

## Briefing note for the Networks Breakout groups

### Development of Output Measures

1.1. In DPCR4 and in other reviews we have made it clear that we do not provide regulatory allowances for delivering a particular portfolio of projects, but rather seek to give an efficient company a settlement that will enable them to finance their business and meet their licence and other obligations.

1.2. While there is common understanding on this point, there has been a tendency for the companies to treat the settlement as a budget with the key objective being to stay within the capital expenditure forecasts used in setting the control. Ultimately we are concerned that with this approach, DNOs may not make investments needed to maintain the condition of the network and meet other customer interests. While we tried to address this to some extent by the rolling capex incentive, which means that companies only bear a proportion of any capex overspend, it is clear that companies are reluctant to overspend against their forecasts. Similarly, there is no strong mechanism to counter the incentive on DNOs to contain capital expenditure.

1.3. We have limited output measures and this means that it may be difficult to detect when lower spending is leading to deterioration of the network and where DNOs are not meeting statutory or licence requirements. This asymmetry of information makes it difficult for us to distinguish between efficient and inefficient deferral/underspend and to take appropriate action where companies are making returns at the expense of customers' long-term needs. This may also limit DNOs' real exposure to asset and equipment price risk as they may be able to offset the impact of higher input prices by deferring the volume of work and asking for further funding at subsequent price controls.

1.4. We intend to address these concerns in the DPCR5 settlement. We propose that in return for the revenues they collect, we will require each DNO to deliver a predefined set of outputs in a sustainable manner. The outputs presented must be:

- measurable, controllable, auditable and replicable over time,
- aligned with the underlying business processes that are used to plan and operate the network,
- cover the major areas of network investment and network operating costs. As a minimum the outputs must address general reinforcement and condition based asset replacement, and
- where possible capture outputs or outcomes such as performance, asset health, network capacity or headroom or network risk and as a last resort inputs such as the volume of asset installed.

1.5. DNOs must be able to show how the outputs would vary with changes in expenditure and the trade-off between different outputs. Examples of output measures are set out in the table below.

**Table 1 Examples of output measures**

<b>Area</b>	<b>Outputs</b>
Overall customer performance	Number and duration of interruptions Overall customer satisfaction
Load related spend	Number of connections made Composite risk metric capturing numbers of customers at risk, time at risk, capacity headroom and extent of load growth Overall network loading
Asset replacement	Composite metric capturing asset condition and criticality Asset fault rates Modelled percentage remaining life
Flooding	Number of substations with improved flood mitigation

1.6. Given the current stage of development of output measures in distribution it is more practical for DPCR5 to have a common framework for the development of outputs but with each DNO able to develop its own set of company specific outputs for areas of investment where the industry has been unable to agree a common approach. For general reinforcement and condition based asset replacement Ofgem will be working closely with all the DNOs to try and develop the basis for a common set of outputs.

1.7. If companies do not provide sufficient output information as part of their FBPO they are likely to find it more difficult to convince us of their cost forecasts. For example, where there is insufficient output information we will place more emphasis on high level benchmarking or undertake a more detailed review of forecast expenditure and/or individual projects.

### **Questions**

1. What are your views on output measures?
2. Paragraph 1.4 of this note sets out our requirements for output measures? Are these appropriate? Are there any additional ones we should include?
3. What should the overall scope of output measures be?
4. What's reasonable to deliver in this price control? What's reasonable to deliver in the future?
5. What steps should be taken in this price control review for DNOs who do not provide sufficient output information?
6. What action should be taken at the next review for DNOs who fail to deliver their outputs?

### **Managing Cost Uncertainty**

1.8. There is significant uncertainty regarding the scale of outturn variations in costs from the assumptions used in setting allowances. This has always existed, but has been brought into sharp focus by recent changes in key input costs, such as the volatility in copper prices and the sharp increases in the cost of raising finance in the wake of the

credit crunch. There have been other significant outturn variations affecting DNOs' net costs, such as the increase in customer contributions for connections activity. The economic downturn will have an impact on a number of key assumptions that will be built into the price control settlement, including load growth and connections demand, wage rates, materials costs, interest costs and inflation. Although inflation rates are, on the face of it, excluded from consideration because we set allowances on a fixed price base and then allow DNOs to recover out-turn inflation, it may be a factor in the assessment of real cost levels.

1.9. At any price control review, forecasting is fraught with uncertainty. But the volatility in many market indices, whilst not unprecedented, is markedly higher than when the last price control was set. If this situation persists through 2009, we will consider ways of structuring the price control to manage the risks of either a) setting a price control that is too generous to the DNOs, because we have been unduly pessimistic in our assumptions or b) setting a price control that turns out to provide them with insufficient revenue to operate the networks and finance necessary investments. The tools we have to do this are discussed below.

1.10. Across our price controls we have adopted a range of approaches to sharing the risk of cost variation and other risks between companies and customers, as set out in the table below:

**Table 1.1 Regulatory tools for sharing risk**

	<b>Tool</b>	<b>Example (DPCR4 unless stated)</b>
DNO risk < -----> customer risk	pass through	Ofgem licence fee
	sharing factor	fixed incentive for capex 29-40%
	volume driver	customer numbers
	price protection	shrinkage mechanism (GDPCR)
	automatic triggers	none in current controls
	reopeners	Traffic Management Act costs
	use it or lose it	equity raising costs (TPCR)
	fixed ex ante	controllable opex (GDPCR/TPCR)

***Managing volume uncertainty***

1.11. There are a number of options for managing uncertainty in economic growth and its impact on demand and load related network investment including revenue drivers, investment drivers and triggers.

1.12. The current price control includes revenue drivers based on units distributed and customer numbers to manage uncertainty in demand and new connections. We do not consider that these measures adequately capture the relationship between changes in economic growth and costs and the units distributed driver may discourage DNOs from using demand side management (DSM) schemes to defer reinforcement. We therefore propose to remove these drivers in DPCR5.

1.13. In both DPCR4 and TPCR capex drivers were introduced due to uncertainty surrounding levels of generation connection during the period and dealing with volume uncertainty more directly. We intend to extend the use of capex drivers to demand related investment and associated indirect costs where we identify significant uncertainty.

1.14. For example, we may flex connections network investment allowances according to actual volumes of new connections. We may flex general reinforcement expenditure allowances (i.e. expenditure on reinforcing the network due to general load growth which cannot be attributed to a specific customer) based on the increase in demand in MVA at highly loaded substations. We are also considering introducing triggers for high materiality projects. As part of these arrangements, DNOs will need to demonstrate that they have done all they can to manage demand at heavily loaded substations including encouraging DSM and through their charging methodologies.

1.15. Where capex drivers or triggers have been implemented in previous price controls they have included a fixed allowance to fund 'baseline' investment and variable allowances to allow an increase or reduction in investment should volumes outturn differently to those assumed in the baseline. We intend to adopt a similar approach in this review.

### ***Managing input price uncertainty***

1.16. DNOs have indicated that increases in real input prices have increased capex spend by up to 20 per cent in DPCR4. However, in recent months there have been sharp reductions in commodity prices. For example, the price of copper rose from around £2,000 per tonne at the beginning of DPCR4 to over £4,000 per tonne in 2006. Since then there has been significant volatility with the latest prices at approximately £2,300 per tonne.

1.17. In principle such changes in input prices are a risk faced by the DNO as there is no reopener for input prices or any form of indexation included in the current control. In practice DNOs are given significant protection through the capex rolling incentives (they only bear between 29 and 40 per cent of the increases) and have also managed higher input prices by varying the volumes of activity to keep their overall level of expenditure within the cost allowances. However, there will be less opportunity for DNOs to manage price risk in this way as we introduce additional outputs measures for DPCR5.

1.18. A key issue for DPCR5 is how much input price risk should be placed on customers relative to shareholders. There are advantages in setting a fixed ex-ante allowance for changes in input prices as this provides strong incentives for DNOs to manage costs where they can, for example through effective procurement, purchasing in advance or hedging some of the risks. However, given the current volatility in input prices it is difficult to set a robust forecast for DPCR5 and there is a danger that we either set prices at the peak resulting in a loss to consumers or set prices significantly too low resulting in a loss to shareholders.

1.19. There are advantages in using some form of indexation whereby our allowance for input prices would track market indices for input costs. A difficulty with this approach is that it may reduce DNOs' incentives to manage costs if they choose to minimise their risk by matching the indices. There are also practical issues in terms of determining an appropriate index. There is no ready-made index for electricity distribution input prices and it would be necessary to determine appropriate weightings to combine other broader indices.

1.20. We consider that it may be appropriate to set an ex-ante allowance for input costs and expose DNOs to price risk up to a certain trigger level of change in prices. Beyond this we would apply indexation for the protection of both customers and shareholders.

1.21. We would welcome views on the appropriate approach to managing uncertainty associated with input prices. Should we set an ex-ante allowance based on a forecast increase in input prices, introduce indexation or adopt a hybrid approach whereby indexation is introduced above a certain threshold?

1.22. We developed our forecast business plan questionnaires (FBPOs) in such a way that we separate out changes in costs due to underlying variations in volumes of activity and efficiency from changes in real input prices. This gives us a better understanding of the reasons for forecast changes in expenditure and allows us to identify elements of the forecasts that are more uncertain. We consider that the Information Quality Incentive (IQI) mechanism should exclude the impacts of changes in real input prices. It will then only reflect differences in forecasts for the underlying volumes of work that are needed on the network to deliver appropriate outputs rather than differing forecasts for input prices. An allowance for input costs can then be added in after the incentive has been applied.

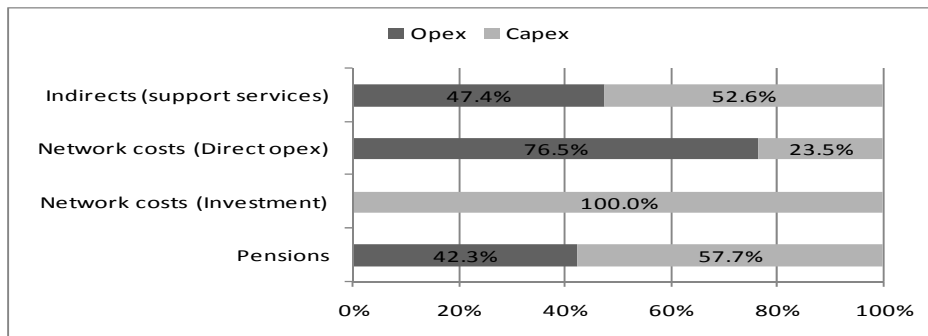
## Questions

1. What approach should we be taking to managing the impact volume/demand uncertainty on network investment?
2. How should we manage uncertainty in unit costs? For example, rapid changes in equipment prices or labour costs? How should risks be shared between shareholders and customers?

## Equalising incentives

1.23. There are currently imbalances between in the incentives for costs that are classified as opex and costs that are classified as capex under the DPCR4 RAV rules. These imbalances may distort real economic trade-offs between capex and opex solutions and create boundary issues. DNOs bear the full cost if they spend £1 of additional opex but only 29p to 40p if they spend £1 of additional capex. The diagram below sets out the proportion of costs that are capitalised to RAV for each of the groups of activities under the current cost reporting rules.

**Figure 4.6 Capitalisation of costs for different activities**



1.24. DNOs benefit if more direct operating costs (such as tree cutting, fault costs, or inspections and maintenance) are classified as network investment or indirect costs, because this moves costs out of an area with stronger incentives and into an area with weaker incentives.

1.25. The balance of incentives is particularly important in the context of forecasts for large increases in opex and capex. We are looking to ensure that DNOs have given appropriate consideration to innovative solutions including potentially deferring greater volumes of work and doing more to actively manage and monitor levels of risk or adopt non-network solutions such as demand-side management or contracting with distributed generation to manage constraints.

1.26. A significant amount of our resources during the DPCR4 period have been spent monitoring the boundary between various categories of costs, for example the distinction between fault costs and asset replacement or the treatment of site engineer costs. Equalising cost incentives could reduce the reporting burden for both the DNOs and Ofgem. It may also lessen concerns with definitional issues, which would allow the regulatory reporting pack (RRP) to be less resource intensive to complete and review.

1.27. We are considering a number of potential options for moving towards more equal incentives:

- We could treat the costs for all activities the same way and capitalise the same percentage of all costs into the RAV. This would remove the costs boundaries and reduce any distortions to the economic trade-offs we are encouraging DNOs to make. It may be appropriate to apply the IQI mechanism to all costs.
- We could treat all direct costs, engineering indirect costs, networks investment support costs and any constraint payments (e.g. DSM or payments to DG) in the same way. A fixed proportion of all such costs would be allocated to RAV but business support costs would be fully expensed. This may capture the key economic trade-offs and significantly reduce boundaries but there may be some distortions remaining under such an approach.
- We could identify where the key trade-offs are between activities such as faults and asset replacement and ensure that such costs are included in the RAV using the same fixed percentage. This would reduce but not remove all boundary issues.

1.28. There are a number of issues which need further consideration under these approaches. For example, under the first two options we would need to decide the

appropriate portion of costs to capitalise and what impact this may have on financeability, appropriate regulatory asset lives and depreciation.

1.29. There have been mixed views to-date from the DNOs on this issue. While some DNOs supported moving towards greater equalisation of incentives, others have suggested that further work is needed to resolve issues with the IQI mechanism before this is taken forwards. Others noted concerns about potentially weakening the strength of opex incentives.

## Questions

1. Should we take further steps to equalise cost incentives?
2. How could this be most effectively be done? What are the potential advantages and pitfalls?

## Information quality incentives (IQI)

1.30. In recent price controls, including DPCR4 and GDPCR, we introduced a number of refinements to the RPI-X framework to address issues of variations in the strength of incentives throughout the price control period and risks associated with companies earning high returns through submitting high capex forecasts and then significantly underspending these forecasts.

1.31. The IQI places more weight on DNOs' forecasts in setting allowed revenues, whilst encouraging them to forecast expenditure at more realistic levels. Table 1 - Electricity distribution sliding scale matrix

**Table 2 - IQI**

DNO:PB Power Ratio	100	105	110	115	120	125	130	135	140
Efficiency Incentive	40%	38%	35%	33%	30%	28%	25%	23%	20%
Additional income	2.5	2.1	1.6	1.1	0.6	-0.1	-0.8	-1.6	-2.4
as pre-tax rate of return	0.200%	0.168%	0.130%	0.090%	0.046%	-0.004%	-0.062%	-0.124%	-0.192%
<b>Rewards &amp; Penalties</b>									
Allowed expenditure	105	106.25	107.5	108.75	110	111.25	112.5	113.75	115
Actual Exp									
70	16.5	15.7	14.8	13.7	12.6	11.3	9.9	8.3	6.6
80	12.5	11.9	11.3	10.5	9.6	8.5	7.4	6.0	4.6
90	8.5	8.2	7.8	7.2	6.6	5.8	4.9	3.8	2.6
100	4.5	4.4	4.3	4.0	3.6	3.0	2.4	1.5	0.6
105	2.5	2.6	2.5	2.3	2.1	1.7	1.1	0.4	-0.4
110	0.5	0.7	0.8	0.7	0.6	0.3	-0.1	-0.7	-1.4
115	-1.5	-1.2	-1.0	-0.9	-0.9	-1.1	-1.4	-1.8	-2.4
120	-3.5	-3.1	-2.7	-2.5	-2.4	-2.5	-2.6	-3.0	-3.4
125	-5.5	-4.9	-4.5	-4.2	-3.9	-3.8	-3.9	-4.1	-4.4
130	-7.5	-6.8	-6.2	-5.8	-5.4	-5.2	-5.1	-5.2	-5.4
135	-9.5	-8.7	-8.0	-7.4	-6.9	-6.6	-6.4	-6.3	-6.4
140	-11.5	-10.6	-9.7	-9.0	-8.4	-8.0	-7.6	-7.5	-7.4

1.1. The DPCR4 IQI matrix takes the form of two incentives. Firstly, DNOs are allowed to earn an additional income on their RAV based on how close their forecast is to our baseline (in DPCR4 this was termed the 'PB Power view'). The second part of the incentive sets the incentive rate for future efficiency savings based again on how close

the DNO's forecast is to our baseline. Under the incentive a DNO with an inflated capex forecast is able to keep a lower percentage of any capex underspend than a DNO with a more accurate forecast.

Given the assumption that management and shareholders are risk-neutral, DNOs earn the highest income by accurately forecasting their intended capex. DNOs earn the highest income by accurately forecasting their intended capex spend (this is highlighted in blue). For example in table 2, suppose the PB Power baseline is £100m. If the DNO expects to spend 100 per cent of the PB Power forecast it will earn an income of £4.5m by not inflating its forecast. This is calculated as  $(£105m - £100m) \times 40 \text{ per cent} + £2.5m$ . In comparison if it inflated its bid to 140 per cent of the PB Power forecast it would only earn an income of £0.6m as it loses out on both the additional income incentive and the efficiency incentive.

1.32. We consider that the IQI was beneficial in terms of encouraging both EDFE and SP to submit revised forecasts at DPCR4, reducing capex by approximately £200m. However, we have concerns that some of the other DNO groups who submitted relatively high forecasts at DPCR4 have spent significantly less than their allowances to date and may outturn significantly below their allowances by the end of the period.

1.33. Responses to our consultation documents and other papers have highlighted two main issues with the IQI mechanism. Management may be risk averse and looking to protect themselves against increases in costs. This may lead to DNOs forecasting higher than their actual view of their cost requirements. Giving companies' complete freedom to reforecast through successive FBQOs may undermine the IQI incentives. A DNO may submit a high forecast at an early stage to influence Ofgem's baselines and then submit lower forecasts to benefit from higher cost incentive rates and cash rewards under the scheme.

1.34. We consider there have been significant benefits to customers from applying the IQI to date and will continue to apply this mechanism as part of DPCR5. However, there may be scope for further improvement in this approach, both in terms of the coverage and the effectiveness of the incentives.

1.35. We have decided to place limits on the ability of DNOs to update their forecasts later in the price control process, similar to those set out by Ofwat. After initial proposals, DNOs will be allowed to update their forecasts on the basis of new evidence or significant changes in outputs, or scope of work, but we will not allow wholesale changes to the forecasts. Companies will have to provide detailed explanations of changes to their forecasts. This approach means that it is critical that DNOs do all they can to ensure that the February submissions reflect their best forecasts possible.

We are also considering options for sharpening the IQI to deal with issues of risk aversion and to provide protection against the risk of major over or underspends. We are considering introducing deadbands or weaker incentives around the allowance to address concerns that the companies that forecast closest to our view stand to bear the highest percentage of any overspend.

## Questions

1. What further steps could we take to ensure companies deliver more robust forecasts?