

London Power Networks

Business plan (2015 to 2023)

Executive summary

March 2014

“ A reliable... an innovative...
and the lowest price electricity
distribution group. ”



Foreword



I am delighted to present a high level summary of our final 2015 to 2023 Business Plan for LPN in RIIO-ED1. LPN is part of UK Power Networks and the plan maintains it as part of a reliable, innovative and the lowest price network group in Great Britain. We have consulted widely with our stakeholders and other customers and incorporated their feedback in the development of these plans.

The detailed comments we have received from stakeholders, together with our own internal analysis, have allowed us to develop well justified RIIO-ED1 business plans which will deliver long term value for money for our customers and stakeholders. Our final business plans will allow us to continue to improve our performance in the areas of safety, network reliability and quality, customer service, cost efficiency and employee engagement.

Since our formation as UK Power Networks more than three years ago, we have delivered a step change in performance in all of these measures as well as operating in a socially responsible manner and investing heavily in innovation. Customer interruptions and customer minutes lost have improved by 12 per cent and 29 per cent over the last three years. We are ahead of plan on network investment as measured by Load and Health Indices; customer service is improving; we are making cost savings that we will pass on to customers; most importantly the safety of our network is paramount. We have also made significant progress in connections' customer service and in meeting the requirement to free up competition in the connections' services arena. Our stakeholders have told us there is still more for us to do in customer service and connections, so we will build on these improvements through our transformation project, which is focused on modernising our processes and systems to be in line with best practice. This project is fully funded by our shareholders and it will deliver sustainable future improvements including service enhancements and cost savings for our customers.

Innovation is at the core of our culture of continuous improvement, and our plan fully embraces the transition to a smart grid over the next two price control periods ensuring that we play our part in the transition to a low carbon economy. We already use many 'smart' techniques as evidenced by our high asset utilisation, relatively low cost of our services, and our high network reliability. Our RIIO-ED1 plan incorporates significant savings from smart network operations. We have proved our ability to deliver on difficult assignments as evidenced by faultless electricity distribution not only during the London 2012 Olympic and Paralympic games but also during other high profile events such as the Royal Wedding and Diamond Jubilee celebrations.

In today's tough economic climate, demands on customers are increasing and we are very conscious that whilst electricity distribution costs represent only approximately 16 per cent of the electricity bill, UK Power Networks has a key part to play in making electricity affordable. Therefore, I am pleased that our final business plan aims to maintain UK Power Networks' average prices as the lowest of the network groups in Great Britain.

A handwritten signature in black ink, appearing to read 'Basil Scarsella'. The signature is stylized and cursive.

Basil Scarsella
Chief Executive Officer



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1

Business plan highlights



1.1 We are a reliable, innovative and the lowest price network group

At London Power Networks (LPN) we are focused on the basics: keeping the lights on, keeping costs down and a culture of continuous improvement and innovation to ensure our performance continues to improve. We are one of the three distribution networks owned by UK Power Networks. UK Power Networks also owns Eastern Power Networks (EPN) and Southern Power Networks (SPN). Together, LPN, EPN and SPN form the UK Power Networks group. UKPN is the:

- **Reliable** – our average, customer minutes lost for 2012/13 (the last year for which sector data is available) was amongst the lowest of all six network groups in Great Britain – LPN is ranked third of the fourteen DNOs on CMLs and first on CIs
- **Innovative** – we have transformed London Power Networks’ performance since our creation in 2010. We spend more on smart innovation research and application than other network groups, and in London we operate the most innovative network in the UK – LPN is ranked second
- **The lowest price network group** – our revenues per domestic customer are the lowest of all six network groups in Great Britain – LPN is ranked third

Simply put, on average UK Power Networks’ customers enjoy better power quality, at lower distribution charges, than elsewhere in Great Britain despite the fact that its LPN network, which serves the greater London area, operates in the highest cost and most densely populated part of the country.

Figure 1: UK Power Networks’ performance

Group	Average customer minutes lost		Average revenues per domestic customer		LCNF innovation funding	
	2012/13	Rank	(2013/14 £p.a.)	Rank	Expenditure £ million	Rank
UKPN	43.5	2	82	1	59	1
WPD	37.8	1	105	3	39	2
SP	44.3	3	111	5	11	6
ENWL	49.0	4	108	4	28	4
NPGL	67.5	5	92	2	27	5
SSE	68.2	6	124	6	37	3

1.2 Our business plan will deliver even better service and value

LPN’s Business Plan for RII0-ED1 (2015 to 2023) will build on this success:

- We will cut prices, the average over the RII0-ED1 period is six per cent lower compared to the end of DPCR5
- We will improve reliability, reducing CMLs by more than 8 per cent in LPN

The commitments should ensure that we remain part of the lowest priced, most reliable DNO group throughout RII0-ED1:

- Our £1.9 billion of forecast expenditure is an 11 per cent increase on our DPCR5 forecast but delivers 11 per cent more investment volumes and lower operating costs
- We will maintain the health of our network and reduce network utilisation in RII0-ED1, optimising work volumes to ensure we only do what we need to do, and applying unit costs that are efficient in the industry
- Our plan has been significantly influenced by feedback from our extensive engagement process with hundreds of stakeholders, including publishing two draft plans including forecast revenues
- We have built on our innovation track record to fully cater for industry changes such as the move to a low carbon economy, the arrival of smart meters and the transition to smart grids – we include £49.4 million of smart savings

- Through our £50 million shareholder funded business transformation project for UK Power Networks we are currently upgrading our systems and processes to further improve customer service to be in line with the top third performance in the industry at the start of RII0-ED1
- We will build further on our good safety record and continue with innovative internal safety programmes
- We will raise £1.1 billion of debt and £0.1 billion of equity capital to finance our plan, at a cost significantly below our cost of capital for DPCR5
- Our plan reflects two years' detailed work by specialists drawn from across our entire business, challenged by external experts, giving us the confidence we can deliver it for the benefit of our customers

1.3 Our plan reflects comprehensive stakeholder engagement

UK Power Networks has an extensive business-as-usual stakeholder engagement programme that covers LPN, EPN and SPN, managed within the customer services directorate and reporting to our CEO and the Board. Since 2011, we have incorporated within our engagement an extensive programme of consultation on all aspects of our 2015 to 2023 business plan to ensure that they meet the expectations of our customers and other stakeholders and deliver value for money over the long term.

We have engaged with hundreds of stakeholders, starting with consultation on our planning assumptions nearly two years ago. We were part the first network group to publish a comprehensive draft business plans in November 2012, and the first to publish updated plans following stakeholder engagement in April 2013.

We published our plan on the 1 July 2013 and after consultation with Ofgem were asked to resubmit the plan on 17 March 2014 for further assessment.

Stakeholder engagement has materially influenced our plan. [Section 7.3](#) summarises the changes we have made as a result of the feedback received from our stakeholders, grouped by key theme.

1.4 We are seeking approval for our business plan

We believe that our Business Plan satisfies our regulator, Ofgem's assessment criteria:

- It is well-justified through a robust process including comprehensive stakeholder engagement ([Section 7](#))
- It delivers the outputs that our customers, stakeholders and our regulator expect from us, and often exceeds the expected regulatory targets ([Section 4](#))
- Our proposed expenditure is efficient and prudent, and reflects savings from innovation ([Section 5](#))
- We propose a balanced approach to deal with uncertainty and risk ([Section 10](#))
- Our financing proposals reflect the market and are efficient and our revenues and prices deliver value for our customers ([Section 6](#))



Key facts about our network

UK Power Networks:
 - Is among the most reliable network groups with the 2nd lowest average customer minutes lost (LPN ranked 3rd out of 14);
 - Has the lowest average distribution use of system prices (LPN ranked 3rd out of 14); and
 - Is the most innovative network group with the highest share of the Low Carbon Networks Fund (Tier 2)

We have transformed our performance since 2010 when UKPN was created. Customer interruptions and customer minutes lost are down for LPN 12% and 29% respectively, customer service is improving, and our costs are now efficient.

Owner: Consortium of investors owned by Cheung Kong Group
 Geographical location: Inner and parts of outer London

Number of customers: 2,279,063
 Length of underground cables (km): 36,710
 Length of overhead cables (km): 22
 Total units distributed annually (GWh): 28,723
 Number of employees (full-time equivalent): 1,234
 Area covered (sq km approx.): 650
 Peak demand (MW): 5,167

Figures quoted are correct as of 31 March 2013

How much we propose to spend and how it will be financed

Cost of Equity	6.0	%	Notional Gearing	65	%
All amounts in 12/13 prices		Total spend £m over the course of the price control			
Network Investment	1,083		Annual average percentage change from DPCR5	23.5	%
Operating Costs ^{***}	878			-4.7	%

What we plan to do

LPN's business plan and 73 output commitments for 2015 to 2023 aim to ensure that we remain innovative, reliable and the lowest priced DNO group throughout RIO-ED1:

- 1 - We will cut prices. The average over the RIO-ED1 period is 6%, lower compared to the end of DPCR5
- 2 - Our £1.9 billion of forecast net expenditure (excluding pensions) is an 11% increase on our DPCR5 forecast but delivers 11% more investment volumes and lower operating costs
- 3 - We will raise £1.1 billion of debt and £0.1 billion of equity capital to finance our plan, at a cost significantly below our cost of capital for DPCR5
- 4 - We will invest £50 million of shareholder funds to upgrade our systems and processes to further improve customer service by the start of RIO-ED1, improving customer satisfaction from an average of 6.9 to 8.1 (out of 10)
- 5 - Our plan has been significantly influenced by feedback from our extensive engagement process with hundreds of stakeholders, including publishing two draft plans including forecast revenues
- 6 - We will ask our stakeholders, through independently chaired DNO critical friends' panels, to continue to improve, influence and review our RIO-ED1 operational performance & delivery record, including a new annual strategic statement for central London.
- 7 - We will build further on our good safety record and continue with innovative internal safety programmes, achieving at least one year with no lost time incidents for employees and contractors and the public
- 8 - We will improve reliability at shareholder cost, reducing CMLs by more than 8%, getting the lights back on for 90% of HV power cuts within 2 hours
- 9 - We will maintain network health and reduce network utilisation over RIO-ED1, optimising work volumes to ensure we only do what we need to do, and reducing our unit costs by 10%
- 10 - We will increase operational resilience through the opening of two additional 24-hour manned depots in central London
- 11 - We will increase operational resilience through the opening of two additional 24-hour manned depots in central London
- 12 - We will achieve an average time to quote of less than 8.2 days for simple low voltage connections, provide the service our large connection customers request, and offer two hour time-banded appointments for connection site visits
- 13 - We have built on our innovation track record to cater for industry changes such as the move to a low carbon economy, the arrival of smart meters and the transition to smart grids – we include £49 million of smart savings
- 14 - We will reduce both our business carbon footprint and leakage from our fluid-filled cables by 2% per annum and maintain our community fund investments of £100,000 per annum
- 15 - We will improve the service we provide to vulnerable customers through dedicated phone lines, information packs and additional support through third parties
- 16 - We will improve our operational capability by recruiting and training over 175 technically skilled staff and targeting high employee satisfaction by improving on our 'one to watch' rating in the Sunday Times Top 100 Best Companies

How this will impact domestic customer bills

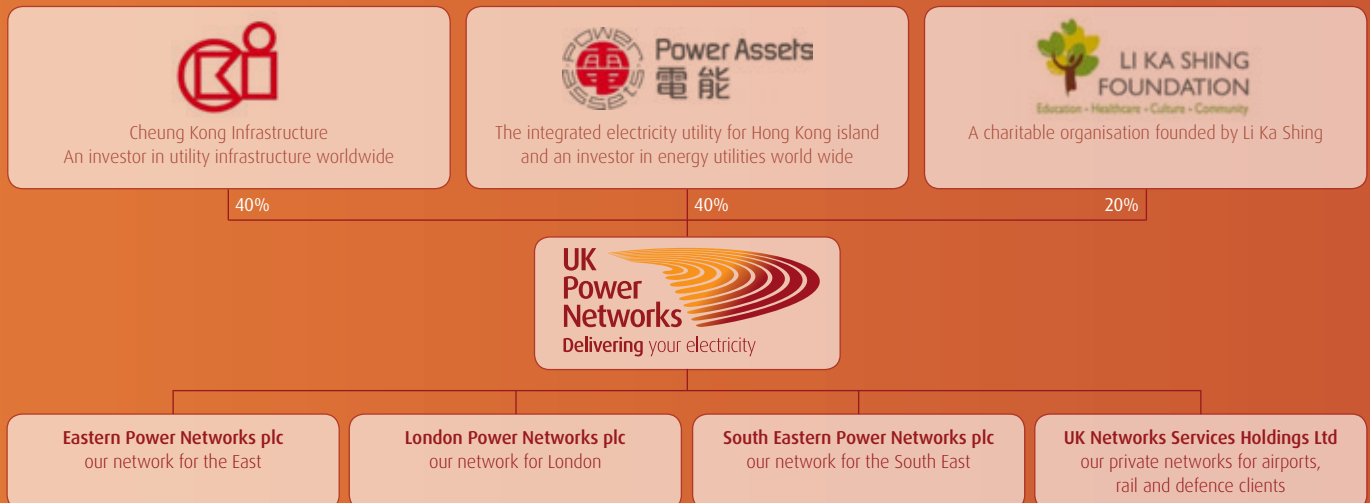
Distribution charges make up 16% of the average overall domestic bill

All amounts in 12/13 prices	2014/15 ^{**}	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Percentage change in distribution costs	n/a	-11.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Annual change in £s	n/a	£66.48	£1.19	£1.22	£1.25	£1.27	£1.30	£1.32	£1.34
Total distribution charge	£75.48	£66.48	£67.68	£68.90	£70.14	£71.42	£72.72	£74.04	£75.38

2 Who we are and what we do



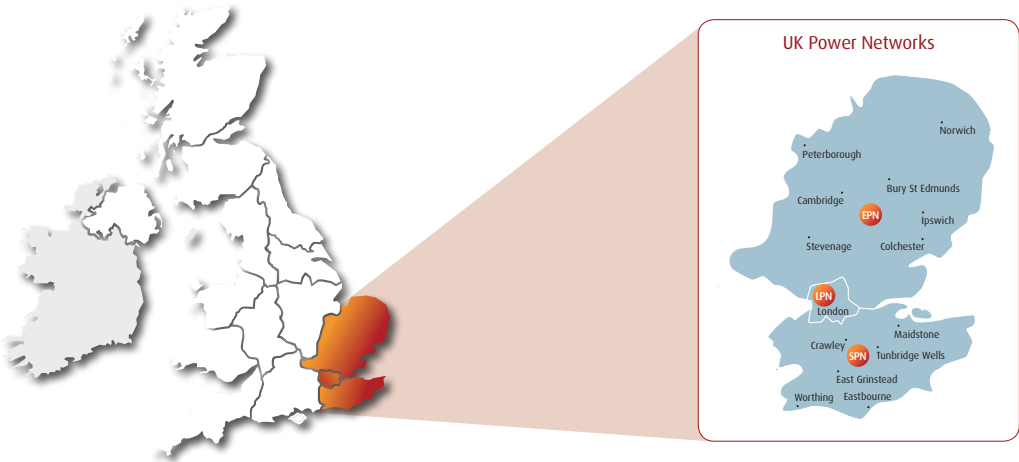
UK Power Networks' ownership structure



LPN owns, operates and manages one of the fourteen electricity distribution networks (DNOs) in Great Britain and we deliver electricity to 2.28 million customers. We are a pure network operator, we do not generate or buy electricity nor do we sell it to end customers. LPN operates in the most challenging, fastest growing, and highest cost part of the country.

This Executive Summary summarises the April 2015 to March 2023 (RIIO-ED1) Final Business Plans of London Power Networks. Our Final Business Plan sets out what we plan to deliver for customers, how we have engaged with stakeholders to produce the plans, and what the plans will cost.

Figure 2: Where we operate



Our key responsibility is to ‘keep the lights on’ for the customers connected to our network and:

- Maintain the safety and reliability of our electricity networks
- Efficiently connect new customers, including generators, to our electricity networks
- Restore supply to customers who experience an interruption as quickly as possible
- Use innovation appropriately to continually improve efficiency together with the services we provide to our customers
- Facilitate a low-carbon environment by investing in assets, processes and initiatives that minimise the effect that our network has on the environment
- Extend and upgrade the network to meet our customers’ future needs

As a natural monopoly our charges are regulated by Ofgem, the economic regulator for the UK electricity and gas utility sector and we must submit business plans such as this one for Ofgem’s approval.

London Power Networks is owned by UK Power Networks which was created in October 2010 from the sale of EDF Energy’s three electricity networks in London, the South East and East of England. UK Power Networks is owned by a consortium of Hong Kong based investors controlled by the Cheung Kong Group (CKG), who are long term investors in utility infrastructure worldwide.

CKG is headquartered in Hong Kong and is a robust, well-capitalised shareholder group which has significant global experience in the long-term ownership and operation of utility and infrastructure businesses. In the UK, CKG is active in electricity distribution via UK Power Networks, in gas distribution via Northern Gas Networks and Wales & West Utilities, and in water and wastewater utilities via the Northumbrian Water Group. CKG also has investments in electricity distribution networks in Australia and New Zealand, and in gas distribution networks, renewable energy power transmission and water businesses in Australia. In Hong Kong, CKG has interests in Hongkong Electric, the sole electricity supplier for over 560,000 customers on Hong Kong Island and Lamma Island.

3 Our track record: transformed performance



Our achievements during the Olympic and Paralympic Games have been recognised by our stakeholders

“ UK Power Networks staff, whether they were directly supporting the Games at the various Olympic venues or were ensuring that the lights stayed on for the millions of households in the region, have played a key role and can proudly share in the success of the 2012 Olympic and Paralympic Games.

Boris Johnson, Mayor of London

Over the Games period, enhanced reporting kept us informed about what was happening, and provided re-assurance across government that energy supplies were being managed efficiently and effectively.

Edward Davey,
Secretary of State for Energy and Climate Change



Our track record of improvement is second to no other network group, particularly considering that we operate in the most challenging, fastest growing, and highest cost parts of the country, including London.

When UK Power Networks acquired the network that became LPN in October 2010 from EDF Energy, LPN was underperforming in most key areas. We introduced a simple and clear strategy to address this underperformance based on achieving upper third performance relative to other UK DNOs by 2014 under three key headings:

- Respected corporate citizen (high quality of supply, reliability, customer service and social responsibility)
- Sustainably cost efficient (delivering our outputs at lower cost and facilitating the transition to a low carbon economy)
- Employer of choice (delivering excellent safety performance and high levels of employee engagement)

We have concentrated on separating from our previous owner EDF Energy, on setting targets and accountabilities for employees, and on resetting our business performance. Some of the key changes we made included:

- Establishing a dedicated customer services directorate, and separating the asset management function from the delivery of capital works
- Introducing an element of performance related pay for all our employees, linked to our progress against our upper third vision
- Focusing the business on improved reliability, 'getting the lights back on' more quickly through changing our working patterns and roles, daily operational calls focused on long duration interruptions, clearing backlogs of maintenance, increased use of generation and investment in automation
- Reducing our 'indirect cost' workforce by around 600 people or 25 per cent, via a voluntary severance scheme, to make our overhead costs efficient
- Focusing our network investment on delivering health and load outputs, and only reinforcing or replacing assets where there is a clear customer benefit rather than simply following our original investment plan
- Investing in cultural change programmes across the business to:
 - Promote focus, accountability and visibility across the management team
 - Develop a culture of putting the customer first amongst all our employees
 - Ensure all employees put safety first in everything they do
- Launching a UK Power Network shareholder funded £50 million business transformation programme to deliver best-in-class business processes and systems

We are pleased that executing our strategy has transformed our performance, with significant benefits for customers. Since we became part of UK Power Networks in October 2010 we have:

- Maintained the lowest prices on average of any DNO
- Reduced customer interruptions and customer minutes lost by 12 per cent and 29 per cent respectively, with the result that we are now one of the most reliable DNO groups in Great Britain
- Delivered our network health and load investment targets ahead of the plan agreed with our regulator
- Improved our average customer service scores by 1.47 (from 6.46 to 7.93 out of ten)
- Improved our employee satisfaction from 69 per cent to 79 per cent as assessed by our annual employee engagement survey
- Invested £59 million in innovation projects, more than any other DNO group
- Cut our costs, whilst still delivering our DPCR5 output commitments, so that we are on track to deliver £75 million of cost savings to customers
- Reduced our business carbon footprint by 27 per cent
- Reduced our total group recordable injury rate by 34 per cent
- Connected 1,700 MW of new customers
- Successfully delivered the power to major events including the London Olympic and Paralympic Games, a Royal Wedding and the Golden Jubilee – challenges faced by no other DNO group

4 Our 73 output commitments



This chapter provides an overview of the outputs LPN proposes to deliver for customers and stakeholders in RIIO-ED1. Our targets are specific, measurable, and time-bounded. This makes them easy for us and our stakeholders to assess, and means that our delivery performance against these targets in the future will be straightforward to measure.

Each year during RIIO-ED1 we propose to publish a report for stakeholders setting out our progress against these output commitments. We have consulted extensively with our customers and other stakeholders on the outputs in the 2015 to 2023 planning period. In summary stakeholders supported:

- The six output categories defined in Ofgem’s RIIO-ED1 Draft Strategy Decision
- The primary outputs under each of the six output categories (but they requested more detail in some areas)
- The proposed secondary deliverables, albeit some suggestions for additional secondary deliverables were made. In particular they requested that the secondary deliverables supporting the environmental output should distinguish between LPN’s response to the low carbon economy and its services or activities, over which it has direct control (i.e. services which involve the use of fluid filled cables), which impact negatively on the environment

We are planning to spend £2.7 billion of total net expenditure (excluding pensions) in RIIO-ED1. Figure 3 illustrates how our forecast RIIO-ED1 expenditure maps to our commitments in the six key output areas. The majority of our forecast expenditure relates to maintaining the reliability and availability of our networks, followed by connections and customer service.

Figure 3: Proportion of forecast totex associated with our output commitments (£ bn)

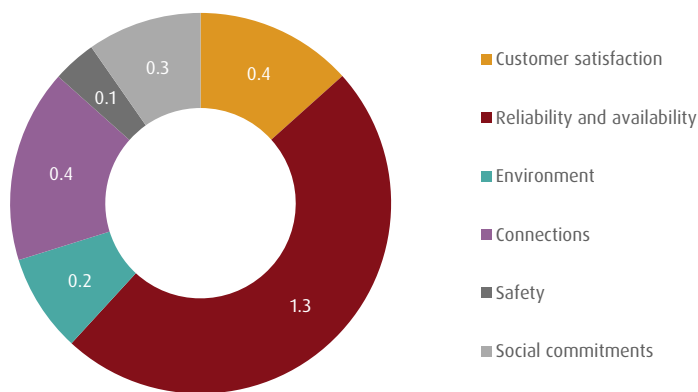


Figure 4 summarises the key output commitments against which LPN will target and measure its performance delivery in the 2015 to 2023 planning period. These are grouped into the six categories identified by Ofgem.

Figure 4: LPN's proposed output commitments for RIIO-ED1

Customer satisfaction



1. Improve LPN's performance in all components of the customer satisfaction survey, achieving an average overall performance of 8.1
2. On average, answer calls from customers within five seconds
3. Resolve 70 per cent of all customer complaints within one day and 95 per cent within 31 days
4. Contact 100 per cent of customers within 24 hours to ensure any work they have requested has been completed to their satisfaction
5. Get the lights back on for 90 per cent of HV power cuts within two hours
6. Provide multiple ways for customers to stay regularly updated on the estimated time for supply restoration and of any changes to the estimated time. As a minimum this will include phone, SMS text, twitter and online
7. Proactively contact 100 per cent of registered vulnerable customers to offer support if they are without power
8. Continue with our three critical friends panels per DNO per annum, including;
9. Publish and review LPN's business plan update every year
10. Publish an annual strategic development statement for Central London
11. Review our economic assumptions with our critical friends panels each year
12. Appoint an independent chairperson to our LPN critical friends panel
13. Hold a Distributed Generation forum annually
14. Continue to use our stakeholder feedback to improve our customer facing business processes

Reliability and availability



15. Maintain LPN's position as having the lowest level of customer interruptions and customer minutes lost in the UK targeting 23 CIs (7 per cent improvement) and 30 CMLs (8 per cent improvement) for unplanned interruptions
16. Maintain the health of the network during RIIO-ED1 as measured by HI, at least at the end of DPCR5 levels
17. Continue to improve LPN's load index by reducing the number of LI 4/5 sites to 12 by the end of RIIO-ED1
18. Protect 18 substation sites from the risk of flooding
19. Reduce the number of 12 hour failures by more than 30 per cent

Environment



20. Reduce our business carbon footprint (BCF) by 2 per cent per annum
21. Continue to recycle 70 per cent of office and depot waste and 98 per cent of street works spoil
22. Maintain sulphur hexafluoride (SF6) leakage at less than 0.2 per cent as a proportion of SF6 in service
23. Reduce cable fluid leakage by 2 per cent per annum
24. Innovation expenditure of 0.5 per cent of allowed revenues and win largest market share of the NIC competition
25. Investigate all noise issues and address all non-compliant sites

Connections



26. Achieve an average time to quote from the time of enquiry of 8.2 days for low voltage single services and 11.7 days for low voltage multiple services
27. Achieve an average time to connect of 42 days for low voltage single services and 53 days for low voltage multiple services
28. Achieve in excess of 99 per cent compared with our Guaranteed Standards of Performance (GSoP) targets
29. From Q3 2014, commence the introduction of new online services for customers requiring new or altered metered services and all customers requiring unmetered connections. Depending upon the complexity of these connections, these services may include:
 - a. On-line submission of service requests
 - b. On-line quotations and estimates
 - c. Service request and job delivery tracking
 - d. On-line payment
 - e. Appointment booking
30. Integrate Flexible Plug and Play connection offers (as per our Low Carbon Network Fund Project) into business as usual by Q2 2015

Meet our improvement commitments to major connections customers:

31. Engage regularly with other connections stakeholders on a frequency agreed with them
32. From 2014, agree and publish a service improvement plan and any associated key performance indicators
33. Publish quarterly updates to communicate progress against the service development plan

34. Review and revise the plan annually in agreement with stakeholders
35. Publish annual progress update to Ofgem and stakeholders
36. Complete an annual independent audit of our achievements against the agreed service development plan
37. Work with connections stakeholders to develop our products and services through 'user groups' with common interest customer groups (highway services, distributed generation, metered customers) to gain insight into their needs and requirements and shape innovation and development within LPN
38. Offer account management to any business/commercial customer who requests this service

Develop more 'pre-application' support for customers to enable them to make informed decisions on their schemes:

39. Extend our 'Ask the Expert' service to include phone, web chat and face to face options
40. Publish 'heat maps' to provide an overview of current network capacities by location
41. Provide access via a web portal to cable diagrams allowing customer access to up to date information
42. Extend the online price illustrator to include all market segments and provide indicative timescales in addition to cost illustrations
43. Extend our current DG surgery sessions to other customer groups to allow customers to discuss their connection proposals informally prior to application

Increase the choice and flexibility of connections services available to customers:

44. Introduce longer office hours for our contact centre from 08.00 to 20.00 weekdays and 09.00 to 16.00 Saturdays
45. Offer two hour time banded appointments for site visits
46. Schedule work delivery across a wider working window to include evenings and weekends
47. Extend the convertible quotes concept so that quotations offered in a competitive market segment can be fully or partly accepted dependent on the customers preference

Continue to support and promote competition in the connections market place through innovative change:

48. Self-determination of the point of connection for all connections to an existing LV network
49. HV jointing to existing networks to include all associated planning and operational activities.
50. Extend live LV jointing to the LPN interconnected

Safety



51. No formal notices or prosecutions by the HSE under applicable legislation
52. Deliver the high safety criticality element of the asset health/risk index (deliver all asset improvements with a high safety criticality score (4) in the asset risk index)
53. Reduce the Total Recordable Injuries rate (accident rate per 100,000 hours worked) by 10 per cent per annum to less than 0.5
54. Reduce the Lost Time Recordable Injuries rate (accident rate per 100,000 hours worked) by 10 per cent per annum to less than 0.05
55. Achieve at least one year with no RIDDOR reportable lost time incidents for employees and contractors during the period 2015 to 2023
56. At least one year with no RIDDOR reportable public harm resulting from our activities
57. As a Group engage with two million children and members of the public, either through face to face or via on line interaction, on public safety issues over RIIO-ED1

Social



Continue to improve the service provided to vulnerable customers:

58. Double the number of customers on our priority service register
59. Proactively contact 100 per cent of registered vulnerable customers to offer support if they are without power
60. Extend our local authority joint response pilot to all local authorities across our geographical footprint willing to participate and standardise triggers
61. Provide vulnerable customers with an alternative high priority dedicated number
62. Distribute welcome packs to all new priority service register customers

Maintain community engagement during RIIO-ED1:

63. Host two subject-specific priority issue focus groups on vulnerable customers and fuel poverty every year
64. Maintain our community fund investing £100,000 per annum

Work proactively with third parties to reduce the level of fuel poverty in our network:

65. Work with National Energy Action (NEA) to map and profile fuel poor customers within our footprint
66. Publish information to targeted customers on how energy efficiency and demand-side activity can be used to manage energy consumption
67. Deliver a series of targeted consumer surgeries for vulnerable residents designed to raise awareness of energy efficiency and how to manage energy bills
68. Publish a strategy to explain how smart meters can be used to reduce fuel poverty
69. Create a group of LPN local community energy champions
70. Develop a project with NEA to educate young carers about energy efficiency
71. Organise and deliver school activity days to encourage safe, efficient use of energy

Be an employer of choice:

72. Measure ourselves against other companies and seek inter and intra sector recognition/accreditation by participating in external benchmarking such as achieving membership of the Sunday Times Top 100 Best Companies
73. Recruit and train over 175 staff as well as upskill and develop existing employees to ensure that we maintain a suitably skilled and motivated workforce

5

Our expenditure plans



5.1 Increased investment and lower operating costs

Our RIIO-ED1 total expenditure (totex) forecast is £1.9 billion in real terms (excluding pensions) as set out in Figure 5, which also shows our actual/forecast expenditure over DPCR5 (grossed up to an eight year basis for comparability with RIIO-ED1). Compared to DPCR5, our work volumes will increase driven mainly by low carbon load growth, increased asset replacement, and the introduction of smart meters. Unit costs are down more 10 per cent on average, smart savings of £49.4 million are included, and overheads are broadly flat against an increased workload. On this basis, our total expenditure has increased by nine per cent.

Our total expenditure forecast has stayed very similar to our July 2013 plan.

Figure 5: Actual and allowed DPCR5 expenditure compared to forecast RIIO-ED1 expenditure

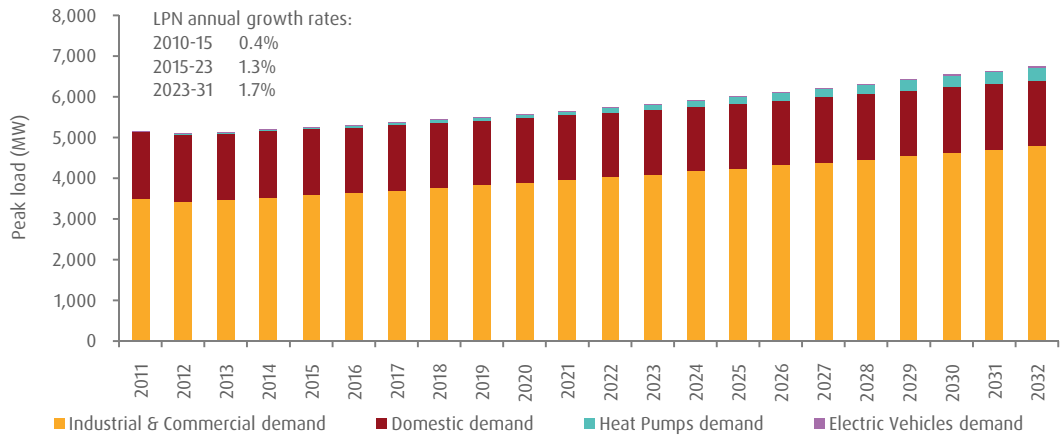
£ billion Real 2012/13 prices	DPCR5-regulatory allowance (8 year equivalent)	DPCR5 LPN actual expenditure (8 year equivalent)	% difference	LPN RIIO-ED1 forecast	% difference between DPCR5 actual expenditure and ED1 forecast
Load related capex	0.42	0.31	-27	0.46	+48
Non load related capex	0.50	0.46	-8	0.53	+16
Network operating costs	0.30	0.35	+17	0.30	-15
Indirect costs	0.56	0.48	-14	0.46	-4
Non-operational capex	0.07	0.10	+41	0.06	-37
RPEs	-	-	-	0.08	-
Pensions ongoing costs	0.06	0.06	-1	0.07	+5
Total	1.92	1.77	-8	1.96	+11
Pension deficit	0.23	0.32	+37	0.26	-17
Total	2.15	2.09	-3	2.23	+7

The key expenditure categories are:

- **Load related capital expenditure** (investment in reinforcing our network to cater for growth in electricity demand) in DPCR5 is below the regulatory allowance by 27 per cent due to a number of factors, including lower than forecast growth in demand resulting from the 2008 financial crisis and a greater than anticipated impact from domestic energy efficiency together with a delay in certain major tunnelling works projects due to planning issues. Expenditure in RIIO-ED1 is forecast to increase by 48 per cent in order to meet the capacity requirements for forecast load growth, including the impact of low carbon technologies, offset by reduced unit costs and £49 million of savings from smart technologies

Figure 6 shows our forecast load growth for LPN.

Figure 6: LPN peak load growth over RIIO-ED1 and ED2



- **Non load related capital expenditure** (investment in replacing or refurbishing assets because of deteriorating condition) in DPCR5 is generally in line with the regulatory allowance set by Ofgem, with an underspend of 8 per cent driven by improved efficiencies on tree management and improved unit costs. Expenditure in RIIO-ED1 is forecast to increase by 16 per cent as our detailed asset modelling forecasts an increase in the amount of asset replacement required as a consequence of our ageing asset base. This increase is partially offset by reduced unit costs
- **Network operating costs** (principally faults and inspection & maintenance) in DPCR5 are overspent against the allowance set by Ofgem. We have overspent on faults as we focused on improving the quality of supply, out-performing on and inspection and maintenance. Expenditure in RIIO-ED1 is forecast to decrease by four per cent, due to the impact of reduced unit costs
- **Indirect overhead costs** (support costs closely associated with our 'direct' capex and opex, and general business support costs) in DPCR5 are below the regulatory allowance by around 14 per cent. Whilst we overspent our allowance at the beginning of the price control period, expenditure has significantly decreased since we separated from the previous owner and reduced our headcount by around 600 people through a voluntary severance programme in 2011. Expenditure in RIIO-ED1 is to decrease by 4 per cent, as further efficiency savings offset the impact of increased work volumes
- **Non-operational capital expenditure** (expenditure on new and replacement assets which are not system assets, such as IT and property) in DPCR5 is 41 per cent above the Ofgem allowance largely due to expenditure on IT separation from EDF Energy, the previous owner and on the Business Transformation project. Expenditure in RIIO-ED1 is forecast to reduce by 37 per cent as a result of efficiency savings offset by the introduction of new business information systems to support the rollout of smart metering and smart networks

5.2 Cost efficiency in RIIO-ED1

This section provides evidence that the unit costs underpinning our expenditure forecasts are efficient and deliver value for money for customers over the long term. Each of these is discussed below.

We support the use of benchmarking as a tool, within the overall toolkit of cost assessment methods and models, to assess our relative efficiency amongst the GB DNOs given the outputs we are required to deliver. However, we acknowledge the inherent limitations of benchmarking and of the comparability of data and note that benchmarking needs to be tailored to meet specific regulatory applications.

We have further developed the cost assessment model which Ofgem used for its fast-track assessment and applied additional benchmarking tools to assess the efficiency of our RIIO-ED1 expenditure forecasts:

- **Ofgem Totex model (macro-CSV):** This is a regression-based statistical model that considers total expenditure (capex and opex) in the context of a number of service characteristics, such as number of customers and units distributed
- **Ofgem Totex model ('bottom-up'):** This is a regression-based statistical model that considers total expenditure (capex and opex) in the context of a number of the key activity cost drivers, such as numbers of faults and network scale
- **Ofgem disaggregated model:** This is a detailed assessment of each cost category utilising an appropriate cost driver for each
- **Bottom up cost analysis:** Using cross utility data, UK Power Networks has developed detailed unit cost targets for its main activities. For indirect costs we have either set the benchmark at industry average or used independent specialist advisors to assess appropriate cost levels
- **Project specific assessment:** Due to the unique nature of some project and programmes of work UK Power Networks has developed specific project justifications
- **Cost-benefit analysis (CBA):** UKPN has used cost-benefit analysis to justify projects against Ofgem agreed criteria and assess our proposals against the condition based plans of the industry
- **External benchmark review:** External consultants were appointed to review and assess the efficiency of IT and property costs

Overall, on a totex basis, all three networks benchmark as efficient and improves efficiency during RIIO-ED1. Within each individual category LPN is able to demonstrate an overall improvement in cost efficiency in RIIO-ED1. However, certain spend categories benchmark as “amber” or “red” for individual networks. We believe that this reflects inevitable simplifying assumptions used in the benchmarking process which are averaged out at the overall totex benchmark level.

We have applied the Ofgem assessment model, suitably modified, to estimate efficiency scores for RIIO-ED1 and these are shown in Figure 7 overleaf.

Note: Efficiency scores have been calculated by dividing the DNO cost submitted to the model by the estimated cost that is produced by the model.

In respect of Ofgem’s combined assessment which brings together the outcomes of the three models, UK Power Networks’ three DNOs are ranked as follows, out of 14 DNOs:

- EPN – 5th
- LPN – 9th
- SPN – 3rd

On a group basis, UK Power Networks ranks 2nd out of the 6 ownership groups.

Overall, on a totex basis, LPN benchmarks as efficient and improves efficiency during RIIO-ED1. Within each individual category UK Power Networks is able to demonstrate an overall improvement in cost efficiency in RIIO-ED1. However, certain spend categories benchmark as “amber” or “red” for individual networks. We believe that this reflects inevitable simplifying assumptions used in the benchmarking process which are averaged out at the overall totex benchmark level.

Figure 7: LPN efficiency of our forecast expenditure

Cost category	Expenditure change required to meet efficiency frontier	
	a positive value denotes a forecast which already benchmarks as efficient	
	LPN	
Combined assessment	-6%	
Totex (macro)	+4%	
Totex (bottom-up)	-9%	
Totex (sum of below categories)	-6%	
Load-related capex	+9%	
Non-load related capex	-31%	
Other network capex	-15%	
Network operating costs (NOC)	-1%	
Closely associated indirects (CAI) and Smart Metering	-4%	
Business support, Op IT&T and non-op capex	-7%	

NB Business Support benchmarks as efficient, supported by external review

The values stated in Figure 7 show the overall change in expenditure required to hit the efficiency frontier, which could be positive or negative. For example, the submitted Network Operating Costs in LPN need to be reduced by 1% to be considered efficient, whereas the load-related capex is already 9% better than the benchmark costs.

Real price effects and ongoing efficiencies (frontier shift)

Key elements of our cost base for the next planning period will increase at a greater rate than the retail price index (RPI), which measures general prices in the economy, due to the specialist labour and materials required to operate our network. LPN engaged NERA Economic Consulting (NERA) to independently estimate the real price effects (RPEs) relative to RPI for the next planning period for labour, materials, plant and equipment.

NERA’s methodology and data sources are consistent with the approach applied by Ofgem in the recent RIIO electricity transmission and gas distribution price reviews. NERA developed a range of scenarios and we have adopted NERA’s mid-point RPE estimates as shown in Figure 8 below.

NERA has also reviewed the potential on-going annual productivity improvements during RIIO-ED1. We have included an on-going productivity estimate of 1.25 per cent per annum for operational expenditure (including total indirect costs) and 0.7 per cent for network investment. In recognition of the slightly higher potential for on-going efficiency in London due to the inclusion of regional cost factors we have increased the on-going annual productivity improvement for LPN by 0.25 per cent per annum compared to our other networks.

These RPEs, as shown in Figure 8, have been reflected in our capital and operating expenditure forecasts set out Figure 8.

Figure 8: RPEs and ongoing efficiencies for the 2015 to 2023 planning period

LPN	Operational activities (%)	Network investment (%)
Real price effects	1.2	1.0
Efficiency savings	1.25	0.7
Net effect	-0.05	0.3

5.3 Network specific initiatives for LPN

Through our stakeholder engagement and the asset management requirements for RII0-ED1 LPN has identified a number of network specific investment initiatives.

London Power Networks

Improved London operational response – the expectations of stakeholders regarding operational network performance are higher in the UK's capital city London than our other network distribution areas. We are proposing to improve the level of services we provide to our customers served by the central London network through the establishment of two central London operational depots, a 24 hour manned fault response service, removal of technical constraints and removal of service constraints. We have included £11 million of annual on-going expenditure in RII0-ED1 to deliver this improved operational performance. Overall for LPN as a whole we expect our CI and CML performance to reduce by a further 0.2 CI and 0.3 CML. However, the CI and CML performance for our central London customers will improve by around 30 per cent.

London infrastructure development – LPN has consulted extensively with key stakeholders, forming specific working groups (see **Process Overview**, Section 7.4). An area of specific debate has been the future development of London's network infrastructure so that it is appropriate for the UK's capital city. In its draft November business plan LPN proposed an additional investment of £170m in capital network infrastructure to reduce network utilisation and £40 million of investment to improve network resilience and performance. As a result of further discussions with Ofgem who confirmed that the current regulatory framework does not support ahead of need investment in infrastructure and that they would not support changes in this area LPN has reduced the additional investment in capital network infrastructure to £100m. The network resilience investment remains at £40 million. We are confident that these investments are well justified under the existing regulatory framework.

Regional cost adjustment factors – in LPN, through bottom up detailed cost analysis and established (RII0-GD1 and T1) top down regional cost adjustment methodologies, we have identified and justified £30 million per annum of additional cost items. We have adjusted the unit costs underpinning LPN's 2015 to 2023 expenditure forecasts to reflect the regional cost differences associated with undertaking the investment required to deliver our output commitments to customers served by this network. The main drivers of these additional costs are:

- **Transport and travelling** – congestion charges, parking and site access. Importantly recent changes to legislation relating to street works have increased these costs significantly
- **Excavations** – accessing underground cable networks in high density urban areas and environmental restrictions on street works
- **Operations** – scheduling work, accessing sites, and gaining consent from multiple interested parties such as property owners and local authorities
- **Resources** – higher labour rates and allowances
- **Security** – higher network asset security requirements and access to assets
- **Properties** – purchasing and accessing higher cost land and buildings
- **Contractors** – higher contracted labour rates (due to shortage of skilled labour)
- **Tunnels** – building tunnels for underground cables

For further information on our expenditure plans please see **LPN Core Narrative**, Section 5.

For further information on how we engaged stakeholders see **Process Overview**, Section 7.4.

For further information on regional cost adjustments please see **Annex 13a: Regional Cost Justification**.

6 Our revenues and prices



6.1 Efficient financing assumptions

Our final business plan has substantial associated financing requirements. Over RIIO-ED1, our regulatory asset value (RAV) is projected to grow by £0.6 billion. This requires £0.4 billion of additional debt which after including existing debt maturing during the period, implies a debt financing requirement of £1.1 billion. Shareholders' equity committed to the business grows by £0.1 billion. Therefore, it is critical that our business plan includes acceptable financing assumptions.

Figure 9 summarises these (with DPCR5 for comparison).

Our acceptance is conditional on Ofgem accepting our overall business plan package, including our proposed totex and financeability proposals, and therefore on the outcome of our discussions with Ofgem and the Draft Determinations.

Since our business plan submission there has been considerable debate on the methodology for estimating to cost of equity. Historically, the key components of the cost of equity had been derived by regulators using long run historic averages. However, in its draft determination for Northern Ireland Electricity (NIE) the Competition Commission (CC) placed more weight on short run data. The consequence of using this approach is a lower estimate of the cost of equity. However, both the Competition Commission, and more recently OFWAT, considered all of the components of the Cost Capital when coming to their draft positions on the appropriate cost of capital. Both regulators adopted an ex- ante approach to the cost of debt, compared to the use of a long run trailing average, as set out by Ofgem in its RIIO strategy document. We acknowledge that Ofgem have accepted the recommendation of Wright and Smithers to continue to use long run data to calculate the total equity market return. However, it is not clear how Ofgem have derived their 6.0% cost of equity.

We have maintained the use of the 10 year trailing average for calculating the cost of debt in line with the decision in Ofgem's March 2013 strategy document. However, it should be noted that our actual cost of debt will exceed our forecast of the cost of debt allowance by 0.55%, on average, over the ED1 period. We accept that we will recover new capital expenditure from customers over 45 years rather than 20, with a transition over RIIO-ED1. We propose a 32/68 fast/slow costs split. This is a 2% increase in fast money but remains within the range described by our historic statutory and our regulatory fast and slow split.

Figure 9: Financing parameters

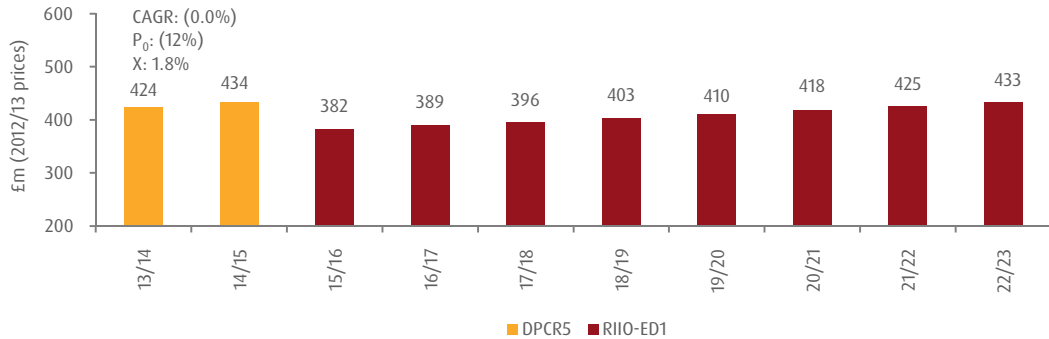
Parameter	Current period (DPCR-5)	2015 to 2023 planning period
Cost of equity	6.7%	6.0%
Notional gearing	65.0%	65.0%
Cost of debt	3.6%	Rolling 10 year average
Vanilla WACC	4.69%	3.79% to 3.21% (estimated)
Totex split (fast/slow)	15/85 (business support + non-operational capital expenditure 100% fast)	32/68 on all expenditure categories
RAV depreciation	20 years	Single period transition to 45 years

6.2 A proposed real terms cut in revenues at the start of RIIO-ED1

Our efficient costs and financing assumptions allow us to reduce the average revenues in RIIO-ED1 compared to the end of DPCR5 by 6 per cent on average. Relative to the end of DPCR5 our forecast prices in RIIO-ED1 will reduce before inflation by 12 per cent rising slowly thereafter by 1.8 per cent in line with the growth in our asset base.

The charts overleaf set out our proposed revenues. The Po refers to the initial real terms cut in the first year of the RIIO-ED1 price control period and the X refers to real terms growth thereafter (which we require to achieve stable interest cover as our RAV increases). We also show the overall compound average growth rate (CAGR) for the RIIO-ED1 period including both the Po and X.

Figure 10: LPN's annual revenue requirement



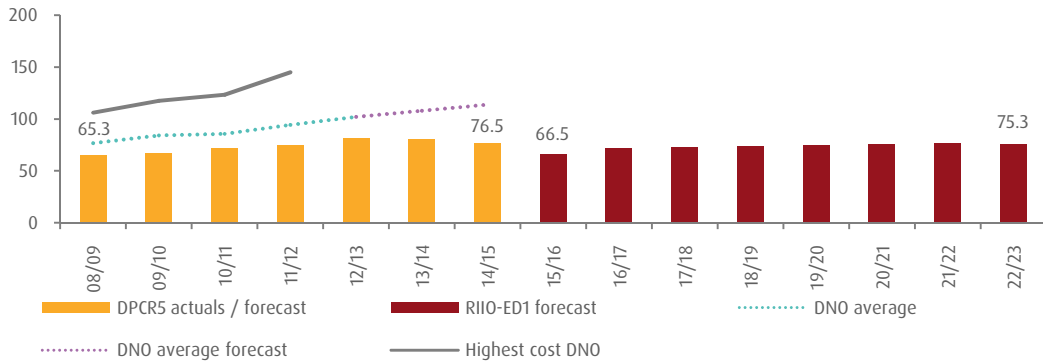
The network shows initial revenue cuts as we reduce high level of revenues at the end of DPCR5 (which in turn reflect under-recovery in the earlier years). The proposed revenue profiles will result in revenues in 2023, at the end of RIIO-ED1, equal to revenues at the end of DPCR5.

6.3 Impact on our customers' bills

The forecast impact on customer bills is in line with our revenue forecasts as shown in Figure 11 for a typical domestic user and Figure 12 for a typical non-domestic customer.

Annual domestic customer bills

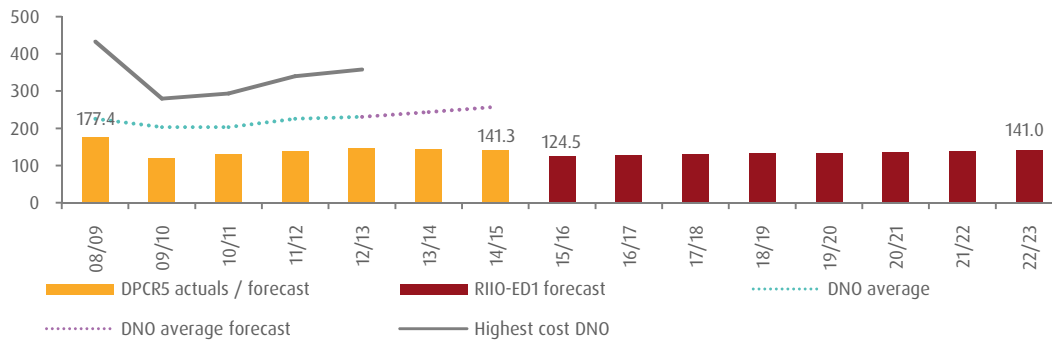
Figure 11: LPN projected change in average annual domestic bill (£2012/13)



LPN's domestic prices are the same at the end of RIIO-ED1 (2022/23) and at the end of DPCR5 (2014/15) at £75 and are lower in between. There is an initial cut of 12% or £9.50 in 2015/16. The average domestic price over the RIIO-ED1 period compared to the end of DPCR5 is 6% lower.

Annual non-domestic customer bills

Figure 12: LPN projected change in average annual non-domestic bill (£2012/13)



LPN's non-domestic prices are the same at the end of RIIO-ED1 (2022/23) than at the end of DPCR5 (2014/15) at £141 and £141 respectively and are lower in between. There is an initial cut of 12% or £17 in 2015/16. The average non-domestic price over the RIIO-ED1 period compared to the end of DPCR5 is 6% lower.

6.4 Summary of impact on customers' bills

Figure 13 shows a comparison of the expected annual cost of electricity distribution for an average domestic and average non-domestic customer between 2014/15 (the end of the current price control) and the average bill for RIIO-ED1.

Figure 13: RIIO-ED1 price comparisons

Real 2012/13 prices	2014/15	Average RIIO-ED1	% difference between end of DPCR5 and average RIIO-ED1
Domestic	75.5	70.8	-6%
Non-Domestic	141.3	132.6	-6%

For further information on the financing of our business plan please see [Annex 17: Financeability](#).

7 Producing a well-justified business plan



7.1 Comprehensive process and governance

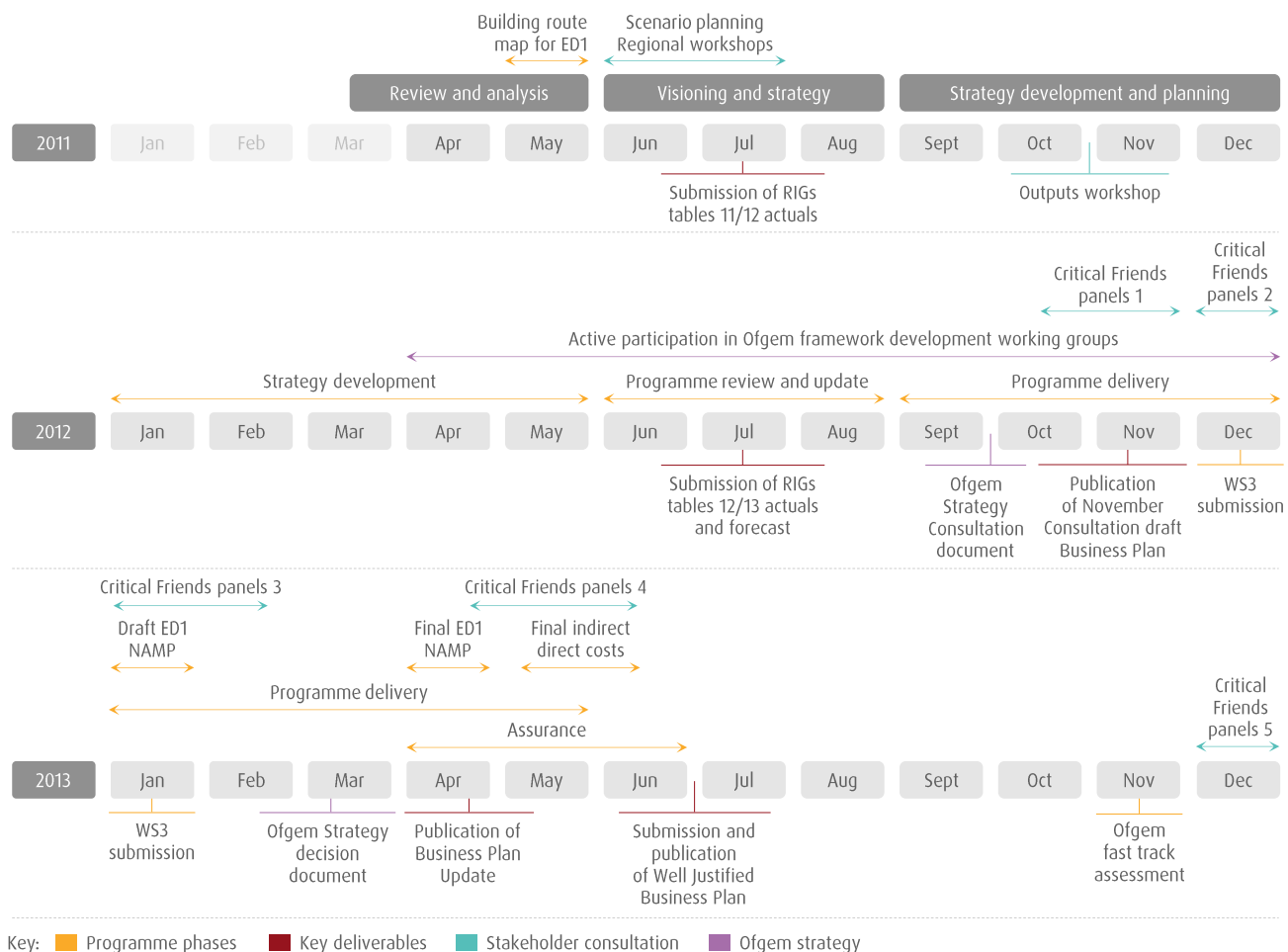
We have taken a whole of business approach to develop our plans for the 2015 to 2023 price control period. The business plan development has been led by LPN's entire leadership team, coordinated via a RIIO Programme Steering Group comprising senior members of the leadership team, which meets weekly and is chaired by the CEO. The Steering Group has responsibility for making key decisions and periodically updating the Board of Directors. This Final Business Plan was approved by our Board in June 2013. A large number of senior managers and other staff across the business have been involved in producing and confirming our business plan assumptions.

Stakeholder engagement is embedded in our business plan development. Since 2011, our customer services team has led an extensive consultation process with our stakeholders on all aspects of our business plans to ensure that they meet the expectations of customers and other stakeholders and deliver value for money over the long term. We consulted through a range of consultation pathways including business as usual and business plan specific pathways.

Our business plan development has preceded in parallel with our innovation and smart grid activities and each has drawn on the other. Our plan incorporates the lessons we have learned from our own and other DNOs' innovation projects, and includes the first stage of a potential journey towards a smart grid by 2030, together with £47 million of smart grid savings for customers.

Figure 14 shows the key stages of our business plan process. Intensive work started on the plan in 2011 including stakeholder engagement on our macro-economic and load forecasts.

Figure 14: Key stages of our Business Plan development



7.2 Extensive stakeholder engagement process

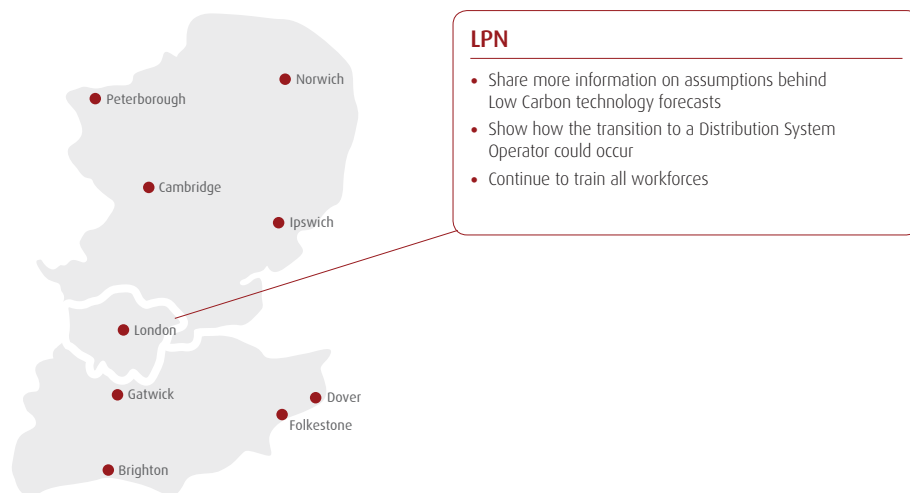
UK Power Networks, on behalf of LPN, has an extensive business-as-usual stakeholder engagement programme, managed within the customer services directorate and through our CEO reporting to the Board. Since 2011, we have incorporated within our engagement an extensive programme of consultation on all aspects of our 2015 to 2023 Business Plans to ensure that where possible they meet the expectations of our customers and other stakeholders and deliver value for money over the long term. We believe that we were one of the earliest groups to start engagement on our Business Plan, and this early start allowed us to be the first to publish a detailed draft business plan including revenue forecasts in November 2012, together with an update to the Business Plan reflecting stakeholder input in April 2013.

UK Power Networks business plan stakeholder engagement included:

- Five Critical Friends Panel sessions
- 14 focus groups with domestic customers
- 21 telephony interviews with London business customers to test their Willingness to Pay (WTP) for certain services
- 400 willingness to pay (WTP) interviews with domestic customers
- 100 WTP interviews with business customers
- 65 WTP interviews with central London business customers
- 22 customer connections stakeholder forums
- Four priority issue topic specific stakeholder panels (vulnerable consumers and fuel poor customers, storm performance, metal theft and street works)
- Two distributed generation customer stakeholder forums and a customer service survey
- Targeted stakeholder feedback
- Bilateral engagement with energy suppliers and large business customers
- Multiple meetings with key central London stakeholders, including establishing a working group with key stakeholders including the Mayor of London, the Greater London Authority, Westminster Council, the Corporation of London, and the City and Westminster Property Associations
- Publication of our draft Business Plan in November 2012
- Online consultation on our November 2012 Consultation Business Plan with 23 responses
- Publication of our Business Plan Update in April 2013
- On line consultation on our Business Plan Update

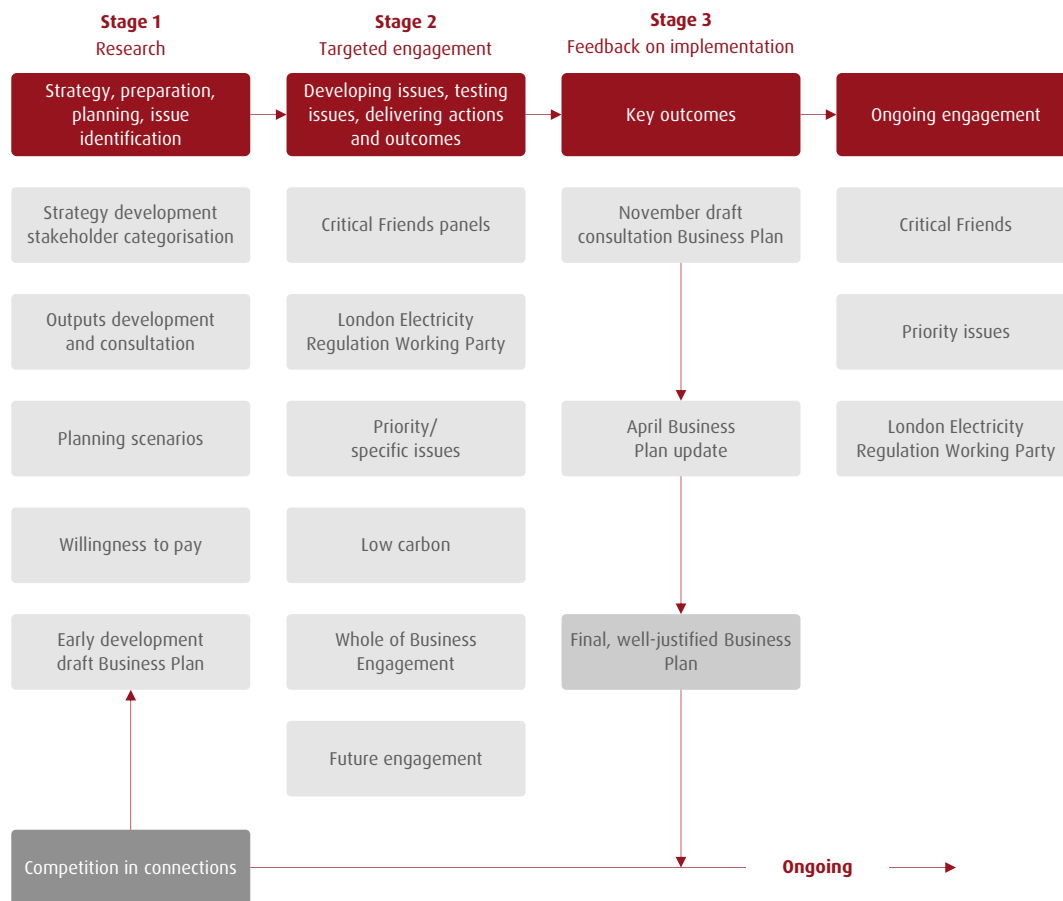
A selection of stakeholder feedback is provided below.

Figure 15: LPN stakeholder feedback



Our stakeholder engagement programme on the Business Plan is summarised in Figure 16 and further detailed below.

Figure 16: Stakeholder Engagement Programme



7.3 Stakeholders have influenced our business plan

Our engagement has identified a number of key issues that consistently come through as most important to our stakeholders including:

- **Increased transparency** – stakeholders have requested greater transparency around reporting, decisions and business processes particularly in connections. In response, we were the first of the UK DNOs to publish information on our annual revenue requirements and prices for the upcoming planning period
- **Improved customer service in particular in connections** – stakeholders would like to see improved customer service and support the development of a contestable customer connections market to foster greater choice in service provider and in improvements in service outcomes. This was also evident from the willingness to pay studies for all three networks. Customers identified a range of services, including longer working windows and specific time-banded appointments. In response, we have already significantly improved our customer connection services by listening to and acting on feedback from customers. We are committed to introducing further improvements as part of our Business Transformation project, including the introduction of a connection customer self-service portal

- **Transition to a smart grid** – there is stakeholder support for planning to meet the challenges arising from the transition to a low carbon economy, which will drive changes in the role and responsibilities of distribution networks. In response, we have made clear our commitment to the UK’s transition to a low carbon economy and to a possible journey towards a ‘smart grid’ by 2030 without creating stranded assets. We have reflected investment to support our transition to a smart grid in our business plans, and have also reflected £49.4 million of cost savings from smart interventions. We are taking an incremental smart solution implementation strategy during RIIO-ED1, continuously monitoring the take up of smart technologies. We have sufficient flexibility in our delivery model to move to a faster implementation strategy if necessary
- **Infrastructure development** – some of our stakeholders, in particular in London, have questioned whether our Business Plan provides sufficient capacity to accommodate future customer connection requests in certain areas of the network and how the cost of network investment, required to accommodate future connections, should be recovered from customers. In response, we have revised our business plans within the constraints imposed by regulations under which we operate to reflect stakeholder feedback, whilst being careful not to propose investment in new capacity ahead of need, which would result in existing customers subsidising the cost of connecting new customers and is prohibited by our regulator
- **Efficiency of cost delivery** – stakeholders have asked for more comparative information on the relative efficiency of our networks in delivering their outputs compared to other DNOs. In response, our vision, to achieve top third performance in our sector in key areas, is founded on comparative benchmarking and this Business Plan is full of information comparing our performance with the sector
- **Willingness to pay survey** – our stakeholder engagement has included a quantitative willingness to pay survey to assess our customers’ priorities and requirements, administered by the consulting firm Accent. The customer priorities identified are consistent with the key issues identified above. It is noticeable however that in absolute terms customers are not prepared to pay significantly more on top of their existing bills for enhanced services and we have taken affordability into account in our Business Plan and in our proposed revenues which include a real terms price cut for customers

Stakeholder requirements not included in the business plan

Whilst we have listened to and understood all the feedback we have received, it has not been practical or appropriate to incorporate it all into our Business Plan. Feedback, which we have not reflected includes:

- The introduction of a seventh output category and associated targets and incentives relating to the decarbonisation of the UK economy. This was proposed by UK Power Networks during the Ofgem working groups but rejected
- Whilst we have undertaken to monitor short duration interruptions (less than three minutes) during RIIO-ED1, compensation has not been extended to those customers affected
- We do not believe we need to move to a Distribution System Operator model during RIIO-ED1, but will continue to review our role as the decarbonisation of the economy speeds up and the requirements on a traditional Distribution Network Operator being to change
- Requests from major London stakeholders for investment in new capacity ahead of need in London to facilitate economic growth through faster connection times and lower connection charges for new major connections. We have not included this investment, which was discussed in our November 2012 draft business plan consultation, because it is clear to us that our regulator Ofgem will not approve the expenditure because it is contrary to the regulatory principles which apply to electricity distribution, namely that connecting customers rather than existing customers should pay for the cost of incremental capacity for new connections, and that this capacity should not be constructed ahead of need. Ofgem has also made its position clear to our stakeholders directly
- We have decided not to create a separate licensed network for central London. We now monitor customer interruptions and customer minutes lost performance separately and provide geographical specific network loading. However, it is not practical due to the interconnection of the London network to try to completely separate the central district from the rest of the London network
- We have decided not to become a Meter Operator in response to the smart metering roll-out and will focus on responding effectively to network interventions required by the supply companies and their agents

- It was suggested that we should measure and report on the additional congestion resulting from our streetworks. Whilst this is a worthwhile proposal, it is not clear to us how this can be achieved and hence it has not been included in our plan. We will, however keep this matter under review
- Moving to a more aggressive programme of removing oil-filled cables to minimise the potential for environmental damage through oil leakage. We will continue to monitor our oil-filled cables carefully and where a suitable investment case exists, (which has considered all externalities including traffic disruption) we will replace them
- It was suggested that we should change our DUoS charging to reflect the distance of the customer from the substation. We believe that this would be perceived as a 'postcode lottery' by customers

7.4 Extensive assurance of our plan

We have subjected our business plans to proportionate and robust internal and external assurance, challenge and verification to improve them and to ensure completeness, accuracy and appropriateness of information, data and assumptions.

- **KPMG** reviewed our business plan data templates
- **PA Consulting** has provided advice, quality assurance and monitoring of the development of the Business Plan since 2011
- A panel of eminent utility executives and other experts organised by **Indepen** has provided an overall critique to challenge and shape the Business Plan
- **Navigant** and **PWC** provided separate reviews of our November and April business plan consultation documents
- **Dialogue by Design** has checked that we have set our Business Plan priorities in line with stakeholder requirements
- **Element Energy** assisted us with economic modelling and reviewed our assumptions for economic growth in the UK economy, and other drivers for load growth including drivers for decarbonisation of the economy (e.g. electric vehicles)
- **Sinclair Knight Merz** assessed the reasonableness of our direct capital investment, opex and outputs forecasts and assessed our health index methodology
- A firm of chartered accountants audited our financial model
- **Chiltern Power** assessed the feasibility, availability, suitability, and completeness of the smart network solutions being used within our Business Plan
- **Two Tomorrows** reviewed the business plan stakeholder engagement commentary to ensure it accurately reflects the processes we followed and the changes to the outcomes as a result of the ongoing engagement programme
- **Oxera** and **First Economics** provided advice on the cost of capital and other financial matters (through the Energy Networks Association)
- **NERA** independently estimated real price effects and annual efficiency improvements for the period 2015 to 2023 to ensure that they are economically justified and robust
- **Investment Property Databank (IPD)** provided cost benchmarking analysis to inform our property related expenditure forecasts and ensure that they are efficient
- **ImprovIT** provided benchmarking cost analysis to inform our IT related expenditure forecasts and ensure that they are efficient

For a more detailed description of the activities undertaken in the construction of our well justified business plan, please see our **Process Overview**.



Adding value through innovation



8.1 Innovation is embedded in our business

Innovation is key to our strategy because our vision of upper third performance in requires continuous improvement in order to maintain that position as other networks also improve.

The major changes we have made to our business since we became part of the UK Power Networks Group demonstrate a substantial level of commercial innovation. The UK Power Networks Group is now embarking on a £50 million shareholder funded Business Transformation project which will accelerate the pace of change in our business and leave us with world class business processes and systems.

Technical innovation in our business and via the Low Carbon Networks Fund is also a major focus for us. We have the leading share of the LCNF and our major projects are already starting to deliver lessons for the DNO community. Our plans incorporate 'smart' interventions on our networks allowing us to build £49.4 million of savings from smart interventions into our Business Plan.

All of our innovation activities are focused on delivering measurable benefits in the areas of our top third vision: respected corporate citizen, sustainably cost efficient, and employer of choice. We do not make changes for the sake of change.

8.2 Key solutions delivering benefits in the business plan

Our past and present innovation performance has allowed us to achieve a significant reduction in the capital expenditure we require:

- Our work within the Low Carbon London project has given us the confidence to replace 14 traditional reinforcement schemes in our Business Plan with interim solutions which we expect to fulfil through Demand Side Response (DSR). We expect DSR to play a role in managing complex construction timelines within a further six reinforcement schemes. This will provide a saving of £13.9 million compared with the original planned schemes and will minimise disruption to customers
- Our change journey is not yet complete, and in particular we still have improvements to make in customer service and in direct cost efficiency. With these goals in mind, early in 2013 we launched a £50 million Business Transformation project. We will not seek to recover the costs associated with this transformation from our customers. The project is focused on process and systems improvements. In particular, it is concerned with ensuring we have best practice, efficient, integrated, common processes and systems across our core work, asset and customer operations. This will enable:
 - Improved customer relationships through greater provision of information, service channels (web, voice, SMS, social media), improved service and self-service options
 - More sophisticated asset performance measurement, refined asset policies and the production of high quality near term asset plans with reduced manual intervention
 - Improved and simplified data capture and management
 - Better managed work planning and the use of contractors
 - Simplified regulatory reporting and internal planning processes
 - Better control of the delivery of capital programmes

- Our trials of a number of transformer monitoring solutions for primary and grid transformers over a number of years, and previous work carried out to model thermal cycling of transformers, has given us the confidence to reduce our capital expenditure forecasts for transformer upgrades by £3.1 million. We expect to meet the gap by managing existing transformers using a combination of advanced monitoring, modelling of their thermal effects, and potentially pre-cooling of transformers ahead of system peaks. In addition Demand-Side Response contracts will be considered where viable to relieve load on transformers in a fault event
- We are not requesting the full amount of capital expenditure to carry out all the replacement of low-voltage (LV) cable which is predicted by our models to need replacing due to the uptake in electric vehicles, micro-generation and heat pumps. This results in both a financial saving to our customers and in reduced disruption due to fewer excavations on the street. We are confident that there are a variety of technologies being worked on by ourselves and other DNOs which can help to manage voltage issues at either the distribution substation or at the customer's premises, or indeed at a mid-point along the length of the feeder as well as there being opportunities to control load or automatically re-configure the low-voltage network to resolve some loading issues. We have identified a saving of £9.9 million over the RII0-ED1
- Our ability to consider refurbishment rather than replacement of equipment, while maintaining network reliability, has reduced our capital expenditure forecast over the RII0-ED1 period. This has its roots in our skilled engineers, but who in turn are informed by and develop our innovation programmes such as the Strategic Technology Programme, a joint research programme in which the GB and Irish DNOs participate
- We have reduced our expenditure forecasts for replacement of switchgear by £2.5 m on the basis that we expect we can manage the condition of the switchgear using real-time partial discharge monitoring. Real-time monitoring gives a picture of the developing nature of faults, and complements the spot-checks which are carried out across all switchgear on a regular inspection cycle
- In the context of supporting new generation and demand connections:
 - We have issued new 'interruptible' offers to a number of renewable generation developers as part of our Flexible Plug and Play (FPP) project. If taken up, these could potentially save significant sums for the developers and reduce their time to break even
 - We have trialled Active Network Management (ANM) technology as part of both our Low Carbon London and FPP projects, which is the vital technology enabler behind interruptible contracts and some Demand Side Response contracts

8.3 We have a positive return on investment in innovation

Over DPCR4 and DPCR5 the UK Power Networks group will have received around £101 million of customer contributions. These contributions have led to £111 million of the total of the £141 million (which includes existing smart solutions) of savings in the RII0-ED1 business plan, and further savings will follow in RII0-ED2. These savings are as much as:

- 25 per cent in the case of our plans to avoid LV cable reinforcement by using smart grid solutions
- 15 per cent in the case of using demand side response to avoid the need to undertake traditional substation reinforcement

These savings are fully documented in our Innovation Annex, which also contains a more detailed description of our smart grid strategy.

8.4 Our investment in smart metering will realise benefits to customers

The Government's decision to mandate the rollout of smart meters to all domestic and non-domestic customers by the end of 2020 is a major national change programme introduced to support the commitment to transitioning to a low carbon economy and meet long-term challenges including providing an affordable, secure and sustainable energy supply.

Smart meters will replace the existing meters and will empower consumers to better manage their energy consumption and their energy bill by providing real-time information on energy usage. They will also facilitate more sophisticated energy management techniques and should bring an end to estimated billing – consumers will only be billed for the energy actually used.

The smart meter rollout is the responsibility of the retail suppliers. However, we are innovating to improve our systems and working practices to ensure smart meters will also deliver direct benefits to UK Power Networks and other network operators. These include real-time data on customers interrupted in a fault situation giving us the ability to improve customer service and restore supplies more quickly, and information on load and voltage, enabling us to better target network reinforcement. We will also have the ability to improve services to vulnerable and fuel poor customers.

Figure 17 below quantifies the cost savings benefits we are forecasting. Customer service benefits would also arise.

Figure 17: Smart metering benefits

Area Real 2012/13 prices	DPCR5 total (£m)	ED1 total (£m)	Comment
Investment decisions	Nil	0.4	Current projected low levels of reinforcement mean that the comparable DECC/ENA benefit cannot be fully realised
Energisation status	Nil	3.8	We estimate that we will avoid around 11,000 visits a year by the ability to test the meter status
Reduced fault opex	Nil	1.0	Improved fault information and incremental change to our process
Total	Nil	5.3	

The smart meter roll out will also impose significant costs on LPN, principally for interventions during installations and for IT.

8.5 Our network innovation funding requests for RIIO-ED1

The RIIO-ED1 framework has two main funding mechanisms to allow DNOs additional revenues for innovation expenditure – the Network Innovation Allowance (NIA) of up to 1 per cent of revenues per annum and the Network Innovation Competition (NIC).

We believe that when practical innovation funding should be subject to the scrutiny of a competitive mechanism to ensure value for money. Therefore, we are requesting an NIA allowance of £2 million p.a. (0.5 per cent of allowed revenues), only half of the maximum available. We propose to bid for the majority of our funding through the competitive NIC mechanism, just as we do today through the LCNF scheme where LPN has the largest amount of approved expenditure under the scheme. This provides the best protection to customers that the expenditure will be efficient and targeted at the best innovation projects as each proposal is assessed on its own merits.

For further information on this chapter please see our [Innovation Strategy](#) and [Annex 9: Smart Grid Strategy](#).

9 Our credible RII0-ED1 delivery strategy



We have transformed our performance over the past three years and are now a well performing business. However we need to do more to be ready for the delivery challenge posed by our business plan:

- Improve our customer service, systems and processes – through our business transformation project
- Improve our capital delivery efficiency – through a best in class capital delivery strategy
- Improve the efficiency of our in house direct work force through our business transformation project using best in class processes and technology
- Meet the challenge of an ageing workforce and a shortage of key skills – through workforce renewal

9.1 Business transformation project

LPN has made a significant improvement in its performance since the change in ownership in 2010. This has been achieved by introducing clear business objectives which are continuously monitored, focusing on what is important to our stakeholders and introducing innovative business, commercial and technical solutions. We have had three distinct phases of our evolution; separate our operations and systems from the previous owners, reset and improve performance, and transform as shown in Figure 18. Two stages of this business transformation have been completed.

Figure 18: Key stages of LPN's evolution



This change in focus and performance gives confidence that we have a firm foundation to deliver for the future. Our business transformation programme has already started, at shareholders cost, and is focused on improving both cost efficiency and customer satisfaction. The delivery of the Business Transformation programme outcomes is led by UK Power Networks, working alongside our Transformation Partner (Enzen) and our Client Side Adviser (KPMG). The programme is due to be completed by the second quarter of 2015, delivering the business outcomes that will enable us to achieve upper third performance and to deliver our proposed RIIO outputs.

The targeted outcomes from the project are summarised in Figure 19.

Figure 19: Targeted outcomes from business transformation



9.2 Capital delivery efficiency programme

We have been working with Turner and Townsend to confirm the required delivery strategy for RII0-ED1. This strategy will enable LPN to deliver the required network investment and achieve the required cost efficiency reduction for direct opex. The programme of work has:

- Provided the supply chain with a forward visibility of work (rolling 18 months)
- Engaged the supply chain early and over the longer term
- Identified the critical resources that are required to deliver the programme, including senior authorising engineers and commissioning engineers
- Identified the schemes where consents will be on the critical path of delivery
- Enabled the supply chain capacity to flex in the event of a significant increase in demand (e.g. connections work; take up of electric vehicles etc)
- Identified the necessary planned outages

This strategy is summarised in Figure 20.

Figure 20: UKPN RIIO-ED1 delivery programme



9.3 Our workforce renewal programme

The LPN technically skilled workforce totals approximately 1,230 employees, made up of 660 LPN staff and 570 Tier 1 contractors working on our network (we also have c. 700 employees not working directly on the network). LPN has been working with EU Skills to develop a model to forecast workforce recruitment requirements. This model takes into account work volume changes in RIIO-ED1, expected retirement profile, expected natural wastage and productivity improvements. During RIIO-ED1 LPN expects 13 per cent of our workforce to retire and for this to rise further to 23 per cent in RIIO-ED2. LPN will use five recruitment and training pathways to manage this potential workforce shortfall:

- Our apprentice programmes (skill level 3) - we recruited 24 adult and school leaver apprentices between 2010 and 2013, we will recruit a further 36 general and 8 smart metering apprentices between 2014 and 2015 and we will recruit a further 22 general and 8 smart metering apprentices in RIIO-ED1
- Engineering development programme (skill level 4-5) - we up-skilled 20 trainees between 2010 and 2013, we will up-skill 24 trainees between 2014 and 2015, and we will up-skill 75 trainees in RIIO-ED1
- Graduate recruitment (skill level 5-7) - we recruited 11 trainees between 2010 and 2013, we will recruit 10 trainees between 2014 and 2015 and we will recruit 24 trainees in RIIO-ED1
- Marketplace recruitment (skill level 2-8) - we recruited 67 skilled direct staff between 2009 and 2013, we will recruit a further 118 staff between 2014 and 2015, and we will recruit a further 50 in ED1
- Contractor delivery - We use contractors for the delivery of additional work programmes, specialist work and to manage peak workloads. This strategy will continue in ED1 with the contractor to direct staff ratio forecast to change from 33%/67% in 2015/16 to 29%/71% in 2022/23

In total this is expected to cost an average £2.8 million p.a. during RIIO-ED1 which compares to an average cost of £3.1 million p.a. in DPCR5.

For further information on this chapter please see **Annex 12: Transformation**, **Annex 15: Deliverability** and **Annex 16: Workforce Renewal**.

10 Risk and uncertainty



The ex-ante nature of the price control settlement, whereby Ofgem determines prices and outputs upfront for the eight year price control period, means that LPN is subject to a range of risks and uncertainties in delivering the agreed outputs within the approved financial settlement. The nature and scope of the uncertainties and risks that we will face over the RIIO-ED1 period are more expansive and complex than those faced over the current price control period due to:

- The significant external risk factors driving uncertainty in network investment arising from the UK Government's commitment to transition to a low carbon economy
- The prospect of significant technical changes to our operations as a result of the smart meter rollout, the introduction of smart interventions and the long term transition to a smart grid
- The extended length of the price control period, which has increased from five to eight years. This has reduced regulatory risk but increased the overall level of operational risk

We have a robust risk management framework which identifies the likely risks and uncertainties we will face over the RIIO-ED1 period, and sets out our financial protection framework and arrangements which will allow us to manage these risks to ensure that we will deliver our output commitments to customers.

We manage risk through a directorate led risk management programme which includes an active risk register which is reported to the Board on a regular basis.

Risk of an unacceptable RIIO-ED1 outcome

We have a robust risk management framework which identifies the likely risks and uncertainties we will face over the RIIO-ED1 period, and sets out our financial protection framework and arrangements which will allow us to manage these risks to ensure that we will deliver our output commitments to customers.

We manage risk through a directorate led risk management programme which includes an active risk register which is reported to the Board on a regular basis.

- **Revenue risk** – that the revenue collected from customers is less than is required to deliver our output commitments, for example because the financeability arrangements are inappropriate, or because inflation is significantly different from forecast. Inflation risk is mitigated by the inflation indexation mechanism for our revenues and RAV. Financeability risk is mitigated by our detailed modelling of credit and equity metrics
- **Volume risk** – the risk that the work volumes underpinning our expenditure forecasts for the RIIO-ED1 period are lower than the actual volume of work that we are required to undertake to provide our output commitments due to:
 - The impact of the transition to a low carbon economy. In particular, higher than forecast uptake of low carbon technology such as distributed generation heat pumps or electric vehicles
 - Faster than forecast economic growth which would require a significant increase in network reinforcement investment
 - Higher than forecast asset replacement arising from the roll out of smart meters
 - More rapid asset degradation than forecast in the programme of works designed to maintain the health of our network assets

These risks are mitigated by our sophisticated load related and asset replacement expenditure models, combined with extensive scenario analysis, and are also capped through Ofgem's re-opener for load-related expenditure and volume driver for smart meter roll out costs.

- **Unit cost risk** – the risk that the unit costs underpinning our RII0-ED1 expenditure forecasts are less than the actual costs that we will incur to provide our output commitments. This risk is mitigated by our detailed bottom up ‘should cost’ work, detailed cost benchmarking, and our fully developed delivery strategy
- **Indirect cost risk** – the risk that our closely associated or business support indirect cost allowances are insufficient to cover our actual spend. This risk is mitigated by our detailed benchmarking together with analysis confirming the deliverability of implied efficiencies versus historic cost levels. LPN has reviewed work volume changes during RII0-ED1 and applied these to forecast closely associated indirect costs
- **Unrecoverable pension deficit risk** – any efficiently incurred pension deficit up to 2010 is funded through extra contributions from customers. However, any increase in pension deficit beyond 2010 will be subject to additional efficiency tests before funding is confirmed. This pension costs benchmarking is new to the electricity distribution industry and therefore introduces some uncertainty into future revenues

We have analysed the risk in our Business Plan within our Risk, Control and Compliance Framework and on this basis we are not proposing any additional uncertainty mechanisms to those set out in Ofgem’s RII0 Strategy Decision documents, as set out in Figure 21.

Figure 21: Regulatory Uncertainty Mechanisms

Regulatory uncertainty mechanism	Risk
Indexation	<ul style="list-style-type: none"> • RPI indexation of allowed revenue • Indexed allowance for cost of debt
Volume driver	<ul style="list-style-type: none"> • Smart meter roll out costs
Pass throughs	Regulatory costs: <ul style="list-style-type: none"> • Business rates • Ofgem licence fees • DCC fixed costs • Transmission connection point charges
Specific reopeners	<ul style="list-style-type: none"> • Load related expenditure including relating to general reinforcement, new connections, low carbon devices (i.e. heat pumps, PV cells), fault level reinforcement • Street works • Enhanced physical site security • High value projects • Innovation roll out mechanism • Pension deficit repair
Revenue trigger	<ul style="list-style-type: none"> • Tax

Further, the incentives under the RII0 regulatory framework provide UK Power Networks with strong financial disciplines both within and across regulatory periods. These are summarised in Figure 22.

Figure 22: Regulatory incentive mechanisms

Output	Incentive mechanisms
Safety	<ul style="list-style-type: none"> • No financial incentives on safety within the Ofgem RII0 framework • Safety has a strong reputational incentive and is subject to criminal fines for breaches
Customer service	<ul style="list-style-type: none"> • Broad Measure of Customer Service - +/- 1.5 per cent base revenues in total: <ul style="list-style-type: none"> - Customer satisfaction survey +/- 1 per cent, - Complaints -0.5 per cent, - Stakeholder engagement +0.5 per cent
Network availability and reliability	<ul style="list-style-type: none"> • The Interruption Incentive Scheme (IIS) is the primary incentive on interruptions to supply (+/-2.5 per cent return on regulatory equity basis points) • The delivery of health indices is also incentivised with a positive incentive to deliver additional work where merited, rather than just a penalty for under delivery (2.5 per cent of value of over or under delivery) • Potential penalties for inefficient non delivery of load indices (2.5 per cent of value of under delivery) • Guaranteed Standards restoration standard where compensation paid for interruptions that exceed the timescales set (12hrs in normal weather) • Worst served customer allowance for set improvements accessible on an as required basis
Connections	<ul style="list-style-type: none"> • Time to Connect incentive (+0.4 per cent base revenue) • Incentive on Connection Engagement (-0.9 per cent base revenue) • Broad Measure of Customer Service for minor connections customers (+/- 0.5 per cent base revenue)
Environmental performance	<ul style="list-style-type: none"> • Losses discretionary award up to £32 million across all DNOs in three tranches • Undergrounding allowance for Areas of Outstanding Natural Beauty and National Parks • Business Carbon Footprint is a reputational incentive using a league table and baseline • Oil leakage and SF6 are reputational incentives based on reporting
Innovations	<ul style="list-style-type: none"> • Network Innovation Allowance (up to 1 per cent of revenue per annum) • Network Innovation Competition (£90 million per annum for the industry in the first two years of RII0-ED1) • Innovation Roll-out Mechanism

For further information on this chapter please see **Annex 14: Managing Uncertainty**.

11 The business plan structure of documents and next steps



11.1 Our package of business plan documents

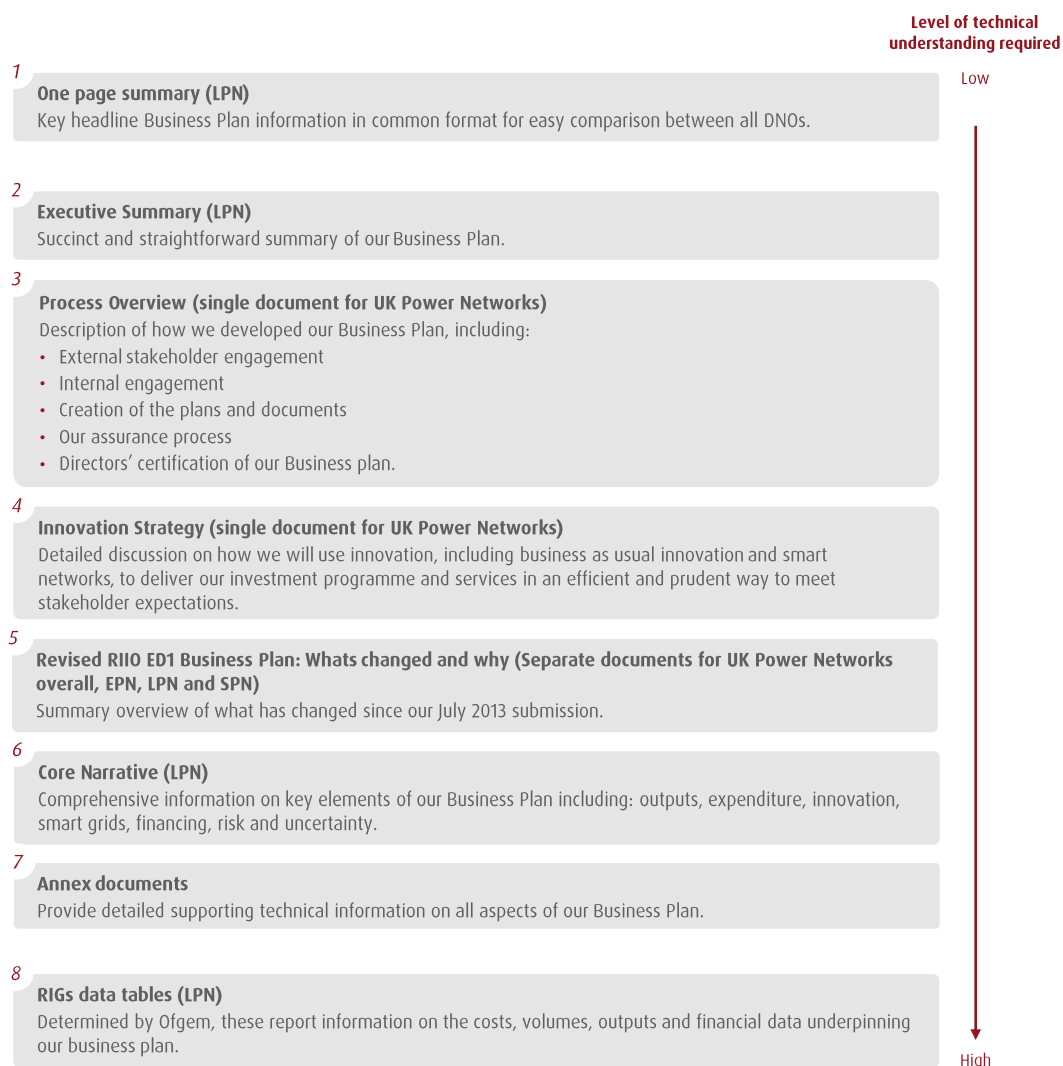
This Executive Summary is one part of a package of integrated documents available on our website:

<http://www.ukpowernetworks.co.uk/internet/en/have-your-say/business-plan/>

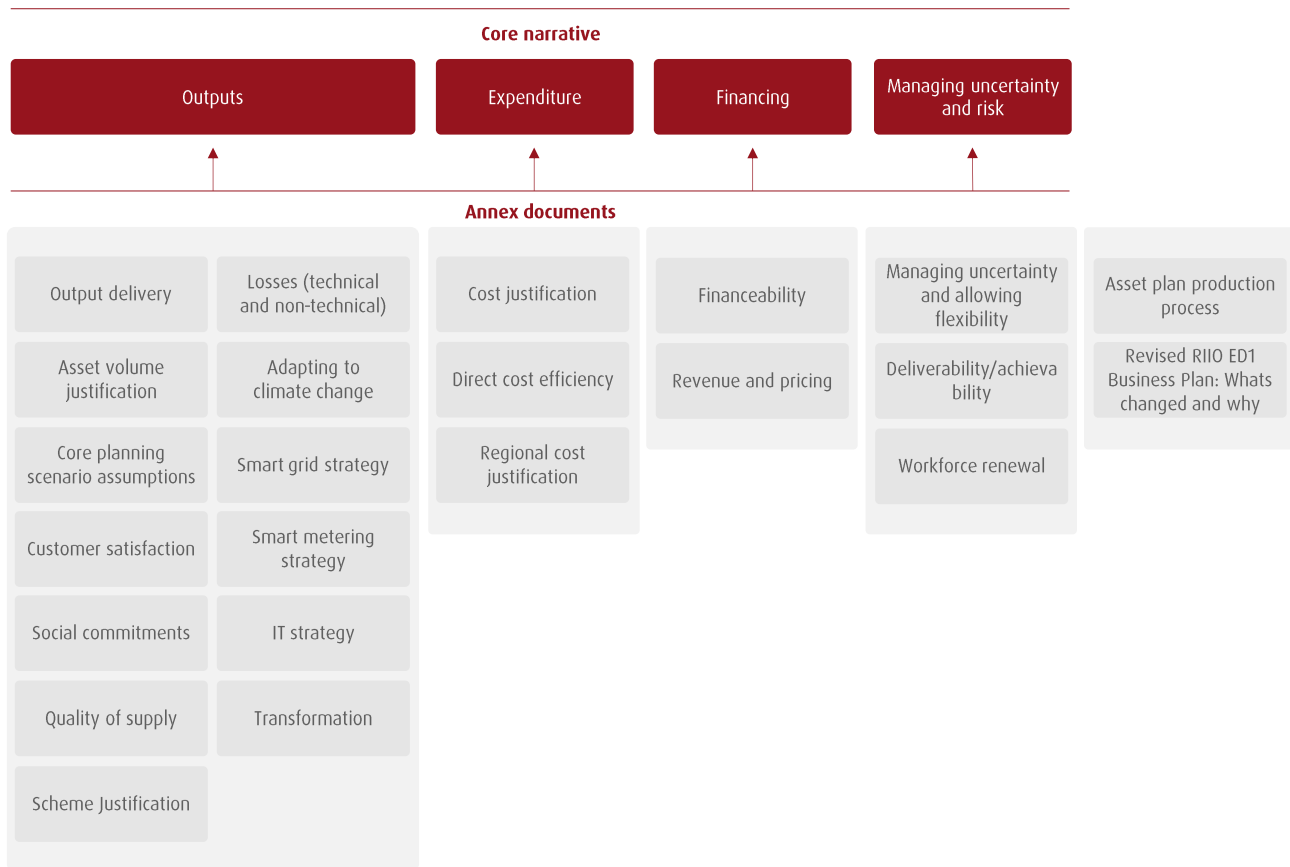
Readers seeking more detailed information may wish to consult the supporting documents including:

- The LPN Core Narrative
- The Process Overview
- The Innovation Strategy
- Annex Documents

The diagram below sets out the package of documents and their contents:



The diagram below sets out the package of documents and their contents:



11.2 Next steps: your feedback is important

We published our plan on the 1 July 2013 and after consultation with Ofgem we were asked to resubmit the plan on 17 March 2014 for further assessment. We believe that our final Business plan is a natural evolution from our July 2013 plan, and incorporates much of the feedback we have received from Ofgem and our extensive consultation with stakeholders.

We also believe that our plan strikes the best balance between low prices, quality of service, investment for the future, and the need to finance our operations.

Ofgem will now consider our plan together with those of the other DNO groups, before publishing its Draft Determinations in July this year.

However your views remain important to us, and in addition any comments you make on our final Business Plan may be considered in Ofgem's assessment. Please visit our website at:

<http://www.ukpowernetworks.co.uk/internet/en/have-your-say/business-plan/>

to give your comments on our plan.





