calculated to give rise to the same intended incentive rate for operating expenditure and capital expenditure. We will consider different options as part of work on the financial framework for our summer 2010 recommendations on the future regulatory framework.

5.39. We recognise that setting the same incentive rate for operating and capital expenditure is not a complete solution to risks of the regulatory regime distorting network companies' decision-making between different expenditure categories.

5.40. Distortions may arise from network companies' perceptions about the regulatory approach that would be taken at the next price control review. For instance, if a network company expects that, at the next price control review, baseline revenue would be set using different methods for assessing its operating expenditure and capital expenditure requirements, this may affect its mix of operating and capital expenditure in the period leading up to the next price control review (see Chapter 4).

5.41. Furthermore, as discussed in Chapter 6, if network companies expect changes to the rules and parameters of the regulatory regime from one review to the next, this could also lead to distortions between operating expenditure and capital expenditure solutions. In developing our ideas further, we will seek to identify ways to address these concerns. For example, we will consider whether it is appropriate to focus on total cost benchmarking when assessing relative efficiency and consider the extent to which it contributes to limiting these distortions.

5.42. As highlighted in the box below, we also recognise that there are potential downsides with setting equal incentive rates for operating expenditure and capital expenditure.

Alternative option: stronger incentives for operating expenditure

Setting the same incentive rate for operating expenditure and capital expenditure represents a departure from much of the precedent in UK utility regulation. Regulated companies have generally faced stronger incentives for reducing operating expenditure than for reducing capital expenditure.

There is a possible line of argument for retaining this tradition:

- ➔ There are risks that the forecasts of a network company's expenditure requirements that are used to set the price control turn out to be excessive compared to what the network company actually needs to spend.
- ➔ Stronger incentives on network companies to cut costs provide consumers with less protection against these risks.
- ➔ Because of the nature of available information, the forecasting risks may be greater for capital expenditure than operating expenditure (e.g. it may be easier to extrapolate operating expenditure using historical data, whereas capital expenditure requirements might be more lumpy over time with less opportunity to use historical levels as a guide to future needs).
- ➔ A better balance can be struck between strong incentives and forecasting risks by setting a lower incentive rate for capital expenditure than for operating expenditure.

However, our current position is that, whilst there might be some benefits in the management of forecasting risks from setting different incentive rates, it is more

important to try to avoid potential distortions in network companies' decision-making between operating expenditure and capital expenditure approaches. We will consider how best to deal with the risks that may arise in the wider framework, as far as possible. The focus on outputs, and associated incentives for delivery of these outputs, should also go some way to balancing any concerns that investment projects that are needed will not be undertaken in the future because of a strong incentive rate on capital expenditure.

Avoiding discretionary adjustments in light of outturn costs

5.43. We recognise that encouraging efficient delivery over the long term is just as much about what we would not do as what we would do.

5.44. Where a network company fails to deliver the outputs set upfront, it would be penalised as appropriate. The level of the penalty may reflect the value of the specific work avoided by the network company because of this shortfall in delivering outputs. In some cases, it might be appropriate to implement a penalty through a reduction in the regulatory asset value (RAV).

5.45. Furthermore, as part of the upfront risk-sharing arrangements on costs, consumers would get some of the benefits from a network company delivering outputs at lower cost than envisaged by Ofgem when the price control was set, and a company would get some financial protection against delivering outputs at a higher cost than envisaged. As noted earlier, as an exception, where expenditure is deemed to be manifestly inefficient we may decide that consumers should not contribute towards this expenditure. A new regulatory framework would be transparent about the types of expenditure decisions that might be expected to be treated in this way and the criteria we would use to consider what is in the best interest of existing and future consumers.

5.46. However, we want to avoid, as far as possible, discretionary adjustments based on the regulator's observation of how much money a company ends up spending over the period of a price control.

5.47. If a company expects the regulator to make discretionary adjustments, at the end of a price control, based on what it actually spends — rather than whether it delivers outputs effectively — this risks undermining innovation and the long-term efficiency of network companies, to the ultimate detriment of consumers. We have identified two main categories of approaches that raise these risks:

- Ex post efficiency adjustments, and
- Claw back of under-spend.

5.48. We briefly discuss each category below. We highlight the risks they pose to innovation and efficient delivery over the long term. We then set out our suggested way forward.

Ex post efficiency adjustments

5.49. The category of "ex post efficiency adjustments" describes an approach in which the regulator determines that some of the expenditure a network company has incurred during the price control period was inefficiently high. It then reduces the amount of revenue the network company is allowed to recover from consumers so that consumers are not exposed to the perceived inefficiency (e.g. through a reduction to the regulatory asset value at the next price control review).

5.50. Ex post efficiency adjustments may be used to protect consumers from paying too much (e.g. funding unnecessary investment through the regulatory asset value). This approach may be more relevant where there is full cost pass-through or a low incentive rate, so that network companies face limited upfront incentives to avoid unnecessary expenditure.

5.51. However, if network companies expect the regulator to make ex post efficiency adjustments, they may adopt an approach where the focus is on being seen (by the regulator) to be spending money efficiently and on minimising the risk of being perceived to have wasted money. This is not as good as it might look. It is likely to encourage network companies to favour tried and tested approaches at the expense of innovation and experimentation that could ultimately lead to lower costs (or better services).

5.52. Innovation and experimentation naturally involve risks of failure — things that could look wasteful with the benefit of hindsight. Yet they are an integral part of the process of productivity growth and economic progress in competitive markets. Refraining from ex post efficiency assessments seems likely to promote innovation and experimentation by network companies that could reduce costs over the longer term.

5.53. The possibility of ex post efficiency adjustments could also deter network companies from anticipating the future needs of network users. A network company might decide that it is safest to wait until it has certainty over specific users' requirements before adapting the network to accommodate these requirements. This could lead to delays in meeting the needs of existing and future network users, or to higher total costs if it needs to rush through solutions in a shorter timescale.

Claw back of under-spends

5.54. Another category of discretionary adjustments in light of outturn costs is where a network company spends far less money during the price control period than envisaged when the price control was set, and the regulator makes a corresponding reduction to the revenues the company collects.

5.55. This might apply, for instance, where a network company has spent dramatically less than envisaged when the price control was set, and the regulator

takes the view that, rather than reflecting genuine efficiency savings, it was provided with forecasts that were higher than appropriate at the time of the price review. Some might perceive such a discretionary adjustment as necessary to prevent such inflation of forecasts being fruitful and to protect consumers from paying excessively high charges.

5.56. However, if a network company expects that Ofgem could make a discretionary reduction to its revenues if it delivers its outputs at much lower costs than envisaged at the time of the price control review, this could take away its motivation to find ways to reduce and restrain its costs. It could lead to the company treating the price control as a budget, rather than seeking to provide value for money to consumers.

5.57. This concern is particularly important in light of the uncertainty that surrounds the forecasting of network companies' expenditure requirements at the time of the price control review. It is perfectly natural for a situation to emerge where a network company spends significantly less or significantly more than the amount envisaged by the regulator. Even where it is already spending less, it is still important that the company faces strong incentives to find ways to reduce and restrain its costs over the remainder of the price control period.

5.58. It is also the case that regulators have struggled, since RPI-X was first introduced, to identify ways of determining, after the event, why a regulated company has spent less than envisaged at the price control review. There are a range of possible explanations. Apart from what might be perceived as genuine efficiency gains or productivity improvements, these include the possibility of the expenditure forecasts at the time of price control review being excessive, the company cutting costs at the expense of what it was expected to deliver, or just good luck. As indicated below, we anticipate that our upfront focus on outputs in a new regulatory framework would provide assurances that cost savings do not come at the expense of delivery of the outputs the price control was intended to fund.

Suggested way forward

5.59. We recognise that the two approaches highlighted above have, to some degree, played a role in Ofgem's regulation of energy network companies in the past as well as in the regulation of other sectors.

5.60. Nonetheless, each of these approaches risks undermining the incentives network companies face to innovate, to anticipate future demands for network services, and to find ways of delivering outputs at lower costs over the long term. The use of these approaches would also reduce the clarity of an outcomes-led framework.

5.61. Arguably, the need for these approaches has fallen over time, for example, as the regulatory assessment of the levels of revenues to be allowed in price controls has improved and longer time series of information on company performance and comparative information has been available. In addition, other elements of a

potential new regulatory framework would be intended to help provide greater protection against the risks that these approaches focus on:

- Reconciling, at the price control review, network companies' baseline revenue against a series of output measures, obligations and milestones that companies can subsequently be held to, which reduces the risk that companies can earn large profits simply by avoiding work that the price control was intended to fund.
- The use of strong incentive rates provides network companies with strong upfront incentives to reduce costs and avoid inefficient or wasteful expenditure — at least as far as they can without the benefit of hindsight.

5.62. We would like to commit to refrain from making discretionary adjustments to the revenues that a network company is entitled to, based on observation on the company's actual expenditure. Ideally, adjustments would only be made where there are risks to delivery of outputs. Any cost savings would be shared with consumers through the incentive rate and the costs of any expenditure above what was allowed would be shared between investors and consumers.

5.63. In the next stages of the RPI-X@20 review, we will be considering how far we can go towards this aim. For instance, we might need to retain the option of making adjustments in light of outturn costs for very specific, exceptional, circumstances including demonstrable cases of mismanagement or fraud. The appropriate approach might vary by sector or by area of expenditure.

5.64. For the avoidance of doubt, our suggested approach does not preclude adjustments to network company's revenues (including adjustments to the regulatory asset value) where a network company does not deliver the outputs specified when the price control was set.

Taking account of interactions between charging and price control incentives

5.65. As discussed in more detail below, there are interactions between network companies' structure of charges, usage of network services, required efficient expenditure for delivery of outputs, and incentives to save costs during a price control period. These interactions are not generally considered as part of the price control review and are likely to have implications for delivery of our desired outcomes.

5.66. Going forward, we will consider whether and how to take account of these interactions as part of the price review process. We would expect network companies, and other parties where relevant, to continue to review charging on an ongoing basis. In particular, we do not anticipate that charging changes would all happen at the time of a price control review. The ideas considered here would be complementary to existing and developing arrangements for charging modifications.

5.67. For the avoidance of doubt, we are not, in RPI-X@20, undertaking a wholesale review of the structure of charges in any of the network sectors. We will build on, where appropriate, our current work on gas entry charging and our work on electricity distribution structure of charges, and any consequential charging changes arising from the UK Government review of transmission access[8]. We are not reviewing the way in which charges are approved by the Gas and Electricity Markets Authority. The aspects of charging that we are considering will need to be consistent with current arrangements for charging modifications, including common methodology requirements, and in the future, with those that develop as a result of our Code Governance Review[9].

Interactions between charging and price control incentives

5.68. We consider here how charging decisions interact with price control incentives. First we set out the current arrangements for charging modifications.

Current charging modification process

5.69. Charges for use of network services are set to enable network companies to recover the expected allowed revenue of providing the services. The network companies can set charges to enable them to earn revenues up to the maximum allowed by the price control.

5.70. In electricity transmission and distribution and gas distribution the decision on how to raise revenue from different groups of customers is based on the charging models' representation of the relative impact on actual costs incurred, for consistency with cost reflectivity requirements. Arrangements are different in gas transmission where auctions set the capacity charges and commodity charges are used to recover any shortfall relative to allowed revenue.

5.71. The structure of charges is subject to approval by the Gas and Electricity Markets Authority. The structure of charges needs to be consistent with established principles and conditions. At present only network companies can propose charging modifications. Our proposed changes in the Code Governance Review would allow other parties to also raise charging modifications.

5.72. We also undertake, from time to time, more detailed reviews of charging regimes. Most recently, we have undertaken a review of the structure of electricity

[8] For further detail on DECC's consultation on transmission access see http://www.decc.gov.uk/en/content/cms/consultations/improving_grid/improving_grid.aspx

[9] Further details on the Code Governance Review can be found on our website: http://www.ofgem.gov.uk/Licensing/IndCodes/CGR/Pages/GCR.aspx

distribution charges and we are reviewing charging as part of the reform of gas transmission entry charging arrangements.

5.73. In our recent electricity distribution structure of charges work we have decided to tie the network companies' decision on extra high voltage (EHV) charging to the price control via an ex post review of capital expenditure (capex) efficiency. This is in response to the decision by two licensees in October 2008 to block our decision to oblige the companies to implement the common EHV charging methodology that we considered to be most cost reflective. The network companies are now obliged to implement their choice of one of two common EHV methodologies by 1 April 2011. In our 2010 decision on EHV charging we will oblige those DNOs implementing the Forward Cost Pricing (FCP) methodology to collect and publish evidence analysing its performance. Where the network companies do not do this, or the evidence provided indicates that the application of FCP has contributed to inefficient investment, we intend to disallow a proportion of associated expenditure from entering the DNO's asset base at the beginning of the next price control[10].

5.74. More generally, the current regulatory framework does not explicitly encourage networks to consider transparently the interactions between charging, other cost drivers, and their business plans at price reviews — though there is nothing to stop network companies doing this. For example, there is little discussion of the impact of proposals on the costs to different groups of consumers; the focus is on total required revenue. Networks are also provided with little incentive in the price control framework to develop new charging structures that might present alternative viable solutions for delivering desired outcomes. In RPI-X@20 we are considering whether it is appropriate to look at these interactions at the price control review.

Incentives to seek out efficient and innovative delivery solutions

5.75. We have emphasised throughout this paper, and in our main Emerging Thinking consultation paper, that we want energy network companies to seek out efficient and innovative solutions for delivering outputs over the long term. It is possible that network companies may be able to develop and adopt new or

[10]The ex post capex review was introduced in our March 2009 decision on the structure of charges project http://www.ofgem.gov.uk/Networks/ElecDist/Policy/DistChrgs/Documents1/Next%20steps%20SoC%20decision%20doc.pdf and was further discussed as part of DPCR5 initial proposals (see paragraphs 1.15 and 1.16). See - http://www.ofgem.gov.uk/Networks/ElecDist/PriceCntrls/DPCR5/Documents1/Initial%20Proposals_1_Core%20document.pdf. We now expect this to be developed and implemented as part of our decision, due next year, on the EHV changing methodology for electricity distribution. For further information on EHV charging see - http://www.ofgem.gov.uk/Networks/ElecDist/Policy/DistChrgs/Documents1/July%20decision%20EHV%20charging%20and%20governance.pdf

innovative charging structures that enable them to deliver outputs efficiently over the long term. For example, a distribution network operator might consider charging structures that encourage network users to reduce their demand for network services in particular locations or at particular (peak) times. This could in turn reduce the need for capital investment solutions and reduce the total cost of delivering outputs over time.

5.76. We would encourage network companies to consider, when developing their business plans, the extent to which charging might be part of the solution. Any proposed changes in the charging methodology by a network company would be subject to consultation requirements and standard charging principles set out in their licences (e.g. cost reflectivity, facilitating competition and non-discriminatory) and would still need to be agreed through standard processes. We set out below some initial ideas on how network companies might be encouraged to consider the interactions in this way.

Incentives to reduce costs during the price control period

5.77. We provide, and would continue to provide in a new regulatory framework, incentives for companies to seek out delivery solutions that enable them to reduce costs over time. This means that during a price control period network companies may have costs that are lower than anticipated at the time of a price control review. This would benefit consumers in the long term.

5.78. We recognise that the incentives to reduce costs can impact on a network company's decisions about structure of charges.

- A network company may choose not to change its structure of charges over time because undertaking a structure of charges modification process would mean spending on operating activities, limiting potential gains from being efficient with operating expenditure (developing and implementing charging modification is largely an operating cost). This may be appropriate but there may be cases where a modification of the structure of charges would have a beneficial impact on delivery of our desired outcomes. If parties other than network companies have the opportunity to propose modifications themselves, as may be the case in the future, the network company's ability to avoid potentially beneficial modifications would be reduced. More transparent information and discussion at price reviews on the interactions between charging, usage of network services and baseline revenues may help to inform users of the network, and other interested parties, of the types of modification that might help to deliver outputs and value for money for the long term.
- On the other hand, the price review incentives to reduce costs may also encourage a network company to change its structure of charges in a way that changes demand for network services by some consumers and enables the network company to avoid expenditure that was considered necessary at the time of the price review. Charging modifications are considered by GEMA, and principles need to be adhered to if they are to be approved, including cost-reflectivity and non-discrimination. Even where modifications are allowed we may

find, after the fact, that the combination of allowed revenue and actual charges that are in place are not always consistent with delivery of our desired outcomes. Where benefits accrue to the network company but the actions taken were not clearly in the interests of existing and future consumers we would need to consider whether and how to take this into account at price control reviews.

5.79. We set out in the text boxes below two specific examples, observed in recent years, to demonstrate these interactions between price control incentives and charging. These are cases that Ofgem has considered outside of the RPI-X@20 review and are presented here for illustration purposes only[11].

National Grid Transco Interruptible tariffs

In the past, National Grid Transco (NGT) offered 'interruptible' tariffs with large discounts on exit capacity charges, in the expectation that demand could be changed at peak periods if needed. Customers self-selected onto these contracts and could even do so in areas where there was spare capacity and hence a small chance of being 'interrupted'. At the same time, NGT had a volume driver in its price control and was able to earn more revenue for every therm that flowed. Other customers, with 'firm' access arrangements, paid higher charges than would otherwise have been the case. With these charging arrangements, NGT could lower its investment requirements (by potentially faciliting a reduction in network demand at peak times) and potentially earn higher revenues if average volume increased. Actual expenditure could have been lower than allowed when the price control was set, enabling NGT to benefit from the change to the structure of charges. We raised concerns about these charging arrangements in the past. For example, in our work on the sale of gas distribution networks we raised concerns about whether the exit and interruption charging arrangements were cost reflective and non-discriminatory (para 5.21 and 5.22 of our July 2003 consultation on the potential sale of the distribution network businesses). Exit capacity charging arrangements have been, and continue to be, changed to help address concerns raised, but the example illustrates how a network company could benefit from the interactions between price control incentives and charging arrangements.

National Grid Electricity Transmission Triad charges

For large users, GB electricity transmission charges are based on peak demand which is measured over the three peak half hours of system demand in the year - the "TRIAD". This method of charging gives a strong incentive on users of the GB network, including interconnectors, to avoid flowing electricity during peak periods. This in turn potentially reduces National Grid Electricity Transmission's (NGET) expenditure if enhancements or reinforcements to the network are not needed because of the anticipated reductions in peak demand. Where this impact on expenditure is not taken into account at a price control review, perhaps because the actual impact on demand is uncertain upfront, NGET can benefit from having lower costs than was assumed when the price control was set.

[11] For more information on the interruptible tariffs example see our July 2003 consultation on the sale of the gas distribution network businesses: http://www.ofgem.gov.uk/Networks/GasDistr/otherwork/Documents1/4208-NCT_potential_sale_consultation_July03.pdf

Taking account of interactions in a new regulatory framework

5.80. In a new regulatory framework we would encourage network companies to consider interactions between charging and the price control. In particular, as part of the price review process, we would encourage network companies to:

- As now, develop charging arrangements consistent with the relevant charging methodology objectives (e.g. cost reflectivity, facilitating competition and non-discriminatory) and our statutory duties, providing network users with efficient signals that reflect the cost of establishing and running network assets.
- Be transparent on the interactions between charging, delivery options and expected efficient costs of delivery in their business plan. For example, they might consider how expected efficient costs of delivery might vary with potential alternative charging arrangements (recognising that any changes would need to be taken through standard modification processes).
- Consider, subject to standard charging methodology requirements including non-discrimination, innovative charging arrangements that could contribute further to delivery of a sustainable energy sector and value for money. When considering the impact of potential alternative charging structure network companies may need to take account of interactions with parallel mechanisms (e.g. the Renewables Obligation in the case of electricity transmission).
- In their business plans and in their decisions about how best to deliver on an ongoing basis, give recognition to the fact that flexibility in the access terms and price of such access can impact on demand scenarios and potential impact of different delivery solutions.
- Discuss the impact of the price control package, both outputs and associated 'prices', in their engagement with consumers and network users.

5.81. We would also discuss, in our enhanced engagement processes, the outputs and price aspects of the package. To do this we and parties involved would need to have information that enables us to understand the implications of network charging structure on demands for network services and to understand better the implications for different groups of consumers of network services (particularly end consumers).

5.82. For our summer 2010 recommendations, we will consider whether it is appropriate to provide network companies with rewards for considering how best to manage the interactions between charging and the price control, including developing innovative charges. We recognise that both network companies and consumers should benefit if changes in charging arrangements contribute to delivery of a sustainable energy sector and value for money. To provide the network companies with an incentive to make these changes we would ensure there is some upside. Essentially gains made, which are considered to be in the interests of existing and future consumers, would be subject to incentive arrangements[12].

[12] This could be the same as the incentive rate used for other cost savings or could be different. We will consider this issue further for our summer 2010 recommendations.

Symmetrically, we would consider whether there needs to be more significant downside to changing charges in ways which we consider, once the impact is observed, are not in the best interests of existing and future consumers.

5.83. We set out here some initial ideas on options for providing an upside and a downside relating to the interactions between price control incentives and charging. We welcome views on these options, including the extent to which they might be more or less appropriate for different energy network sectors.

- We may explicitly reward network companies that demonstrate in their business plans and on an ongoing basis that they have considered changes in charging arrangements as part of their assessment of alternative delivery solutions (e.g. full consideration of non-network solutions to limit volume or avoid/defer reinforcement to ensure the most efficient long-term solution for customers). This could be part of our general approach to treating network companies differently at a price review to reflect differences in planning and delivery performance.
- We may provide explicit rewards for those network companies that implement new or innovative charging structures that are proposed at the price control review or during the price control period[13].
- We may make adjustments to a network company's allowed revenue if cost savings that arose from choices on charging structure were deemed not to be in the interests of existing and future consumers. We will consider further whether such arrangements could be developed by linking charges to outputs as part of the 'understanding of what is to be delivered' under the price control package.
- We may explicitly assess the impact of the price control package on different groups of consumers of network services, and consider whether it is appropriate to set constraints on the proportion of costs that are raised from different types of charges (e.g. volumetric and connections charges) or different groups of consumers.

5.84. For our summer 2010 recommendations we will consider further how best to consider charging and the price control 'in the round' at price control reviews.

[13]Any proposed changes in charging methodology by a network would be subject to consultation requirements and standard charging principles set out in their licences (e.g. cost reflectivity, facilitating competition and non-discriminatory) and would still need to be agreed through standard processes.

6. Longer-term price controls

6.1. We have heard concerns from stakeholders that the five-year time horizon of price controls has a strong influence on energy network companies' behaviour, potentially to the detriment of the longer-term efficiency of network companies. These concerns fit with a theoretical analysis of the profit opportunities available to network companies under the current regimes involving five-year price controls.

6.2. Current regulatory arrangements create risks that network companies may focus their efforts on the five-year price control window at the expense of actions that could reduce or restrain costs over the longer term. For instance:

- network companies may miss opportunities to plan their activities more effectively and to anticipate the needs of existing and future consumers and network users over the period beyond the five-year price control period; or
- network companies may not engage in innovative activity for which the potential payoff falls beyond the period of the current price control.

6.3. We see these concerns as a potential consequence of the current price control arrangements.

6.4. Different aspects of a new regulatory framework go some way towards addressing risks of network companies taking an overly short-term focus. These include network companies' business plans reflecting a longer time horizon, a specific innovation stimulus, and suggestions to refrain from discretionary adjustments to revenues in light of outturn costs (so long as outputs are delivered).

6.5. However, there may be benefits from going further and giving network companies a much clearer and more substantial financial stake in their costs in the years beyond a five-year horizon. This could help encourage network companies to take actions, and plan their activities, in a way that better constrains their costs over the longer term. It could provide a stronger, and complementary, motivation for longer-term thinking by network companies, sitting alongside the benefits of longer-term business plans and the innovation stimulus.

6.6. We are considering different ways in which we could commit to the levels of a network company's baseline revenue under a price control (or some part of this revenue) for a period longer than five years. The appropriate approach may vary between the sectors.

6.7. We commissioned a paper from Reckon LLP to identify potential benefits and drawbacks of longer-term price controls and to identify a number of options around longer-term price controls. We highlight below a number of different options that we will be considering further.

Options for longer-term price controls

Extending the length of the price control period

6.8. The Reckon paper considers, in the first instance, the possibility of extending the period between price control reviews (e.g. from five to ten years). This could bring benefits to longer-term efficiency. It could also reduce the administrative burden of the price control process.

6.9. The paper highlights a number of potential drawbacks of extending the period between price control reviews. Two stand out. First, the things that we, and network companies' customers, want network companies to deliver may change over time, and a longer period between price control reviews may provide insufficient scope to adapt the regulatory regime to deliver these. Second, longer-term price controls might create greater risks that a well-managed network company may be unable to finance its activities or that network companies might earn what might be perceived as excessive returns at the expense of consumers.

6.10. These concerns might, in turn, lead to Ofgem re-opening the price control before the planned review — or at least to perceptions by network companies that this might happen. The less confidence network companies have in the price control standing for the planned period before being re-opened, the less scope there is for the potential benefits of a longer price control period to be realised.

Partial longer-term price controls

6.11. In light of the potential risks associated with extending the length of the price control period, we can see merit in options that would bring some of the benefits of longer-term price controls, whilst mitigating these risks. In this context, Reckon's paper identified options for partial longer-term price controls.

6.12. We summarise the two most promising options for partial longer-term price controls below. Under both of these options the network company would have a clear financial stake in costs over a longer period, but there would be a partial price control review, in which to make specific changes, halfway through this period. The Reckon paper gives a more detailed description of these options as well as a high-level comparison of them against five-year price controls and a full extension of the price control period to ten years.

6.13. The first option is to set a longer-term price control (e.g. for ten years) and plan a review of output requirements midway through this period (e.g. after five years). Under this approach, the baseline revenue would be adjusted after five-years only insofar as is justified by the changes to the outputs that a network company is required to deliver. Because any changes to the revenue the network company is allowed under the price control would be incremental, linked to changes to outputs, rather than a full review of the overall revenue allowed, this option would be

expected to achieve the benefits of longer-term price controls in better encouraging network companies to reduce and restrain costs over the longer term. At the same time, this option would provide an opportunity to adapt the regime before the end of the price control in terms of the outputs network companies are required to deliver.

6.14. The second option is to set a longer-term price control (e.g. for ten years), but give network companies and customers some additional protection against costs being higher or lower than anticipated. This protection would be given by partially adjusting the revenues the network companies can earn under the price control halfway through the period, on the basis of an updated forecast of the network companies' expenditure requirements (including financing costs) for the remainder of the period. The key feature of this approach is that the adjustment halfway through the period is partial – only a proportion (e.g. 50 per cent) of the difference between the original and updated forecast would feed through to changes to the price control. This has the effect of exposing network companies, to some extent, to the original longer-term price control throughout the period.

6.15. Further options and variations are possible. Another option, discussed below, is a longer-term commitment to the rules of the regulatory regime, without necessarily committing to the revenues that network companies can earn for a period beyond five years.

Next steps on partial longer-term price control

6.16. We will be considering these options in more detail as we work up our summer 2010 recommendations. In addition, we have not ruled out a more straightforward extension of the period between periodic reviews, and will be considering different options on the possible duration of price controls.

6.17. We recognise that a move towards longer-term price controls might need to be accompanied by changes to other aspects of the price control regime. For instance, there might be a greater need for:

- more regular monitoring of network companies' performance between price control reviews;
- potentially updating the cost of capital between price control reviews; and
- greater use of other measures to protect network companies and consumers against uncertainty during the price control period (see discussion below).

6.18. We would also need to take account of any movement towards longer-term price controls when setting the level of cost of capital.

Longer-term commitment to the rules of the regulatory regime

6.19. We have also identified options that would provide a longer-term commitment to the "rules" of the regulatory regime, beyond the period over which the revenues that a network company can earn under the price control are set.

6.20. A network company's decision-making may be distorted by perceptions that it might operate under different (e.g. more favourable, or less favourable) price control arrangements at the next price control review. Anticipation of what changes might be made at the next price control review may distort when the network company does things as well as what it does — for example, decisions between operating expenditure and capital expenditure approaches.

6.21. For instance, as set out above, an important element of the price control regime is the incentive rate. If a network company expects to face a higher incentive rate under the next price control than the current price control, this could distort its behaviour. It may have a profit opportunity to carry our work now that could otherwise be delayed until the next price control period, simply because it expects consumers to bear more of the costs of its expenditure under the current price control. Such distortions may operate against the efficiency of network companies.

6.22. Together with our thinking on options for longer-term price controls, we will consider the case for setting price controls within the context of committing to specific rules of the regulatory regime over the longer term. The following aspects of the regime might be candidates for a longer-term commitment:

- The methods used to set baseline revenues (e.g. role of benchmarking analysis).
- The "incentive rates" or "sharing factors" that network companies face.
- The ways in which network companies are protected against specific sources of uncertainty.
- The methodology for determining the allowed rate of return.

6.23. The benefits of providing commitment on these and other aspects of the regulatory framework need to be weighed against the benefits of retaining full flexibility to adapt and improve the regulatory regime over time.

Project-level funding arrangements

6.24. In our assessment of options for encouraging network companies to focus on the longer term we will also consider whether it is appropriate to treat some projects differently to the rest of the price control package. Where network companies' direct expenditure towards specific projects, rather than ongoing activities, it may be beneficial to determine funding arrangements for these projects in a way that is not constrained by the timing and length of the price control.

6.25. For instance, it may be difficult to anticipate at the time of the price control review what an appropriate level of baseline revenue is for a project that we expect to commence later on in the price control period. It may be beneficial to determine this closer to the time when the project is needed, when there is more information on the likely costs and timescales. As highlighted in our supporting paper on a greater role for competition in delivery, we might, for example, want the delivery of a project to be tendered out during a price control period and to use information on the tender price as an input to determining the revenues a network company is allowed under the price control (this will depend on the nature of tender being considered).

6.26. In addition, where we expect a project to span more than one price control period, the incentives on the network companies to control costs might be greater if the funding arrangements are committed to for the full length of the project. This could address concerns that the approach reduces network companies' incentives to restrain costs over the full length of the project because of the opportunity for it to seek additional funding for the project when the next price control is set.

6.27. We recognise that basing regulatory arrangements around the delivery of specific projects can present a risk of micro-management. Even if a network company delivers the projects agreed with Ofgem efficiently and on time, this does not guarantee that value for money will be achieved overall. Opportunities may be missed for the network to carry out a different mix of projects, or to change the timing of projects, in ways that might lower overall costs whilst still meeting our desired outcomes.

6.28. In RPI-X@20 we will consider further in what circumstances it might be appropriate to treat specific projects separately from the general price control framework. We will consider the potential for designing incentive arrangements to mitigate the risks that Ofgem setting network companies project-level deliverables could lead to an inappropriate programme of work by networks.

Management of uncertainty during the price control period

6.29. We recognise that, by the nature of ex ante price controls, there is uncertainty when a price control is being set about what network companies will face during the price control period. As noted earlier, if the length of time between price control reviews is changed (partially or in full) the potential risks associated with this uncertainty may become more significant.

6.30. In general, we think it is appropriate for network companies to manage the uncertainty that they face. The symmetric incentive rate discussed in Chapter 5 provide some assurances that if costs are higher than anticipated at the price control review these would be shared between investors and consumers.

6.31. However, we recognise that there may also be a role for specific uncertainty mechanisms in the regulatory framework that enable the revenue allowance to be adjusted during the price control period. Ofgem's current price controls include a range of mechanisms, which reduce network companies' exposure to financial risks. These include the indexation of revenues to the retail price index (RPI), revenue or volume drivers, specific re-openers and provisions for logging up specific costs for treatment at the next price control review[14].

6.32. We have discussed the benefits and drawbacks of such mechanisms in an RPI-X@20 working paper from October 2009 on "Ensuring the future regulatory framework is adaptable". The working paper identifies that these mechanisms may reduce the financial risks that network companies face, reduce the risks that network companies may make what are perceived to be "windfall profits" and reduce the risks that network companies do not deliver what they are meant to deliver. It also recognised that these mechanisms might undermine incentives for efficiency, increase price volatility, increase the complexity of the regime and the risks of unintended consequences and increase the regulatory burden.

6.33. We may have come to the point where there are too many mechanisms of this nature and that their cumulative impact (e.g. on complexity and incentives) may not be given sufficient weight. We also recognise that there is potential for a network company to benefit from the upside of one uncertainty mechanism, without facing downsides elsewhere. We will consider how to adopt a more holistic approach to reviewing the case for adjusting baseline revenue during the price control period in response to such uncertainty mechanisms.

6.34. In particular, we would take a more structured approach to the implementation and review of specific mechanisms which reduce network companies' exposure to uncertainty or which pass-through the regulatory treatment of specified costs to the next price control review. We plan to develop, as part of RPI-X@20:

- processes to ensure that the potential downsides of these mechanisms are given sufficient weight before including them in the price control;
- processes to review existing mechanisms to assess whether they are still needed;
- processes to ensure a consistent approach to the use of these tools is taken across different aspects of the price control review; and
- guidance on the design of these mechanisms in ways that are least likely to damage the incentives on network companies to control their costs, that can limit the impact on price volatility and that are relatively simple.

6.35. We will develop the basis for such an approach for our summer 2010 recommendations. The aim would not be to constrain our discretion at the time of each price control review, but rather to contribute to better decision-making, drawing on the experience and understanding of that we have developed over time.

[14] See Ofgem (2009), "Delivering outcomes: Ensuring the future regulatory framework is adaptable", RPI–X@20 working paper, October, Annex 1

7. Aligning incentives to encourage cross-sectoral solutions

7.1. Energy network companies are only part of the solution to delivering a sustainable energy sector at value for money. They will not be able to deliver in isolation. They will need to work with other parties including suppliers, generators and consumers, as well as relevant parties in other sectors (e.g. transport and communications). We recognise that a number of network companies already work in partnerships with others. More is needed in the future.

7.2. As discussed in our main Emerging Thinking consultation paper, we need to ensure that the regulatory framework as a whole encourages energy network companies to actively seek out delivery solutions with other parties where appropriate. We would achieve this through realignment and strengthening of incentives, enhanced engagement, an innovation stimulus that is open to third parties and competitive tendering of key aspects of delivery.

7.3. In our discussions with stakeholders, academics and other interested parties, a number of specific aspects of the existing industry structure and regulatory arrangements were highlighted as potential constraints on delivery of our desired outcomes. The concerns primarily relate to the electricity sector. We will consider further for our summer 2010 recommendations whether there are parallel concerns for the gas sector.

7.4. The arguments that have been made in discussions are as follows:

- The current ownership and regulatory arrangements for the electricity and gas transmission owners and system operators may distort decisions relating to the need to manage constraints and expand available capacity.
- The ability of electricity distribution network operators to undertake effective active demand management, and make choices between expanding capacity and managing the network, is constrained by the absence of a distribution system operator role.
- The ability of electricity distribution network operators to undertake effective active demand management is constrained by the existence of the supplier hub, and the delineation of roles and responsibilities between suppliers and distribution network operators.

7.5. A number of parties have also suggested that the bundled ownership of suppliers and electricity networks means that not all suppliers can effectively engage in the regulatory process as representatives of consumer interests. Others have noted that bundled ownership of distribution network operators may constrain the benefits of benchmarking in the regulatory framework, and limits the number of parties considering how best to deliver and to identify innovative solutions for delivery. These issues relating to bundling have not been addressed in the RPI-X@20 review, although we have been mindful of their impact on the development of our ideas on enhanced engagement and incentive design.

7.6. We set out here how incentives between the transmission owner and the system operator; and between distribution networks, the system operator and suppliers might be better aligned. Building on work undertaken by Frontier Economics 2009 we do not think that structural changes are necessary for the delivery of our RPI-X@20 outcomes, although we anticipate that the roles of some network companies would change over time[15]. Our priority is to ensure that incentives are aligned between different industry players. We will work up the detail for our summer 2010 recommendations.

Aligning Transmission Owner and System Operator incentives

7.7. National Grid Electricity Transmission (NGET) is the system operator for the GB electricity transmission network with responsibility for ensuring the network remains within safe operating limits. NGET is also the transmission owner in England & Wales with responsibility for making investment decisions for the electricity network. In Scotland, there are separate transmission owners (Scottish Power and Scottish and Southern) that take these investment decisions. In gas, National Grid Gas (NGG) is both the system operator and the transmission owner for GB as a whole.

7.8. Network users have a responsibility to ensure the amount of energy they flow onto or take off of the system is consistent with contractual allowances. The system operator has a role in ensuring the system remains within safe operating limits. It does this by buying or selling energy where network users are not compliant with contractual allowances or where constraints on available system capacity arise. The transmission owners are responsible for ensuring there is sufficient network capacity to facilitate flows along the network.

7.9. The electricity system operator is subject to regulatory incentives. The incentives are set through extensive consultation with the system operator and other industry parties. The SO incentive schemes establish cost targets that the electricity system operator is expected to achieve in performing its role. If actual costs are below the relevant target, the system operator is permitted to receive an incentive payment, and similarly if actual costs exceed the target, each faces an incentive penalty. The maximum payment is subject to an upper cap, and similarly the maximum penalty is bounded by a lower collar. The incentives are currently set for one year, although there are currently discussions to extend this to two years and

[15] The Frontier Economics report highlights a number of structural (e.g. distribution network operators owning back-up generation capacity) and relationship changes (e.g. coordinated processes between the transmission system operator and distribution system operators) that might be considered desirable more generally and which might enhance delivery of our outcomes, if DNOs were to increasingly rely on active demand management as an alternative to network investment. We will give these conclusions further consideration as we work up the detail of the framework.

potentially in time to align the length of the incentive period with that of the transmission owner[16].

7.10. Allowances for network investment are included in the transmission owner's five-year price control and the transmission owner can undertake investment to remove constraints, enabling the system operator to avoid these associated costs.

7.11. There are clear interactions between the scale of constraint costs and network investment decisions. It is therefore important that the incentives of the system operator are aligned with the incentives of the transmission owner. We consider here whether this is the case.

Are incentives sufficiently aligned in the current frameworks?

7.12. As discussed in Frontier's report, there are concerns that the incentives of the transmission owner and system operator may not be sufficiently aligned in the electricity sector. We need to consider how these are impacted by the joint ownership of the GBSO and TO in England and Wales, and separate ownership of the GBSO and TO in Scotland.

- There is a potential risk that NGET's incentives to invest as transmission owner would be distorted by its incentives, as system operator, to reduce capacity constraints. Any biases, arising from joint ownership, could be influenced by the perceived relative certainty of funding for investment under a price control and the volatility of constraint costs investment.
- The transmission owners' incentives to invest are also potentially distorted by the fact that they do not face the costs associated with constraints. At the very least there is a perception that there is limited coordination of network maintenance and development plans, which means that efficient decisions may not be reached. This is likely to be true of NGET and the Scottish TOs.
- The timing of the regulatory incentives are not aligned, with the system operator incentives currently being set for one year and those of the transmission owner currently being set for five years. The cost categories and incentive design are different for the system operator and the transmission owners. Changes to the system operator incentives are outside the scope of RPI-X@20. However we will consider implications of our new regulatory framework for the system operator incentives.

[16] For further details see our letters on system operator incentives from April 2010: http://www.ofgem.gov.uk/Markets/WhlMkts/EffSystemOps/SystOpIncent/Documents1/Open%20Letter%20final.pdf (May 2009 letter) and http://www.ofgem.gov.uk/Markets/WhlMkts/EffSystemOps/SystOpIncent/Documents1/Ofgem%20initial%20comments%20on%20National%20Grid%20System%20Operator%20Incentives.pdf (November 2009 letter).

7.13. Combined, these concerns suggest that the transmission owners may not have the right signals under the current framework to make efficient trade-offs between capacity management and network investment.

7.14. There is less concern about the implications of the ownership arrangements in the gas sector. This is because funding for constraint costs and incremental investment is provided in the transmission owner control and therefore the incentives are not detached. Constraint costs are also generally less volatile in gas, making the trade off between constraint management and network investment much clearer. As National Grid Gas focuses on the longer term in a new regulatory framework it would need to consider the trade-offs over time.

What can we do in a new regulatory framework?

7.15. Frontier Economics considered a number of potential solutions to improve the alignment of the incentives of the transmission network owners with the incentives of the system operator.

- Structural solutions: The report concluded that a structural solution, under which the joint ownership of the England and Wales transmission owner and GB system operator would be split, may deliver some benefits but that these would be likely to be outweighed by the costs associated with separation. Frontier did not consider issues relating to the ownership of the Scottish TOs, which are being considered separately as part of the third package implementation.
- Changes to licence arrangements: Changes could be made to the code governing the relationship between the Scottish transmission owners and the system operator. For example, changes could be made to improve communication between the players to ensure efficient decisions were taken on system development and, where appropriate, these were coordinated.
- Changes to incentive arrangements: Changes could be made to equalise incentives for constraint management and network investment. Suggested changes included the potential to combine the system operator incentives and transmission owner control to reduce inconsistencies, as well as the introduction of a congestion volume driver in the transmission owner price control.

7.16. We agree that ownership changes are not needed to ensure that the price control framework encourages efficient delivery of our desired outcomes. A new regulatory framework would, as discussed above, have general incentives to encourage efficient decision making and cross industry engagement. For example, the alignment of incentives between different types of expenditure would encourage the transmission owners to make more efficient trade-offs between capacity management and network investment. We will consider further for our summer 2010 recommendations whether specific changes to the SO TO code are needed. We will also consider, when looking at the design of outputs and associated incentives, whether there is a case for including an output relating to constraints. For example, allowances could be set based on a defined level of constraints, with rewards available if constraints were lower than expected and penalties if they were higher.

Incentives for electricity distribution networks to act as system operators

7.17. Historically distribution network operators have had a similar role to the transmission owners in ensuring there is sufficient network capacity to meet peak demand requirements. Flows on the distribution networks have been relatively predictable and unidirectional and there has been a limited role for the distribution network operators to play in actively managing the system.

7.18. The roll out of smart metering, the likely increase in intermittent generation and the possible take up of electric vehicles are just some reasons why the role of the electricity distribution network operators may change in the future. Furthermore, if distribution network operators were to take a more active role in managing the local network system, along the lines of the System Operator in transmission, this could potentially reduce the need for reinforcement of the distribution system to meet peak demand. As emphasised above, a new regulatory framework would need to encourage distribution network companies to seek out the most efficient solutions between investment options and active demand management options.

7.19. Frontier Economics identified two main ways in which distribution network operators could assume a more active system management role, namely contracting with generators for supply side response and contracting with final consumers for demand side response. They identified potential barriers to both options within the current regulatory framework and industry structure.

- Distribution network operators have questioned whether they would be able to establish contracts with distributed generators or storage providers for supply side response to provide them with sufficient certainty to avoid investment.
- Since distribution businesses were separated from supply businesses (the supplier hub) they do not have a direct relationship with consumers and may not be able to contract with them directly for demand side response.
- The distribution network operators could contract with suppliers to secure the demand side response but this is expected to have its own limitations and costs. Suppliers may also be reluctant to offer diverse regional tariffs to consumers.
- The transmission system operator may override decisions made by the distribution network operator, limiting the ability of the distribution network to make efficient choices between active demand management and investment.

7.20. We are confident that solutions can be implemented within a new regulatory framework to deal with these concerns. For example, issues relating to the interactions between the transmission system operator and a distribution system operator can be addressed by implementing appropriate operational rules and improvements in communication between the distribution network operators and the System Operator. There are also potential new technologies that may provide

solutions to these issues. For example, trials of Virtual Power Plants in Europe[17] may provide alternative ways of automatically triggering a demand side response. The appropriate solutions would depend in part on how the relationships between suppliers and the distribution network operators develop with the roll out of smart metering. We therefore consider it appropriate to look again at these specific issues when we understand better the potential implications of smart meter roll out for distribution network operators and for their interactions with suppliers.

7.21. In the meantime, a new regulatory framework would provide opportunities for distribution network companies to trial and test ideas relating to active demand management. Networks would be encouraged to roll out viable options on their networks where there are efficiency gains to doing so, reflecting the focus on output delivery and the alignment of incentives between different types of expenditure. Where barriers are identified, there would be an onus on the distribution network operator to seek out potential solutions, seeking regulatory approval for changes if needed. The innovation stimulus, like the low carbon networks fund, provides opportunity to consider innovative ideas in this area.

[17] For further information on Virtual Power Plants see, for example, http://www.newscientist.com/article/dn17290-virtual-power-plants-could-tame-coming-grid-haos.html

8. Next steps

8.1. Before making our summer 2010 recommendations we will work to put more detail on our ideas and stress test them internally and with stakeholders.

8.2. We recognise that to complete the framework there is significant work to carry out, in particular:

- Developing the principles to be used in setting outputs and in establishing arrangements to penalise and reward network companies for delivery against the outputs.
- Work on the nature of business plans to be provided by network companies as part of price control reviews, and how we will encourage high-quality plans.
- Work on the methodologies used to assess the baseline revenue including benchmarking companies' performance against each other and use of other comparators.
- Consideration of how (where applicable) the current output incentives (including methodologies and rates) may be retained as part of the new framework and where there are opportunities for rationalisation or there is a need for refocusing incentives.
- Development and assessment of detailed options for the implementation of longer-term price controls, including risk mitigation measures. This includes consideration of how the appropriate approach might vary across the four energy network sectors.
- Assessment of the scope to address concerns about delays in transmission network operators connecting new users to their networks (and related capacity constraints for existing users) through the introduction of new output measures and obligations related to connections and capacity constraints.
- Assessment of the case for specifying penalties and rewards around measures of the utilisation of specific assets, as part of the range of tools that could be used to encourage network companies to strike an appropriate balance between investing early to anticipate the needs of network users and waiting until a firmer understanding of users' needs is available.
- Assessment of options for making effective use of information available from competitive tenders in setting the revenue constraints that network companies are subject to under price controls. This includes consideration of ways to mitigate risks that passing through tender prices to the price control could undermine incentives for companies to tender efficiently.
- Identification of principles for governing decisions on the upfront incentive rate set as part of the core efficiency incentives. This includes consideration of the potential role for applying schemes based on Ofgem's information quality incentive in each of the four energy network sectors, taking account of how such a scheme would fit with other aspects of a new regulatory framework.
- Assessment of the potential barriers to committing to refrain from making any discretionary backward-looking adjustments to network companies' revenue allowances in light of their actual costs, and guidance on the circumstances (if any) where we would expect to make such adjustments.
- Development of processes and guidance to bring a more structured approach to the implementation and review of uncertainty mechanisms that apply during a

price control period (e.g. mechanisms intended to reduce network companies' financial exposure to uncertainty or provisions to delay the regulatory treatment of specified costs to the next price control review).

- Work on how best to take account of interactions between TO and SO incentives, and to consider potential implications of the role of distribution network operators as System Operators.
- More generally, considering how best to encourage network companies to work with others in the sector, and in other sectors, to identify collaborative delivery solutions to enable delivery of a sustainable energy sector at value for money.

Transition

8.3. We consider that the majority of the framework described in this supporting paper could be introduced at the next round of price control reviews. This is partly because the new framework builds upon a number of elements of the current framework. In some areas, such as outputs, while it would involve significant work to define the information that the companies would be held to, there is no reason why this cannot be done as part of the first price control.

8.4. We recognise that there may be an iteration process both in developing outputs that properly reflect the outcomes and in considering further detail on the form of the new business plans and what they need, and do not need, to demonstrate long-term efficient delivery.

8.5. We intend to engage actively with stakeholders to understand how to prepare in a way that minimises any delay in implementing our approach. This is because we are keen not to put at risk any of the benefits of the new approach to consumers and wider stakeholders.

8.6. This will be one of the key aspects of our work for our summer 2010 recommendations. The more developed our approach is in advance the easier it will be for all affected parties to adapt.

Appendix 1: Environmental output category

1.1. We set out here some further ideas on the environmental output category. We focus attention on this category as it would be key to ensuring that we and network companies focus on ensuring environmental targets are met, particularly delivery of a low carbon energy sector. The targets may be GB targets or sector-specific targets and the outputs may need to change if new targets are introduced or the relative importance of existing targets changes.

1.2. We will consider further what principles should be considered when considering outputs in this category. The principles may include that environmental outputs should:

- meaningfully reflect network companies' proactive contribution to the delivery of the environmental targets and specific aims for the energy sector;
- not favour or specify a particular approach or technology;
- not favour or specify a particular source of generation (e.g. low/zero carbon sources) over others (consistent with our previous stated policy position)18;
- appropriately reflect the most important element of environmental performance; and
- maintain enough coverage of other aspects of environmental performance so that these are not compromised by the focus on the most important element (e.g. enough consideration of non-carbon elements such as noise and dust).

1.3. The outputs should encourage network companies to make best use of available information where possible and relevant and should encourage them to work with others to identify sectoral solutions to the significant challenges. It is likely that there would be a mix of outputs that are directly within the network companies' control and outputs that reflect cross-sectoral delivery and the network company's contribution to this.

1.4. The type of outputs that might be considered for this category include:

- outputs reflecting the network companies' business carbon footprint including all direct and indirect emissions derived from the operation of the network business; (currently used in a reputational incentive in electricity distribution)
- measures related to the quality and timing of connections (applicable to two of the primary output categories); and
- measures of other network company emissions such as noise and dust.

[18] See for example the position presented in our further consultation document on Connection Use of System Code (CAP148) 'deemed access rights to the GB transmission system for renewable generation (April 2009). This is available on our website at http://www.ofgem.gov.uk/Licensing/ElecCodes/CUSC/Ias/Documents1/090414_CAP148_further_cons_FINAL.pdf.

1.5. We will consider further what data network companies already collect and report now as part of general environmental accounting. The environmental outputs, like all others, should not specify how a network should deliver. The focus is on what is to be delivered and a new regulatory framework would separately encourage network companies to seek out innovative and efficient delivery solutions for the long-term.