

7 Managing Uncertainty and Risk

Any business plan must address risk. The principle we have adopted is that risk should be borne by the party most capable of managing and mitigating it. This means we seek to manage all risks that we can exercise reasonable control over. Consequently our plan allows for all business as usual risks, such as unit costs and delivery, to rest with us and we reflect this in our Cost of Equity calculation.

7.1 Some areas are so uncertain, though, that it is not possible or sensible for us to price the risk into our plan. If we did, it may result in unnecessary price increases being passed on to customers. These uncertainties include load-related investment (including general reinforcement and low carbon technology), smart meter impacts and changes in legislation. In these circumstances, Ofgem offers a range of mechanisms which seek to protect both the DNO and its customers from significant cost and price risk. These include reopening specific aspects of the price control, flexing cost allowances as volumes change and pass-through of certain costs.

Low carbon technology

The Government is committed to legally binding targets to reduce total UK greenhouse gas emissions by 80% compared to their 1990 levels by 2050.

7.2 These targets are underpinned by binding carbon budgets and comprehensive plans to introduce a range of policy measures and stimulus packages to reduce carbon emissions.

7.3 Some of the key enablers are:

- Electric vehicles to decarbonise transport
- Heat pumps to decarbonise heating
- Photovoltaic cells (solar panels) to decarbonise electricity generation

7.4 Widespread adoption of these technologies will increase consumers' demand for electricity. This will place a significant additional load on Great Britain's transmission and distribution networks.

7.5 There are two major implications for our plan. The first is the rate at which these technologies will be deployed and therefore the degree to which we will have to upgrade (reinforce) our network to deal with the additional load. The second is the concentration of these technologies, commonly referred to as clustering.

7.6 We have analysed the DECC future scenarios for different combinations of technologies and incentives to meet the low carbon goal. These are produced at a national level and therefore require a level of moderation when translating them to local impacts. We have used the research we commissioned from CEPA and the Tyndall Centre of the University of Manchester to help us do this and concluded that the DECC Low scenario is most appropriate for our best case forecast (see Annex 8).

Monitoring change

7.7 Experience with the effect of the Government's feed-in tariff for photovoltaic cells has shown that stimulus packages can cause rapid and dramatic changes in consumer behaviour and adoption rates. Similarly, as technology becomes cheaper, more efficient and more accessible, the case for installing it becomes more compelling. Again, this can have a significant effect on consumer adoption rates.

7.8 We have established an effective monitoring programme which will allow us to respond quickly to changes in low carbon adoption rates.

7.9 The main indicators we use are:

- Government policy and market stimulus initiatives that may trigger changed behaviour or faster adoption

- Marketing activity by specialist providers of low carbon solutions
- Pricing and development trends in low carbon technologies
- Trends in connection activity for low carbon installations

7.10 Monitoring connection trends is facilitated by the registration required for heat pumps to be eligible for the Government's Renewable Heat Incentive and for photovoltaic cells to be eligible for the Government's Feed-In Tariff. IET wiring regulations mean customers are required to notify us of the installation of electric vehicle charging infrastructure. We believe that this and similar active monitoring will give us between six and 12 months to flex our plan in response.

Flexing our plan

- 7.11 We want to play our full part in enabling the transition to a low carbon future. This means we need to take reasonable steps to ensure our customers and communities can benefit from low carbon technologies when they want.
- 7.12 We already operate a Connect and Manage programme, whereby we facilitate low carbon connections to our network and undertake to manage any load implications while the case or need for reinforcement is developed. We will continue this programme through RIIO-ED1. We will improve it through the use of smart meter data, which will help us analyse load requirements on our low voltage network, where we expect most of the low carbon technologies will be deployed.

Distributed generation

7.13 The Energy Act 2013 contains enabling legislation that will provide for Electricity Market Reform, the development of a capacity mechanism and new Feed-In Tariffs for renewable generation. DECC have forecast the effect that this will have on the economic case for renewable generation at the scale that connects to our network (known as Distributed Generation). We have based our forecasts on the very latest information and forecasts for Distributed Generation provided by DECC.

Other load-related investment

7.14 Our investment proposals are also based on our assessment of economic growth and the associated impact on demand and connections. Our independent analysis supports a view that economic growth and social expansion in our region will be relatively modest and our forecasts reflect this. The risk of a significant variation in load related expenditure will remain throughout RIIO-ED1.

Efficiently managing these uncertainties

7.15 Ofgem has proposed that we should be able to reopen part of the price control in circumstances where our forecasts of load-related expenditure are out by more than 20%. We support this and think it provides the most cost-effective solution for our customers.

Smart meter implementation

The Government's smart meter programme requires the installation of smart meters in all domestic and small commercial premises by 2020. We plan to use smart meter data to improve the way we interact with our customers and manage our network. We also have a role in supporting the smart meter installation programme.

7.16 The rate at which smart meters will be rolled out remains unclear. The completion date of 2020 is now one year later than originally planned, primarily to allow the electricity and gas retailers to agree data and system designs and complete their testing programmes. Whilst there is scope for the end date to move again, we are confident that Government and industry support for the smart meter case means this would not be beyond the end of RIIO-ED1.

- 7.17 Smart meters will be installed by meter operators on behalf of electricity suppliers. When they do, they will carry out a complete safety inspection of the meter, the cut-out and associated installation. Where the cut-out is found or suspected to be defective, the meter operators will look to DNOs to carry out the necessary repair work. Where we are required to undertake this work we will comply with a nationally developed service level agreement setting out DNO and supplier obligations which we support.
- 7.18 Estimates for the rate of cut-out interventions vary. Early analysis suggested that as many as 7% of installations would require remediation. Later analysis suggests this number may be closer to 2%.

Efficiently managing these uncertainties

- 7.19 We have based our plan on the 2% estimate. We will monitor actual rates as the smart meter programme progresses. Where volumes increase beyond this estimate, Ofgem has proposed a volume-driven price adjustment which assumes unit costs will become more efficient as volumes increase. We think this is an equitable approach for our customers, our company, the meter operators and the electricity suppliers.
- 7.20 DNOs will have to pay for access to and use of smart meter data. The costs of this access and use are difficult to forecast whilst the data and system designs are still being finalised.
- 7.21 Ofgem proposes a pass-through mechanism for these costs until full deployment is complete. Thereafter, their expectation is that on-going costs will be offset by operational efficiencies. We agree with this approach and have reflected it in our business plan. In total we forecast that customers will receive over £20 million of direct benefits across our RIIO-ED1 and RIIO-ED2 business plans. These benefits will be realised across the latter third of RIIO-ED1 and increase significantly in RIIO-ED2. To enable these benefits we will invest a total of £18.1 million, £3.1 million of which will be funded from our existing DPCR5 allowances.
- 7.22 The above savings are based on the DECC low LCT adoption scenarios. Savings under higher adoption scenarios are likely to be much higher. In particular, the forecast reduction in losses is the minimum value likely to be observed, however under higher LCT growth scenarios coupled with the introduction of active time of use tariffs by Suppliers, then this benefit could rise to as much as £9 million pa by RIIO ED2 equating to over £72 million of additional benefits for customers.
- 7.23 In addition to losses savings, time of use tariffs under the high scenario would be likely to add a further £4.8 million of reinforcement savings pa by 2025 totalling an additional £29 million in the ED2 period.

Traffic Management Act

The Traffic Management Act 2004 details the regulations that we must follow when working in the public highway. The Act has been progressively implemented since 1 April 2008 and gives Highway Authorities the powers to introduce Permit to Work regulations and charges. Under these arrangements, the Highway Authorities can introduce specific restrictions, requirements and charges for the work we need to do on public streets.

- 7.24 Permit to Work powers are being implemented at different times and different rates by each of our region's Highway Authorities. We have included a reasonable estimate of costs for RIIO-ED1 based on the charging we have experienced so far in a few areas where we operate, such as St Helens. We have also made an estimate of the much greater levels of costs we could incur as new schemes recently introduced in Greater Manchester are fully implemented.

Efficiently managing these uncertainties

- 7.25 A mechanism to address this uncertainty already operates in the DPCR5 price control. Ofgem has proposed that this mechanism be continued in RIIO-ED1. Whilst we have not needed to invoke the uncertainty mechanism in DPCR5, we believe that implementation in Greater Manchester could result in approximately £20m of additional operating costs. In the event that actual costs are significantly greater than our forecast, we will submit evidence for an adjustment to our allowances in line with the 2019 reopener mechanism proposed by Ofgem.

Changes in legislation

Our plan is based on existing EU and UK legislation.

- 7.26 We are aware of a number of potential EU legislation changes that would affect it, including:
- Generation Connection Code
 - Demand Connection Code
 - Interconnector Status
 - Creosote – used in the treatment of woodpoles
 - SF₆ usage
- 7.27 We are actively engaged in monitoring and influencing developments with a view to protecting our customers' interests.
- 7.28 The RIIO-ED1 price control has a specific review process whereby we and Ofgem may consider whether the Outputs we are required to deliver have materially changed. This is to take place in 2019, if required, and is referred to as the mid-period review. Given the significant uncertainty of this legislation being enacted, its timing and cost impact, Ofgem's preference is to address any implications at the mid-period review. We agree that this is an appropriate solution.

New nuclear power station in Cumbria

NuGen has applied to National Grid Electricity Transmission for the connection of a 3.6GW nuclear power station at Moorside near Sellafield. To enable this connection, National Grid will need to provide 4 x 400kV transmission circuits. At present, no firm commitments on the timing of the connection works or the route for the transmission circuits have been made.

- 7.29 NuGen have submitted a modification application to National Grid Electricity Transmission to commence the formal application process for a connection to the transmission network. National Grid and Electricity North West are preparing a modification offer for approval by NuGen. The optioneering process undertaken by National Grid in co-operation with us and regional stakeholders has been wide-ranging and has considered overhead lines, underground cables and sub-sea cables; AC and AC/DC solutions have also been considered.
- 7.30 Following consideration of the many options National Grid announced that they are considering the three particular options. . The most likely option has a significant impact on our 132kV distribution network, whereby National Grid's proposals would mean displacing our existing lines to establish a 400kV overhead line double circuit around the west coast of Cumbria.
- 7.31 We do not expect our customers to meet any part of National Grid's costs or the consequential costs of accommodating their chosen route. It is likely, though, that we would have to upgrade or replace some of our assets as a result. Where this is the case, and our customers benefit from it, then the costs will be reflected in our charges (see Annex 26).
- 7.32 Our options are to:
- Include the costs and risk in our base plan and reflect this in prices to customers
 - Incur the costs and reflect these in prices through the annual iteration process
 - Use the existing High Value Project uncertainty mechanism, which is available to all DNOs
 - Use the Strategic Wider Works uncertainty mechanism, which is generally only available to Transmission operators

- 7.33 The first option is inappropriate because customers would be required to pay for the project, even if it is delayed or does not happen. The second and third options place a significant additional cash burden on us and the resultant Cost of Equity needed to compensate for this and maintain our Investment Grade credit rating is substantially beyond the reasonable range that customers could be expected to bear.
- 7.34 Ofgem has suggested that we use the established Strategic Wider Works uncertainty mechanism. We think this is a sensible approach which will ensure our customers pay for those assets and services which benefit them, but only when the cost, timing and scope of the work is known.
- 7.35 We have already established a collaborative and constructive relationship with National Grid and NuGen. We will continue to work with them to ensure our customers' interests are properly considered and to play our part in enabling a significant addition to UK low carbon generation capacity.

Rail Electrification

The Government is committed to investing in a programme of electrification that will help transform the railway and provide Britain with a sustainable world-class transport system. Network Rail is electrifying key rail routes across the North of England. This work involves a considerable number of diversions of our assets where they are in effected roads and bridges.

Manchester to Liverpool, and Huyton to Wigan: by December 2014

- 7.36 We have worked with Network Rail to modify bridges between Newton-le-Willows and Liverpool, and Huyton and Wigan. Work is now continuing to install the overhead line equipment to allow electric trains to be introduced between Manchester Victoria and Liverpool, and Liverpool and Wigan, by December 2014.

Preston to Blackpool: by May 2016

- 7.37 A fully electrified route between Preston and Blackpool will connect the area to the west coast main line; the key rail artery linking the North West with London and Scotland. Network Rail have already upgraded 15 bridges. Overhead line equipment on this route will be installed in 2015/16.

Manchester to Preston: by December 2016

- 7.38 Work on modifying the bridges and tunnels will start in the spring of 2014 and continue through 2015, followed by the installation of the overhead line equipment. The line will be fully electrified by December 2016.

Oxenholme to Windemere and Wigan to Lostock

- 7.39 The Department for Transport announced in the autumn of 2013 additional funding to electrify these routes. Network Rail is currently carrying out an assessment of the structures to understand which need to be modified for electrification.

Manchester to Leeds and York

- 7.40 Funding to electrify the North Transpennine route was announced in November 2011. Work has started on modifying bridges on the first phase of the Transpennine route from Manchester Victoria and Guide Bridge to Stalybridge, which will be fully electrified by December 2016. East of Stalybridge, Network Rail is currently carrying out an assessment of the bridges and tunnels between Manchester and Leeds once complete, a fully electrified route will be provided between Manchester, Leeds and York by December 2018.

- 7.41 There are a number of potential diversions on the Preston to Blackpool, Manchester to Preston and Manchester to Leeds phases of this work. We are aware that Ofgem have agreed a mechanism to advance fund similar costs in other DNOs' business plans, with an uncertainty mechanism to companies to allow these costs to be returned to customers if another party ultimately funds the work. We have made a provision for the NRSWA diversions within roads and bridges in our submission, but we have made no provision for overhead line diversions. Following extensive dialogue between DNOs, Network Rail, Treasury and Ofgem we expect these to be recharged to Network Rail. We are aware of at least six 132kV and four lower voltage overhead line diversions with an estimated capital cost of £1.75 million but have assumed that these will be recharged and will not be paid for by our customers. We do not believe that including an uncertainty mechanism with the advanced funding of these costs would be in our customers interests and have not included this in our business plan.

Real Price Effects

Inflation is generally measured by the Retail Price Index (RPI) and our income is adjusted to match RPI each year. This mechanism manages the general inflationary uncertainty associated with both new and existing assets. However, the types of goods that we purchase are very different from the basket of goods that are used to measure RPI.

- 7.42 Inflationary pressures on our cost base are driven by copper, steel, oil and other commodity prices, construction costs, specialist labour rates and capacity in the contractor market. We purchase a lot of equipment from global markets and with other parts of the global economy potentially performing better than the UK; this may create further differences between domestic RPI and the inflation we face. Contractor and specialist labour rates may also increase beyond RPI when demand, particularly in the infrastructure sector, outstrips capacity.
- 7.43 The difference between general inflation (RPI) and the actual inflation we experience is known as the Real Price Effect (RPE). We commissioned EC Harris to forecast the RPE outlook for RIIO-ED1. We reviewed their analysis alongside our own economic projections and determined the RPE impact on our RIIO-ED1 plan (after we have mitigated some of these increases) is £82.6 million (see Annex 16). We have fully offset this impact with efficiencies.

Pass through costs

We are unable to manage the costs of our licence fee, which is determined by the level of activity in Ofgem, National Grid's Transmission Connection Point charges and our overall rates bill which is determined by the Government's Valuation Office.

- 7.44 The existing DPCR5 mechanism allows us to pass any variation between actual and forecast costs to future prices. Ofgem has proposed to continue this mechanism in RIIO-ED1. We think this is an appropriate way to keep the risk balance between customers and ourselves constant.

Flexing our delivery model

The framework arrangements in our delivery model mean that we can flex contractor support to respond to changes in our reinforcement programme, whether in response to low carbon, socio-economic factors or the proposed Moorside nuclear power station.

- 7.45 Our RIIO-ED1 investment programme has a relatively smooth year-on-year profile. This helps us optimise delivery efficiency by giving our operational team and contractors a stable base from which to develop their plans. The monitoring steps we discuss above will give us sufficient time to revise these plans should the need arise. Plan revision will include flexing operational and contractor support to deliver an increased investment programme (see Annex 7).

- 7.46 Clearly, there is finite capacity in our internal workforce and the contract market. In the event that the DECC High scenario materialises, we believe there would be significant pressure on our delivery programme. Whilst we could look to secure substantial additional capacity, we do not think this is the most economic approach to take. Instead, we will re-profile those parts of our core investment programme which are less time-critical and thereby create space to accommodate any major shocks in low carbon adoption rates. We have assessed our plan and identified that on average just over 10% of any year's investment activity could be moved by two years to help optimise capacity.

Managing charging volatility

We recognise that volatility in our use of system charges to electricity suppliers could result in them including a risk premium in customers' bills. Our proposals are designed to minimise the need for such a premium.

- 7.47 The design of the price control means that many of the revenue components which give rise to volatility in charges are not factored into charges until two years after the details have been finalised. These components include rewards and penalties under the incentive mechanism, the recovery or repayment of revenue from previous years and the funding of additional costs allowed under the uncertainty mechanisms described above.
- 7.48 We already provide electricity suppliers with long-term projections of our expected revenues and charges and we plan to supplement these by giving 15 months' notice of indicative tariffs along with the assumptions underpinning them. This gives electricity suppliers the predictability they need in making their offers to customers and is consistent with Ofgem's proposals on risk allocation designed to keep customers' electricity bills to a minimum.