

# **Willingness to Pay Market Research SPN**

**Main Report**

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# CONTENTS

Executive Summary .....	i
1. INTRODUCTION .....	2
1.1 Background.....	2
1.2 Objectives .....	3
2. METHODOLOGY .....	4
2.1 Introduction .....	4
2.2 Target Audience .....	4
2.3 Survey Method .....	4
2.4 Survey Numbers & Structure .....	4
2.5 Questionnaire Length and Content .....	5
2.6 Pilot Survey .....	6
2.7 Mainstage Fieldwork Dates .....	6
2.8 Quality System Details - ISO 20252 .....	6
3. FINDINGS .....	7
3.1 Introduction .....	7
3.2 Electricity Bills .....	8
4. STATED PREFERENCE ANALYSIS .....	11
4.1 Background Theory .....	11
4.2 Methodology.....	11
4.3 Stated Preference Values .....	13
4.4 Combined & Ranked Customer Priorities for SPN .....	21
4.5 Ranked Customers Priorities for All DNOs .....	25
4.6 Customers WTP.....	29
4.7 Summary of Key Findings by Socio-Economic Group (SEG) and Business Size.....	31
5. Conclusions and Recommendations .....	35
5.1 Domestic Customers.....	35
5.2 Socio-Economic Group .....	36
5.3 Business Findings .....	36
5.4 Business Size .....	37
Appendix A: Profile Data	
Appendix B: Domestic Questionnaire	
Appendix C: Domestic Showcards	
Appendix D: Business Questionnaire	
Appendix E: Business Showcards	

## Executive Summary

UK Power Networks is in the early stages of developing a business plan, for the period from April 2015 to March 2023. This will ultimately be submitted to Ofgem in July 2013 as part of its next regulatory price control (known as RII0-ED1). To support this plan UK Power Networks required research to:

- test customer preferences in respect of the options that might be included in the final business plan, and the value that they placed on these options
- determine the overall acceptability and affordability of the package as a whole.

For SPN this research was addressed through 100 business and 412 domestic interviews. Sophisticated stated preference and contingent valuation techniques were used to prioritise service aspects and determine customer willingness to pay for them.

The results revealed that SPN domestic willingness to pay for service changes ranges from 0.60% to 2.90%, with overall willingness to pay for the full package being 20.4% of the distribution element of the bill by 2023.

For SPN domestic customers, the highest priorities for changes in services are:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises.

Willingness to pay for these services by 2023 was very similar: a 2.89% increase in distribution bills for investment in technologies to allow cheaper and quicker connection of new low carbon generators of electricity, and a 2.9% increase for investment in infrastructure to detect loss of supply.

The highest priorities for investment amongst SPN businesses were:

- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises
- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends

Willingness to pay for these ranged from 2.27% of the distribution element of the bill by 2023 for the timing of any new connections work service aspect, to 2.34% for investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity and 3.01% for investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises.

# **1. INTRODUCTION**

## **1.1 Background**

The electricity industry was privatised over 20 years ago. In that time, regulation has primarily focused on encouraging greater efficiency and thus value for money for its customers. However, political and economic priorities have shifted with the acknowledgement of the impact of climate change and the desire for greater security of supply.

The most notable consequence of this change is the recognition that billions of pounds of capital investment is required to transform the energy networks and make them fit for purpose in a low-carbon economy.

As a response, Ofgem has revised the regulatory framework which applies to networks companies. RIIO has been introduced, meaning that revenue will be generated from Incentives, Innovation and the delivery of Outputs.

Although some elements of the framework are familiar, there are also important changes to the way in which Networks companies are expected to behave. Most notable, is the recognition that all of the required investment will be financed by end-customers and therefore it is only fair that they are given an opportunity to influence investment decisions and that the networks are delivery the product and service levels that the customers require.

As a consequence, UK Power Networks needs to involve customers and other stakeholders in shaping their business plans, at all stages of the process – from high level prioritisation through to the ultimate spending decisions.

Research is therefore required to ensure that UK Power Networks' business plan is a reflection of customer priorities and the value that they place upon the elements that make up the plan.

Accent has been commissioned by UK Power Networks to undertake this comprehensive programme of research designed to inform their future investment strategy. The research will derive willingness to pay values, along with determining customer priorities for investment. It will also test customer preferences in respect of the options that might be included in the business plan, and the value that is placed on each of these options.

## 1.2 Objectives

UK Power Networks is in the early stages of developing a business plan, for the period from April 2015 to March 2023. This will ultimately be submitted to Ofgem in July 2013 as part of its next regulatory price control (known as RIIO-ED1).

UK Power Networks requires research to:

- test customer preferences in respect of the options that might be included in the final business plan, and the value that they place on these options
- determine the overall acceptability and affordability of the package as a whole.

This research will need to reflect the potentially different views of domestic consumers and businesses (ie industrial/commercial) customers.

## **2. METHODOLOGY**

### **2.1 Introduction**

The research has been undertaken across all three UKPN ie EPN, SPN and LPN.

There were four main elements to the research:

- Stage 1 – Setup and design of qualitative research:
  - 2 pilot groups and 3 tele-depths
- Stage 2 – Qualitative fieldwork:
  - 12 extended (2-hour) focus groups: 4 in each of UKPN’s licence areas:
  - 18 45-minute tele-depths with business customers: 6 in each of UKPN’s licence areas:
- Stage 3 – Design of quantitative research:
  - 160 domestic pilot interviews and 160 business pilot interviews:
- Stage 4 – Quantitative fieldwork :
  - 1200 domestic Phone post Phone interviews: 400 per licence area
  - 300 business Phone post Phone interviews: 100 per licence area.

This report relates to the main quantitative stage of the surveys for SPN licence area.

### **2.2 Target Audience**

The research focused on those consumers who were “responsible for paying their household’s electricity bills” (domestic) or were “responsible for paying their organisation’s electricity bills or for liaising with their electricity distributor [for example, in the event of a power cut, to arrange a new connection etc]” (businesses).

### **2.3 Survey Method**

The interviews were undertaken from Accent’s telephone units using a phone-post/email/fax-phone approach, whereby target respondents are contacted, asked some questions to determine whether they are in scope for the survey, invited to take part and – where they agree to do so – are sent show material to refer to during the interview. This show material includes context for the attributes to be discussed as well as hard copies of the choice experiments to ensure they fully understand the choices that we are asking them to make. It is sent to them as an email attachment, a fax or in the post, as they prefer.

### **2.4 Survey Numbers & Structure**

For the mainstage of the survey a total of 301 business and 1200 domestic interviews were achieved against targets of 300 and 1200 respectively. The number of interviews achieved for SPN specifically was 101 business and 412 domestic. Both of these cell sizes can be considered to provide robust data for the markets they represent.

Minimum quotas were set by age band and SEG to get a representative spread of respondents within the sample. Table 2 shows the breakdown of achieved interviews by the different quota groups for SPN.

**Table 1: Domestic interviews achieved by segment –SPN**

Age Band	SPN
18-44	155
45-64	165
65+	92
SEG	
ABC1	206
C2DE	197
Not stated	9
<b>Total achieved</b>	<b>412</b>

**Table 2: Business interviews achieved – SPN**

Size	SPN
Small	66
Medium	24
Large	11
<b>Total target</b>	<b>101</b>

Further profiling data can be found in Appendix A.

## 2.5 Questionnaire Length and Content

The questionnaire took an average of 38 minutes for domestic respondents to complete and 22 for business respondents. It included a mix of background, stated preference, contingent valuation and revealed behaviour questions.

A stated preference approach was used to provide a robust assessment of the relative importance consumers place on different elements during the decision making process. Both the stated preference and contingent valuation questions were used to determine customers willingness to pay for improvements or their willingness to accept a deterioration in service levels. This is explained in greater detail in Section 4.

The questionnaire was structured as follows:

- Background, contextual questions<sup>1</sup>
- Stated preference (SP) exercises: 3 lower level & 1 packaged exercise
- Contingent Valuation (CV) & follow up questions
- Key demographics.

Respondents were sent (by email, fax or post) show material to refer to during the interview. This comprised explanatory information about the services being tested and copies of the SP choice experiments for their reference. The questionnaires and showcards used are shown in Appendix B, C, D and E.

<sup>1</sup> The findings from the background questions are available in a separate report.

## **2.6 Pilot Survey**

A pilot of 135 business and 151 domestic interviews was undertaken between 9 August and 21 August 2012. The pilot was conducted in order to test:

- the recruitment process
- the clarity and flow of the questionnaire
- the appropriateness of the language used
- the accuracy of all routings
- ease of use of the show material
- the stated preference design and understanding of the stated preference exercises
- the interview duration
- the survey hit rate.

The results of the pilot were reported separately and reviewed with the UKPN team. No substantial changes were made to the questionnaire or stated preference exercises following the pilot.

## **2.7 Mainstage Fieldwork Dates**

The mainstage fieldwork was undertaken between the 6th of September 2012 and 23 October 2012.

## **2.8 Quality System Details - ISO 20252**

All research and analysis was undertaken in line with the requirements of International market & social research standard ISO 20252:2006.



## **3. FINDINGS**

### **3.1 Introduction**

Before discussing the stated preference data, this section of the report gives details of some key background findings. Charts indicating annual bill sizes for business and domestic respondents are shown, followed by customers' perceptions of the amount currently paid to UK Power Networks.

The charts show the results for SPN's domestic and business customers and also compare them to the total business and total domestic data. The question text is shown before the findings for each question. Where the question wording differed for business respondents, the alternative wordings are shown in the text, for example:

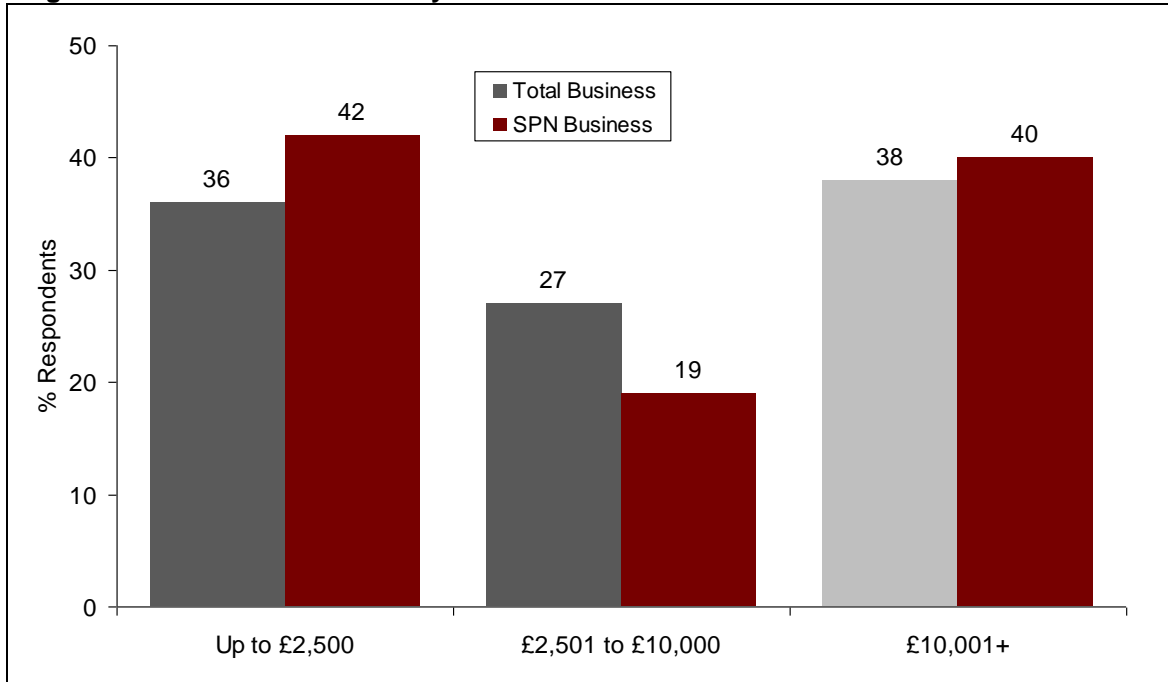
*“Do you/does your organisation ...?”*

### 3.2 Electricity Bills

All business respondents were asked:

*“How much is your site’s annual electricity bill?”*

**Figure 1: Site’s Annual Electricity Bill**



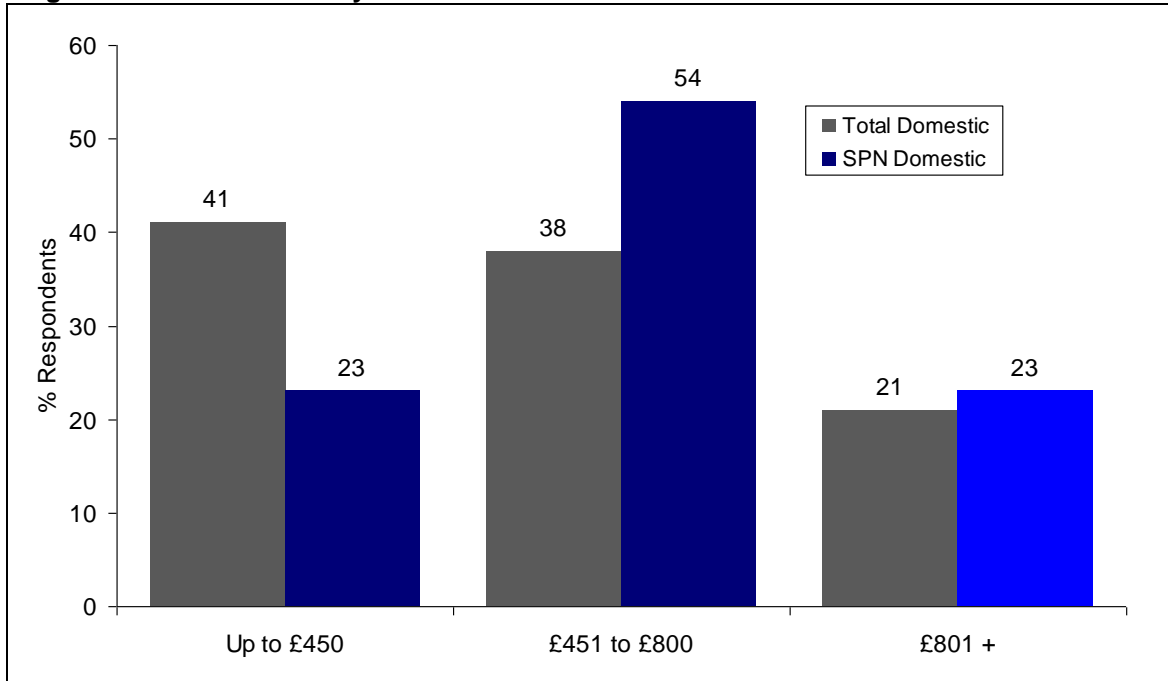
Base: all respondents – business: 301, SPN (101)

Four in ten (42%) SPN business customers surveyed had an annual electricity bill of £2,500 or less, with a similar proportion (40%) having bills in excess of £10,001.

Domestic customers were asked a similar question:

*“How much is your annual electricity bill?”*

**Figure 2: Annual Electricity Bill**



Base: all respondents – domestic: 1,200, SPN (412)

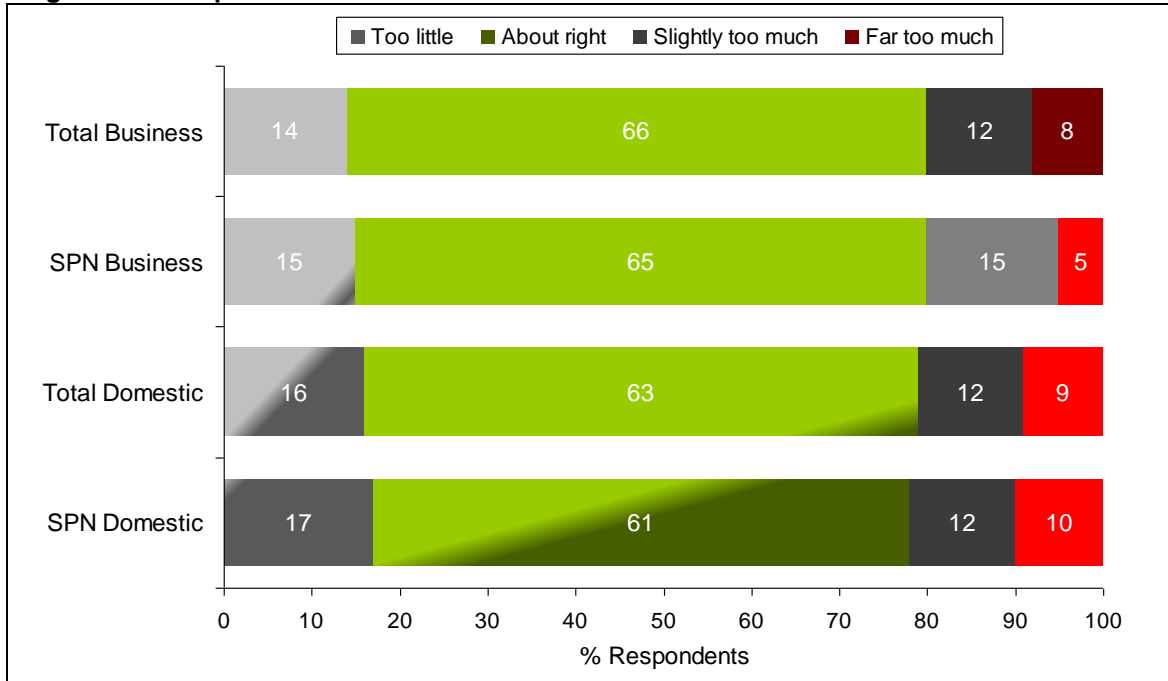
One quarter (23%) of SPN’s domestic customers had an annual electricity bill of up to £450, with the same proportion (23%) having bills in excess of £801 per annum.

In order to understand respondents’ perception of the proportion of their electricity bill allocated to their distributor, they were all asked:

*“Previously you told me that your annual electricity bill is xx. Roughly 18% of this, ie (18% OF xx) goes to your electricity distributor; the rest is distributed as shown in Showcard 2, ie the company that you pay your bills to. Given what we have told you about the role of the distributor, how do you feel about the amount that goes towards your distributor? Is it ...*

- Too little*
- About right*
- Slightly too much*
- Far too much”*

**Figure 3: Perception of the Amount Paid To the Distributor**



Base: all respondents – business: 301, SPN (101), domestic: 1,200, SPN (412)

Around two thirds (65%) of SPN business and six in ten of its domestic customers (61%) felt the amount paid to the distributor was “about right”. One in seven (15%) SPN business customers felt that the distributor received “slightly too much”, whilst one in eight (12%) domestic customers felt the same. What is most interesting, however, is that about one sixth in each case believe it to be too little.

## 4. STATED PREFERENCE ANALYSIS

### 4.1 Background Theory

In principle there are two preference elicitation techniques, namely Revealed Preference and Stated Preference. The revealed preference (RP) technique is where customers reveal what they have actually chosen among the available products/services in the market, whilst stated preference (SP) refers to the observation of preferences stated against real and/or hypothetical products/services. SP enables one to test hypothetical attributes, or services levels which are not yet available, so it is particularly valuable in circumstances such as these where UKPN wants to test customer priorities for potential service improvements and their willingness to pay for them.

There are, of course, potential issues/weaknesses with SP (as reported in literature). It is possible that ‘what people state’ in a hypothetical scenario may not actually be the case in reality, which could inflate willingness to pay values. However, this can be mitigated through a carefully designed and executed SP exercise.

Ranking, rating and discrete choice experiments (DCE) are the three variants of SP. The most commonly used SP technique is the DCE as it is the simplest of the choice techniques and thus has the lowest cognitive complexity – ie the lowest degree of task complexity and difficulty arising from the experiment. The DCE experiments provide a framework for estimating the relative marginal disutility of variations in attributes, and their potential correlations. In DCE, respondents have to choose one alternative out of two or more alternatives. Examples of how they have been presented in this study, along with other methodological details, are discussed in Section 4.2.

### 4.2 Methodology

All survey respondents were asked to undertake a series of trade off (Stated Preference) exercises which sought to assess the relative importance and associated willingness to pay for a range of potential service improvements.

In this study respondents were shown a series of four exercises where they were asked to make choices between different service levels relating to electricity distribution. Fourteen different attributes (or service types) were tested across the three initial lower level exercises. Their associated levels are shown in the table below:

**Table 3: Attributes and levels in the Stated Preference design**

<b>EXERCISE 1</b>
<b>TIMESCALE FOR PROVISION OF QUOTATIONS FOR SIMPLE, LOW VOLTAGE NEW CONNECTIONS WORK:</b>
<ul style="list-style-type: none"><li>• Within 15 working days</li><li>• Within 10 working days</li><li>• Within 7 working days</li><li>• By date agreed with customers</li></ul>
<b>TIMING OF ANY NEW CONNECTIONS WORK:</b>
<ul style="list-style-type: none"><li>• As now, ie work undertaken in normal business hours (08.00-17.00)</li><li>• Work undertaken in normal business hours (08.00-17.00) and in the evenings</li><li>• Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends</li><li>• Work is undertaken within a banded time ie morning, afternoon or evening in normal</li></ul>

business hours, evenings or at weekends
<b>CONTACT FOR ANY NEW CONNECTIONS WORK: :</b>
<ul style="list-style-type: none"> <li>• As now, telephone or e-mail to general call centre</li> <li>• Phone or email contact via dedicated new connections call centre</li> <li>• Phone or email contact via a named co-ordinator</li> <li>• All contact through an on-line web portal</li> </ul>
<b>TIME TO COMPLETE SIMPLE, LOW VOLTAGE NEW CONNECTIONS WORK:</b>
<ul style="list-style-type: none"> <li>• Standard service, with UKPN defining what they will do and what activities remain the responsibility of a customer's builder or electrician</li> <li>• A menu of services available from UKPN allowing the customer to choose who completes which elements of the work</li> <li>• All elements of the work completed by UK Power Networks</li> </ul>
<b>EXERCISE 2</b>
<b>INVESTMENT IN INFRASTRUCTURE TO ENABLE UKPN TO DETECT LOSS OF SUPPLY:</b>
<ul style="list-style-type: none"> <li>• No investment</li> <li>• Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises</li> </ul>
<b>INVESTMENT TO ENABLE GREATER UPTAKE OF ELECTRIC VEHICLES:</b>
<ul style="list-style-type: none"> <li>• No investment</li> <li>• Investment in infrastructure required to support take up of electric vehicles</li> </ul>
<b>INVESTMENT IN INFRASTRUCTURE TO ENABLE GREATER UPTAKE OF LOW CARBON ELECTRIC HEATING TECHNOLOGIES:</b>
<ul style="list-style-type: none"> <li>• No investment</li> <li>• Investment in infrastructure required to support take up of low carbon electric heating technologies</li> </ul>
<b>INVESTMENT TO ENABLE LARGESCALE RENEWABLE GENERATION (E.G ONSHORE WIND FARMS, BIOMASS PLANTS ETC):</b>
<ul style="list-style-type: none"> <li>• No specific infrastructure investment; each new connection charged at cost</li> <li>• Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity</li> </ul>
<b>INVESTMENT TO ENABLE UPTAKE OF MICRO-GENERATION E.G, SOLAR PANELS ETC:</b>
<ul style="list-style-type: none"> <li>• No specific infrastructure investment; each new connection charged at cost</li> <li>• Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity</li> </ul>
<b>EXERCISE 3</b>
<b>FREQUENCY OF POWER CUTS OVER 3 MINS - AVERAGE NUMBER:</b>
<ul style="list-style-type: none"> <li>• 1 every 15 months</li> <li>• 1 every 18 months</li> <li>• 1 every 24 months</li> </ul>
<b>RURAL CUSTOMERS: FOR POWER CUTS LONGER THAN 3 MINUTES, TIME TO RESTORE 80% OF AFFECTED CUSTOMERS</b>
<ul style="list-style-type: none"> <li>• Within 180 minutes</li> <li>• Within 120 minutes</li> <li>• Within 60 minutes</li> </ul>
<b>URBAN CUSTOMERS: FOR POWER CUTS LONGER THAN 3 MINUTES, TIME TO RESTORE 80% OF AFFECTED CUSTOMERS:</b>
<ul style="list-style-type: none"> <li>• Within 180 minutes</li> <li>• Within 60 minutes</li> <li>• Within 20 minutes</li> <li>• Within 10 minutes</li> </ul>
<b>INFORMATION DURING A POWER CUT:</b>
<ul style="list-style-type: none"> <li>• Information available on contacting call centre</li> <li>• Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates</li> <li>• Information available on contacting call centre plus provision of automatic update calls to</li> </ul>

customer from call centre and follow-up call when power cut over <ul style="list-style-type: none"> <li>Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc</li> </ul>
<b>CONTINGENCY SERVICES:</b>
<ul style="list-style-type: none"> <li>Customer responsibility for any back-up services</li> <li>Provision of generator hire e.g. for an event</li> <li>Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems</li> </ul>

An example of how these were presented as a choice set is shown below:

Looking at Choice Card A1, which Option do you prefer, A or B?

	Option A	Option B
<b>Timescale for provision of quotations for simple, low voltage new connections work:</b>	Within 15 working days	By date agreed with customer
<b>Timing of any new connections work:</b>	As now, ie work undertaken in normal business hours (08.00-17.00)	Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends
<b>Contact for any new connections work:</b>	All contact through an on-line web portal	As now, telephone or e-mail to general call centre
<b>Time to complete simple, low voltage new connections work:</b>	As now, ie within 90 days	75 days quicker than now, ie within 15 days
<b>Type of new connections service offered:</b>	Standard service, with UKPN defining what they will do and what activities remain the responsibility of a customer's builder or electrician	All elements of the work completed by UK Power Networks

1. Option A

2. Option B

A final, fourth exercise brought together all of the different aspects covered in the previous exercises along with cost. In this final exercise respondents were asked to trade off the “best” or “worst” levels of each of the attributes in order to scale (or factor) the values calculated from the individual exercises and determine overall willingness to pay for them. Contingent valuation questions were also used to double check respondents’ maximum willingness to pay and these findings were used to scale the final SP data.

### 4.3 Stated Preference Values

The following tables show the factored coefficient scores – or values – given by all SPN respondents to each attribute level tested.

It also shows the robust t-stat for each level. A robust ‘t test’ value of 1.96 or greater either means that respondents were significantly supportive of the proposition (ie where a positive coefficient or value was achieved) or significantly opposed to it (ie where a negative coefficient or value was achieved). For ease of comprehension, those results that are insignificant are highlighted in yellow throughout this section.

It should be noted that the “base” or “lowest” level of each attribute has a coefficient of zero against which all other levels are measured. Note that the coefficients indicate the relative importance of each level compared to another. For example, a service level with a coefficient of 0.4000 can be said to be twice as highly valued as a service level with a coefficient of 0.2000.

The results shown in the tables are very positive. The large majority of the levels were significant for both business and domestic customers (ie had a t-stat of 1.96 or above), show the correct signs (ie positive where a service level is improving relative to the base and negative where it is declining relative to the base) and moving in the expected direction (ie a higher value is typically attributed to a 'better' service level).

However, it will also be seen that a number of levels were not significant, indicating that they were not valued by respondents. Game 2 and, to a lesser extent Game 3, have more significant results than in Game 1.

## **Domestic Game 1**

The following results were achieved for domestic customers (as shown in Table 4):

- “Timescale for provision of quotations for simple, low voltage new connections work”: moving from the base of 15 working days to 7 working days was valued by respondents; even more highly valued and significant was offering quotations to a date agreed with the customer.
- “Timing of any new connections work”: neither adding evenings or weekends as a service option for this attribute were perceived as a significant improvement; however, having appointments within a banded time was valued and significant.
- Only the last level for the attribute “Contact for any new connections work” was significant. However, importantly, it shows a negative value, indicating that customers prefer to making contact with the company providing their services by phone (as now) rather than online.
- All the levels of the attribute: “Time to complete simple, low voltage new connections work” showing improvements from a base of within 90 days were considered valuable and were significant.; the greater the improvement the more highly they were valued.
- Finally, having all elements of the works required for a new connection completed by UKPN was considered valuable and significant. Availability of a menu of services was not.



**Table 4: Game 1 Domestic – SPN**

Attributes	Levels	Factored coefficient	Robust t stat
<b>Timescale for provision of quotations for simple, low voltage new connections work:</b>	Within 15 working days	0.0000	0
	Within 10 working days	-0.0059	-0.85
	Within 7 working days	0.0179	2.68
	By date agreed with customer	0.0271	6.16
<b>Timing of any new connections work:</b>	As now, ie work undertaken in normal business hours (08.00-17.00)	0.0000	0
	Work undertaken in normal business hours (08.00-17.00) and in the evenings	-0.0066	-0.65
	Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	0.0125	1.26
	Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.0244	6
<b>Contact for any new connections work:</b>	As now, telephone or e-mail to general call centre	0.0000	0
	Phone or email contact via dedicated new connections call centre	-0.0081	-0.99
	Phone or email contact via a named co-ordinator	0.0065	0.82
	All contact through an on-line web portal	-0.0086	-1.97
<b>Time to complete simple, low voltage new connections work</b>	As now, ie within 90 days	0.0000	0
	30 days quicker than now, ie within 60 days	0.0227	2.37
	60 days quicker than now, ie within 30 days	0.0269	2.79
	75 days quicker than now, ie within 15 days	0.0288	6.68
<b>Type of new connections service offered:</b>	Standard service, with UKPN defining what they will do and what activities remain the responsibility of a customer's builder or electrician	0.0000	0
	A menu of services available from UKPN allowing the customer to choose who completes which elements of the work	0.0088	1.08
	All elements of the work completed by UK Power Networks	0.0119	3.3

## Business Game 1

Some slightly different results were achieved for business customers, the key findings being:

- “Timescale for provision of quotations for simple, low voltage new connections work”: moving from the base of 15 working days to 10 working days was not significant; however, offering quotations to a date agreed with the customer and within 7 working days were both valued and significant, particularly the latter.
- “Timing of any new connections work”: Offering appointments within a banded time was valued and significant, but, interestingly, was valued less than “work undertaken in normal business hours, evenings and weekends”. Improving from the current situation to offering evening work was not valued.

- The only significant level for the attribute “Contact for any new connections work” was getting “phone or email contact via a named co-ordinator”.
- Similarly, only moving from within 90 days to within 15 days to complete simple, low voltage new connections work was considered valuable and significant.
- Finally, having all elements of the new connection work completed by UKPN was significant and positively valued; a menu of services was not.

**Table 5: Game 1 Business – SPN**

Attributes	Levels	Factored coefficient	Robust t stat
<b>Timescale for provision of quotations for simple, low voltage new connections work:</b>	Within 15 working days	0.0000	0
	Within 10 working days	0.0022	0.12
	Within 7 working days	0.0425	2.21
	By date agreed with customer	0.0296	2.6
<b>Timing of any new connections work:</b>	As now, ie work undertaken in normal business hours (08.00-17.00)	0.0000	0
	Work undertaken in normal business hours (08.00-17.00) and in the evenings	0.0372	1.37
	Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	0.0788	3.14
	Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.0259	2.76
<b>Contact for any new connections work:</b>	As now, telephone or e-mail to general call centre	0.0000	0
	Phone or email contact via dedicated new connections call centre	0.0316	1.21
	Phone or email contact via a named co-ordinator	0.0602	2.3
	All contact through an on-line web portal	-0.0164	-1.54
<b>Time to complete simple, low voltage new connections work</b>	As now, ie within 90 days	0.0000	0
	30 days quicker than now, ie within 60 days	-0.0345	-1.23
	60 days quicker than now, ie within 30 days	-0.0026	-0.09
	75 days quicker than now, ie within 15 days	0.0492	4.81
<b>Type of new connections service offered:</b>	Standard service, with UKPN defining what they will do and what activities remain the responsibility of a customer's builder or electrician	0.0000	0
	A menu of services available from UKPN allowing the customer to choose who completes which elements of the work	0.0146	0.76
	All elements of the work completed by UK Power Networks	0.0286	3.13

## Domestic Game 2 and 3

The following results were achieved for domestic customers in Game 2 and 3:

- All the investment attributes were significant and highly valued, particularly:
  - investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity (seen as the most valued)
  - investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises
- “frequency of power cuts over 3 mins - average number”: moving from having a power cut every 15 months to having one every 18 was not perceived as valuable and was not significant, while moving to 1 every 24 months was significant and valued
- decreasing the time to restore power to 80% of rural customers affected by a cut in excess of 3 minutes from within 180 minutes to 60 minutes was valued; improving it to within 120 minutes was not
- worsening the time to restore power to 80% of urban customers affected by a cut in excess of 3 minutes from within 20 minutes to 60 minutes or 180 minutes was perceived negatively (ie customers would expect to be compensated for this); however, an improvement to 10 minutes was not valued
- “information during a power cut”: all the levels were valued and significant with “information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over “ seen as the most valuable level
- only the second level of contingency services – “provision of back-up services to customers e.g. regular testing of customer-owned generators and systems” – was significant and positively valued.

**Table 6: Game 2 and 3 Domestic – SPN**

Attributes	Levels	Factored coefficient	Robust t stat
Investment in infrastructure to enable UKPN to detect loss of supply	No investment	0.0000	0
	Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	0.0576	11.69
Investment to enable greater uptake of electric vehicles	No specific infrastructure investment	0.0000	0
	Investment in infrastructure required to support take up of electric vehicles	0.0317	6.73
Investment in infrastructure to enable greater uptake of low carbon electric heating technologies	No specific infrastructure investment	0.0000	0
	Investment in infrastructure required to support take up of low carbon electric heating technologies	0.0342	6.96
Investment to enable largescale renewable generation (e.g onshore wind farms, biomass plants etc)	No specific infrastructure investment; each new connection charged at cost	0.0000	0
	Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	0.0577	11.28
Investment to enable uptake of micro-generation e.g, solar panels etc:	No specific infrastructure investment; use traditional network investment as needed	0.0000	0
	Investment in infrastructure to support uptake of micro-generation technologies	0.0390	7.93
Frequency of power cuts over 3 mins - average number:	1 every 15 months	0.0000	0
	1 every 18 months	-0.0019	-0.44
	1 every 24 months	0.0149	4.32
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers:	Base: Within 180 minutes	0.0000	0
	Within 120 minutes	0.0059	1.06
	Within 60 minutes	0.0259	7.55
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers:	Within 180 minutes	-0.0340	-7.21
	Within 60 minutes	-0.0248	-5.74
	Base: Within 20 minutes	0.0000	0
	Within 10 minutes	0.0001	0.01
Information during a power cut:	Information available on contacting call centre	0.0000	0
	Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	0.0127	1.99
	Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	0.0205	3.27
	Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.0144	3.59
Contingency Services	Customer responsibility for any back-up services	0.0000	0
	Provision of generator hire e.g. for an event	-0.0048	-0.82
	Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.0131	3.85

## Business Game 2 and 3

Again, as for Game 1, results for Game 2 and 3 for business customers were fairly similar to the domestic results, key findings being:

- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises was shown to be the most valuable level tested
- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity was the second most valued attribute
- Investment in infrastructure required to support take up of low carbon electric heating technologies was valued highly
- similarly, investment in infrastructure to support uptake of micro-generation technologies was also highly valued and significant
- “frequency of power cuts over 3 mins - average number”: as in the domestic results, moving from having a power cut every 15 months to having one every 18 was not valued by SPN business customers, while moving to 1 every 24 months was significant and valued
- decreasing the time to restore power to 80% of rural customers affected by a cut in excess of 3 minutes from within 180 minutes to 60 minutes was valued; decreasing it to 120 minutes was not
- worsening the time to restore power to 80% of urban customers affected by a cut in excess of 3 minutes from within 20 minutes to 60 minutes or 180 minutes was perceived negatively (ie business SPN customers would expect to be compensated for this). However, as with domestic customers an improvement to 10 minutes was not valued.
- “information during a power cut”: for business customers none of the levels apart from the last one: “provision of additional information services such as real-time information on internet, use of social media, customer service staff ‘knocking on doors’ “ were valued
- finally, only moving from customer responsibility for any back-up services to “provision of back-up services to customers e.g. regular testing of customer-owned generators and systems” – was valued and significant; provision of generator hire was not.

**Table 7: Game 2 and 3 Business - SPN**

Attributes	Levels	Factored coefficient	Robust t stat
Investment in infrastructure to enable UKPN to detect loss of supply	No investment	0.0000	0
	Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	0.1043	6.16
Investment to enable greater uptake of electric vehicles	No specific infrastructure investment	0.0000	0
	Investment in infrastructure required to support take up of electric vehicles	0.0323	2.06
Investment in infrastructure to enable greater uptake of low carbon electric heating technologies	No specific infrastructure investment	0.0000	0
	Investment in infrastructure required to support take up of low carbon electric heating technologies	0.0750	4.07
Investment to enable largescale renewable generation (e.g onshore wind farms, biomass plants etc)	No specific infrastructure investment; each new connection charged at cost	0.0000	0
	Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	0.0811	4.54
Investment to enable uptake of micro-generation e.g, solar panels etc:	No specific infrastructure investment; use traditional network investment as needed	0.0000	0
	Investment in infrastructure to support uptake of micro-generation technologies	0.0672	4.21
Frequency of power cuts over 3 mins - average number:	1 every 15 months	0.0000	0
	1 every 18 months	0.0133	0.78
	1 every 24 months	0.0440	3.44
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers:	Base: Within 180 minutes	0.0000	0
	Within 120 minutes	0.0057	0.32
	Within 60 minutes	0.0460	3.81
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers:	Within 180 minutes	-0.0799	-4.81
	Within 60 minutes	-0.0475	-2.88
	Base: Within 20 minutes	0.0000	0
	Within 10 minutes	-0.0017	-0.09
Information during a power cut:	Information available on contacting call centre	0.0000	0
	Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	0.0120	0.52
	Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	0.0089	0.41
	Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.0306	2.06
Contingency Services	Customer responsibility for any back-up services	0.0000	0
	Provision of generator hire e.g. for an event	0.0133	0.57
	Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.0349	2.87

#### **4.4 Combined & Ranked Customer Priorities for SPN**

The following two tables combine all levels tested that were valued and significant and rank them in order of priority. Table 8 – which shows the ranking for SPN domestic customers – demonstrates that the following are most important to them:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity (almost five times as important as the least valued service, as demonstrated by the index)
- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises (again, almost five times as important as the least valued service).

Fairly high values were also associated with:

- investment in infrastructure to support uptake of micro-generation technologies (over three times as highly valued as the least valued service)
- investment in infrastructure required to support take up of low carbon electric heating technologies
- investment in infrastructure required to support take up of electric vehicles.

Of least importance are:

- all elements of new connections work completed by UK Power Networks
- information during a power cut: information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates
- provision of back-up services to customers e.g. regular testing of customer-owned generators and systems.

And ranked negatively are:

- for urban customers: for power cuts longer than 3 minutes, time to restore 80% of affected customers worsening to within 180 or 60 minutes
- contact for any new connections work: all contact through an on-line web portal.

**Table 8: Domestic SPN priorities combined and ranked**

Levels	Factored coefficient	Index
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	0.0577	4.84
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	0.0576	4.84
Investment in infrastructure to support uptake of micro-generation technologies	0.0390	3.28
Investment in infrastructure required to support take up of low carbon electric heating technologies	0.0342	2.87
Investment in infrastructure required to support take up of electric vehicles	0.0317	2.66
Time to complete simple, low voltage new connections work:75 days quicker than now, ie within 15 days	0.0288	2.42
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	0.0271	2.27
Time to complete simple, low voltage new connections work: 30 days quicker than now, ie within 60 days	0.0269	2.26
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	0.0259	2.17
Timing of any new connections work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.0244	2.05
Time to complete simple, low voltage new connections work:30 days quicker than now, ie within 60 days	0.0227	1.91
Information during a power cut: Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	0.0205	1.72
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	0.0179	1.50
Frequency of power cuts over 3 mins - average number: 1 every 24 months	0.0149	1.25
Information during a power cut: available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.0144	1.20
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.0131	1.10
Information during a power cut: Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	0.0127	1.07
All elements of the work completed by UK Power Networks	0.0119	1.00
Contact for any new connections work: All contact through an on-line web portal	-0.0086	
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-0.0248	
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-0.0340	

Table 9 shows the ranking for SPN business customers and shows that the following are most important to them:

- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises (valued four times as highly as the least highly valued service)



- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- timing of any new connections work: work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends
- investment in infrastructure required to support take up of low carbon electric heating technologies.

Also highly valued are:

- investment to enable uptake of micro-generation e.g, solar panels etc (valued two and a half times as highly as the least valued service level)
- contact for any new connection work: phone or email contact via a named coordinator.

Of least importance are:

- timing of any new connection work: work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends
- type of new connections service offered: all elements of the work completed by UK Power Networks.

And ranked negatively are:

- for urban customers: for power cuts longer than 3 minutes, time to restore 80% of customers affected worsening to within 180 or 60 minutes.

**Table 9: Business SPN priorities combined and ranked**

Levels	Factored coefficient	Index
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	0.1043	4.03
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	0.0811	3.13
Timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	0.0788	3.04
Investment in infrastructure required to support take up of low carbon electric heating technologies	0.0750	2.90
Investment to enable uptake of micro-generation e.g, solar panels etc	0.0672	2.60
Contact for any new connection work: Phone or email contact via a named co-ordinator	0.0602	2.32
Time to complete simple, low voltage new connections work:75 days quicker than now, ie within 15 days	0.0492	1.90
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	0.0460	1.78
Frequency of power cuts over 3 mins - average number: 1 every 24 months	0.0440	1.70
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	0.0425	1.64
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.0349	1.35
Investment in infrastructure required to support take up of electric vehicles	0.0323	1.25
Information during a power cut: available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.0306	1.18
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	0.0296	1.15
Type of new connections service offered: All elements of the work completed by UK Power Networks	0.0286	1.11
Timing of any new connection work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.0259	1.00
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-0.0475	
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-0.0799	

## 4.5 Ranked Customers Priorities for All DNOs

Sections 4.3 and 4.4 have shown the findings for SPN customers only. This section compares the ranking of all three different DNOs customer priorities against each other.

The domestic comparison table demonstrates that domestic customers of all three DNOs had similar highest priorities, with the following seen as the most important or second most important levels in all cases:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment to enable UKPN to detect loss of supply from individual or small groups of premises.

Other investment related attributes were also highly valued by all three, with the exception of investment to support the take up electric vehicles. Although this was the fifth highest ranked level by SPN customers, it was ranked 12<sup>th</sup> by both LPN and EPN.

Other key differences were:

- all elements of the work completed by UK Power Networks for a new connection work was much less valued by SPN customers
- LPN customers valued having new connection work undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends more highly than EPN and SPN customers
- On the other hand new connection work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends was seen as a valuable improvement by EPN customers, while it was considered less important by LPN customers and was not significant for SPN customers
- Investment to enable uptake of micro-generation e.g, solar panels etc was seen as less important by EPN customers
- EPN customers valued a reduction of time to restore 80% of affected rural customers to within 60 minutes more highly than SPN customers.

**Table 10: Domestic all DNOs priorities combined and ranked**

Levels	LPN ranking	EPN ranking	SPN ranking
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	1	2	1
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	2	1	2
Investment to enable uptake of micro-generation e.g, solar panels etc	3	6	3
Investment in infrastructure required to support take up of low carbon electric heating technologies	4	5	4
Timing of any new connections work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	5	7	10
Frequency of power cuts over 3 mins - average number: 1 every 48 months	6	N/S	N/S
Timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	7	3	N/S
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	8	N/S	16
Time to complete simple, low voltage new connections work: 75 days quicker than now, ie within 15 days	9	9	6
Type of new connections service offered: All elements of the work completed by UK Power Networks	10	10	18
Contingency Services: Provision of generator hire e.g. for an event	11	N/S	N/S
Investment in infrastructure required to support take up of electric vehicles	12	12	5
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	13	8	N/S
Information during a power cut: Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	14	13	15
Timescale for provision of quotations for simple, low voltage new connections work: Within 10 working days	15	15	N/S
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	16	16	20
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	17	17	21
Contact for any new connections work: All contact through an on-line web portal	N/S	14	N/S
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	NA	4	9
Frequency of power cuts over 3 mins - average number: 1 every 24 months	N/S	11	14
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	N/S	N/S	7
Time to complete simple, low voltage new connections work: 30 days quicker than now, ie within 60 days	N/S	N/S	8
Time to complete simple, low voltage new connections work:30 days quicker than now, ie within 60 days	N/S	N/S	11
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	N/S	N/S	13
Information during a power cut: Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	N/S	N/S	12
Information during a power cut: Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	N/S	N/S	17
Contact for any new connections work: All contact through an on-line web portal	N/S	N/S	19

The business comparison table demonstrates that business customers of all three DNOs also had similar highest priorities, with the following seen as the most important, second most or third most important levels in all cases:

- investment to enable UKPN to detect loss of supply from individual or small groups of premises
- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity.

Investment to enable uptake of micro-generation e.g, solar panels etc, was also highly valued, but SPN customers considered this less important than LPN and EPN customers.

Other key differences were:

- improvements in the timescale for provision of quotations for simple, low voltage new connections work were considered more important by LPN customers
- having new connection work undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends was considered less important by SPN customers; however, SPN customers were the only business customers where having work undertaken in normal business hours, in the evenings and weekends was valued, it being the third most important service to these customers
- being provided with a back-up service e.g. regular testing of customer-owned generators and systems was considered more valuable by EPN customers
- EPN customers also placed more value on investing in the infrastructure required to support take up of electric vehicles.

**Table 11: Business all DNOs priorities combined and ranked**

Levels	LPN ranking	EPN ranking	SPN ranking
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	1	2	1
Investment to enable uptake of micro-generation e.g, solar panels etc	2	3	5
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	3	1	2
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	4	13	14
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	5	N/S	10
Investment in infrastructure required to support take up of low carbon electric heating technologies	6	5	4
Timing of any new connections work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	7	9	16
Time to complete simple, low voltage new connections work: 75 days quicker than now, ie within 15 days	8	8	7
Investment in infrastructure required to support take up of electric vehicles	9	4	12
Frequency of power cuts over 3 mins - average number: 1 every 48 months	10	N/S	N/S
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	11	6	11
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	12	16	17
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	13	17	18
Information during a power cut: Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	N/S	10	13
Timescale for provision of quotations for simple, low voltage new connections work: Within 10 working days	N/S	15	N/S
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60 minutes	NA	7	8
Frequency of power cuts over 3 mins - average number: 1 every 24 months	N/S	12	9
Type of new connections service offered: All elements of the work completed by UK Power Networks	N/S	11	15
Timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	N/S	N/S	3
Contact for any new connection work: Phone or email contact via a named co-ordinator	N/S	N/S	6
Contact for any new connections work: Phone or email contact via dedicated new connections call centre	N/S	14	N/S

## 4.6 Customers WTP

As mentioned in the methodology section, the willingness to pay estimates shown in the table have been derived from the package SP exercise, scaled to the Contingent Valuation (CV) questions. Having done that, the results suggest that the average willingness to pay amongst domestic customers is 20.4% of the distribution element of the bill by 2023.

This domestic willingness to pay (WTP) ranged from a 0.60% increase in their distribution bill by 2023 for the lowest valued service level to a 2.90% increase for the service level valued most highly, as shown in Table 12. This also shows the level to which customers would need to be compensated for a decline in (or what they see as a decline or failure to improve) service.

**Table 12: Domestic Willingness to Pay – SPN**

Levels	WTP in % in 2023
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	2.90
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	2.89
Investment in infrastructure to support uptake of micro-generation technologies	1.96
Investment in infrastructure required to support take up of low carbon electric heating technologies	1.72
Investment in infrastructure required to support take up of electric vehicles	1.59
Time to complete simple, low voltage new connections work:75 days quicker than now, ie within 15 days	1.45
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	1.36
Time to complete simple, low voltage new connections work: 60 days quicker than now, ie within 30 days	1.35
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	1.30
Timing of any new connections work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	1.23
Time to complete simple, low voltage new connections work:30 days quicker than now, ie within 60 days	1.14
Information during a power cut: Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	1.03
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	0.90
Frequency of power cuts over 3 mins - average number: 1 every 24 months	0.75
Information during a power cut: available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.72
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.66
Information during a power cut: Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	0.64
All elements of the work completed by UK Power Networks	0.60
Contact for any new connections work: All contact through an on-line web portal	-0.43
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-1.24
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-1.71

Overall business willingness to pay was 21.0%, ranging from 0.75% to 3.01%, as shown in Table 13.

**Table 13: Business Willingness To Pay – SPN**

<b>Levels</b>	<b>WTP in % in 2023</b>
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	3.01
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	2.34
Timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	2.27
Investment in infrastructure required to support take up of low carbon electric heating technologies	2.16
Investment to enable uptake of micro-generation e.g, solar panels etc	1.94
Contact for any new connection work: Phone or email contact via a named co-ordinator	1.73
Time to complete simple, low voltage new connections work:75 days quicker than now, ie within 15 days	1.42
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	1.33
Frequency of power cuts over 3 mins - average number: 1 every 24 months	1.27
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	1.22
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	1.01
Investment in infrastructure required to support take up of electric vehicles	0.93
Information during a power cut: available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	0.88
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	0.85
Type of new connections service offered: All elements of the work completed by UK Power Networks	0.83
Timing of any new connection work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.75
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-1.37
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-2.30



## 4.7 Summary of Key Findings by Socio-Economic Group (SEG) and Business Size

The below comparison tables show the results for different SEG for domestic customers and by business size for business customers.

As shown in Table 14, there were many differences in the findings between ABC1s (the higher socio economic group) and C2DEs (the lower socio economic group). In particular, ABC1s placed a higher value on:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment in infrastructure required to support take up of electric vehicles
- investment to enable uptake of micro-generation e.g, solar panels etc
- “time to complete simple, low voltage new connections work: 30 days quicker than now, ie within 60 days” and “new connections work being undertaken in normal business hours (08.00-17.00), in the evenings and at weekends” neither of which was valued by C2DEs.

C2DEs placed higher values on most of the other levels, particularly:

- investment in infrastructure required to support take up of low carbon electric heating technologies
- time to complete simple, low voltage new connections work:75 days quicker than now, ie within 15 days
- rural customers: for power cuts longer than 3 minutes, time to restore 80% of affected customers improving to within 60 minutes
- timing of any new connections work: work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends.

**Table 14: Domestic SPN Willingness To Pay by SEG**

Levels	WTP in % in 2023 ABC1	WTP in % in 2023 C2DE
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	3.21	2.47
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	2.79	2.84
Investment in infrastructure required to support take up of electric vehicles	1.98	0.98
Investment to enable uptake of micro-generation e.g. solar panels etc	1.86	1.75
Investment in infrastructure required to support take up of low carbon electric heating technologies	1.41	1.98
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	1.23	1.28
Time to complete simple, low voltage new connections work: 30 days quicker than now, ie within 60 days	1.17	N/S
Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	1.16	N/S
Time to complete simple, low voltage new connections work: 75 days quicker than now, ie within 15 days	1.09	1.71
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60 minutes	1.03	1.58
Timing of any new connections work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.99	1.70
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	0.75	N/S
Information during a power cut: Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	0.72	N/S
Frequency of power cuts over 3 mins - average number: 1 every 24 months	0.67	0.79
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	0.65	0.62
Type of new connections service offered: All elements of the work completed by UK Power Networks	0.57	N/S
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-0.88	-1.61
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-1.49	-1.93
Information available on contacting call centre plus provision of automatic text messages to registered customers with details of power cut and updates	N/S	1.34
Information during a power cut: Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	N/S	0.76
Information available on contacting call centre plus provision of automatic update calls to customer from call centre and follow-up call when power cut over	N/S	1.18

Segmented results for business customers are shown in Table 15. However, it should be noted that these are the combined results for EPN and SPN, as the segmented data had to be combined in order to have the bigger sample sizes required to achieve more robust results.

As shown in Table 15, several service levels were valued very differently by small compared to medium and large businesses. Small businesses placed a higher value on:

- investment to enable uptake of micro-generation e.g, solar panels etc (this was not valued by medium and large businesses)
- investment in infrastructure required to support take up of low carbon electric heating technologies (this was not valued by medium and large businesses)
- rural customers: for power cuts longer than 3 minutes, time to restore 80% of affected customers improving to within 60 minutes.

Medium and large businesses placed higher values on the following in particular:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises.

Also they placed a much higher value on all “timing of any new connection work” levels, in particular on “work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends” and “work is undertaken in banded time”.

**Table 15: Business EPNSPN Willingness to Pay by Size**

Levels	WTP in % in 2023 Small	WTP in % in 2023 Medium/Large
Investment to enable uptake of micro-generation e.g. solar panels etc	2.80	N/S
Investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity	2.54	3.40
Investment in infrastructure required to support take up of low carbon electric heating technologies	2.28	N/S
Investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises	2.15	5.91
Rural customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers within 60minutes	2.00	0.80
Provision of back-up services to customers e.g. regular testing of customer-owned generators and systems	1.41	1.17
Investment in infrastructure required to support take up of electric vehicles	1.33	1.65
Frequency of power cuts over 3 mins - average number : 1 ever 24 months	1.31	0.88
Time to complete simple, low voltage new connections work: 75 days quicker than now, ie within 15 days	1.31	1.01
Timescale for provision of quotations for simple, low voltage new connections work: Within 7 working days	1.08	N/S
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	0.70	N/S
Type of new connections service offered: All elements of the work completed by UK Power Networks	0.69	0.98
Timing of any new connection work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends	0.55	1.53
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 180 minutes	-2.46	-2.19
Urban customers: For power cuts longer than 3 minutes, time to restore 80% of affected customers: Within 60 minutes	-3.03	-1.27
Timing of any new connections work : Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends	N/S	3.97
Timing of any new connections work : Work undertaken in normal business hours (08.00-17.00) and in the evenings	N/S	3.22
Timescale for provision of quotations for simple, low voltage new connections work: Within 10 working days	N/S	-1.23
Timescale for provision of quotations for simple, low voltage new connections work: By date agreed with customer	N/S	0.90
Information available on contacting call centre plus provision of additional information services such as real-time information on internet, use of social media, customer service staff 'knocking on doors' etc	N/S	1.24

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Domestic Customers

Domestic willingness to pay for service changes ranges from 0.60% to 2.90% with overall willingness to pay for the full package being 20.4% of the distribution element of the bill by 2023.

For SPN domestic customers, the highest priorities for changes in services are:

- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises.

Willingness to pay for these services by 2023 was very similar: a 2.89% increase in distribution bills for investment in technologies to allow cheaper and quicker connection of new low carbon generators of electricity, and a 2.9% increase for investment in infrastructure to detect loss of supply.

The following service areas were all also considered to be of fairly high priority:

- investment in infrastructure to support uptake of micro-generation technologies (over three times as highly valued as the least valued service)
- investment in infrastructure required to support take up of low carbon electric heating technologies
- investment in infrastructure required to support take up of electric vehicles.

The results suggest that for SPN domestic customers, security of supply and provision of electricity with minimal environmental impact is highly valued.

Willingness to pay for new connections work (all elements completed by UKPN) was very low, 0.60% increase in distribution bill by 2023. This may well be due to the limited experience or need for new connections amongst domestic customers. Separate research questions indicate a very small proportion (5%) of domestic customers have contacted their distributor for a quote for a new connection.

Willingness to pay for information to be made available during a power cut via text messages was valued slightly higher, but still very low, at a 0.64% increase in distribution bill by 2023; there was also a low willingness to pay for information via social media. Conversely, separate, non stated preference research finding suggests that nearly two thirds (64%) of domestic SPN customers would like to receive service information from their distributor during a cut. The importance of using stated preference analysis to determine customers' highest priorities is therefore evident here; whilst provision of information during a cut is desirable, when compared with other service options, willingness to pay for this service is notably low.

## 5.2 Socio-Economic Group

UKPN may wish to use the results by socio economic group to endeavour to ensure that they do not overstate the willingness to pay of lower socio economic groups who will typically be the lower income groups. In this respect their priorities and willingness to pay should be noted. For C2DE customers, the highest priorities are:

- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises
- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- investment in infrastructure required to support take up of low carbon electric heating technologies.

Willingness to pay for these ranges from 1.98%, to 2.47% to 2.84% respectively.

Amongst both socio-economic groups, service changes to address security of supply and minimise environmental impacts of electricity supply appear to be of high priority.

## 5.3 Business Findings

SPN business willingness to pay ranged from 0.75% to 3.01%, with overall willingness to pay for the full package being 21.0% of the distribution element of the bill by 2023.

The highest priorities for investment amongst SPN businesses were:

- investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises
- investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity
- timing of any new connections work: Work undertaken in normal business hours (08.00-17.00), in the evenings and at weekends

Willingness to pay for these ranged from 2.27% of the distribution element of the bill by 2023 for the timing of any new connections work service aspect, to 2.34% for investment in network technologies to allow cheaper and quicker connection of new low carbon generators of electricity and 3.01% for investment in infrastructure required to enable UKPN to detect loss of supply from individual or small groups of premises.

Of least importance to SPN business customers were:

- timescale for provision of quotations for simple, low voltage new connections work: by date agreed with customer
- type of new connections service offered: all elements of the work completed by UK Power Networks

- timing of any new connection work: Work is undertaken within a banded time ie morning, afternoon or evening in normal business hours, evenings or at weekends.

Investment in improvements to new connections levels of service are clearly not a priority for business customers. Separate research findings indicate that only 19% of SPN business customers surveyed have ever contacted their distributor for a new connection.

As with the domestic findings, results from separate, non stated preference research implies that the provision of information to business customers during a power cut is desirable. However, in the stated preference analysis no value was placed on receiving service information during a cut, and, when compared with other potential service area improvements, this is not a service SPN business customers are willing to pay for.

## **5.4 Business Size**

It is important to note that the conclusions for business size are based on the combined results for EPN and SPN. The segmented data for these two DNO's were combined to ensure a sample size large enough to achieve more robust results.

Values placed on service levels differed greatly between small business and medium to large businesses. Small businesses placed the highest value on investment to enable uptake of micro-generation e.g, solar panels (not valued by medium to large businesses) and medium to large businesses on investment in infrastructure to detect loss of supply from individual/small premises.

Both small and medium to large businesses placed a high value on investment in technologies to allow cheaper and quicker connection of new low carbon generators of electricity. Willingness to pay for this service was higher amongst medium and large businesses than small businesses: 3.4% and 2.54% respectively.

# **APPENDIX A**

## **Profile Data**

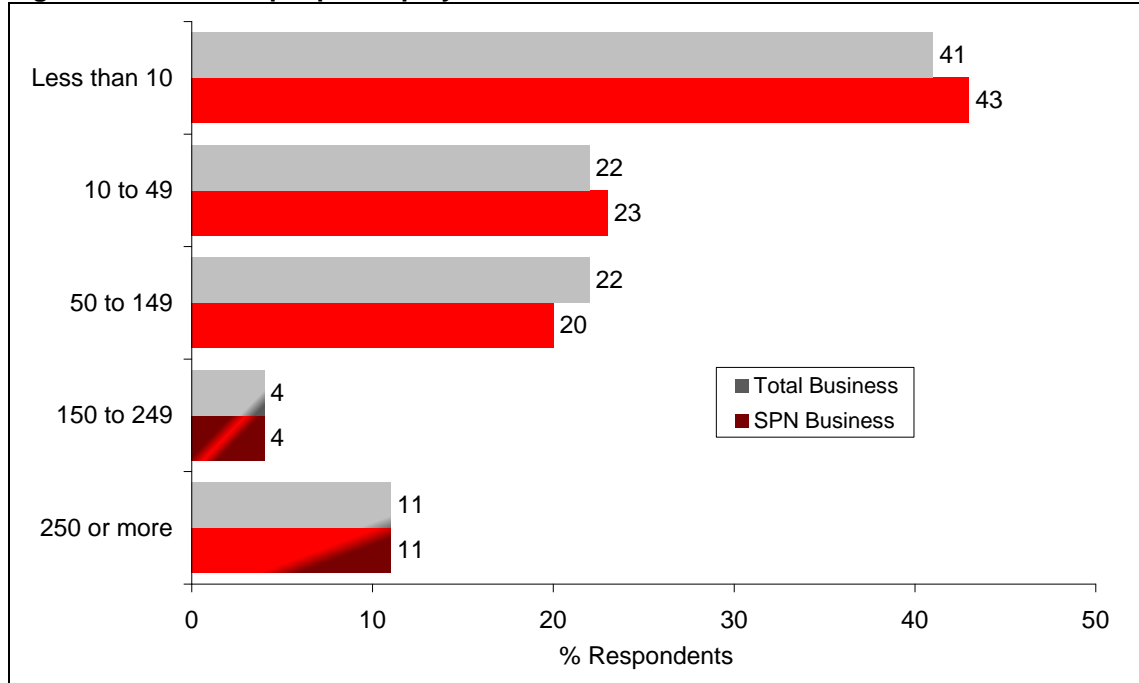


The charts below show the profile of business and domestic respondents. The question text is shown before each chart.

## Business

*“How many people are employed by your company at this site?”*

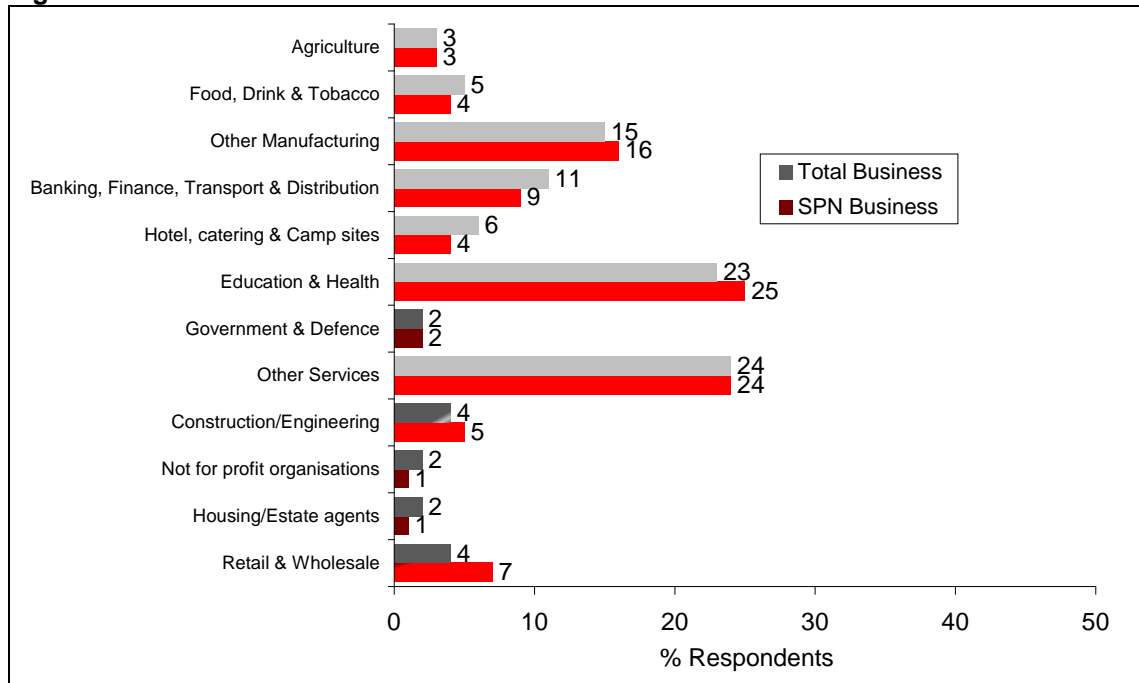
**Figure 4: Number of people employed at site**



Base: all respondents – business: 301, SPN (101)

*“And what business sector best defines the core activity of your company?”*

**Figure 5: Business sector**

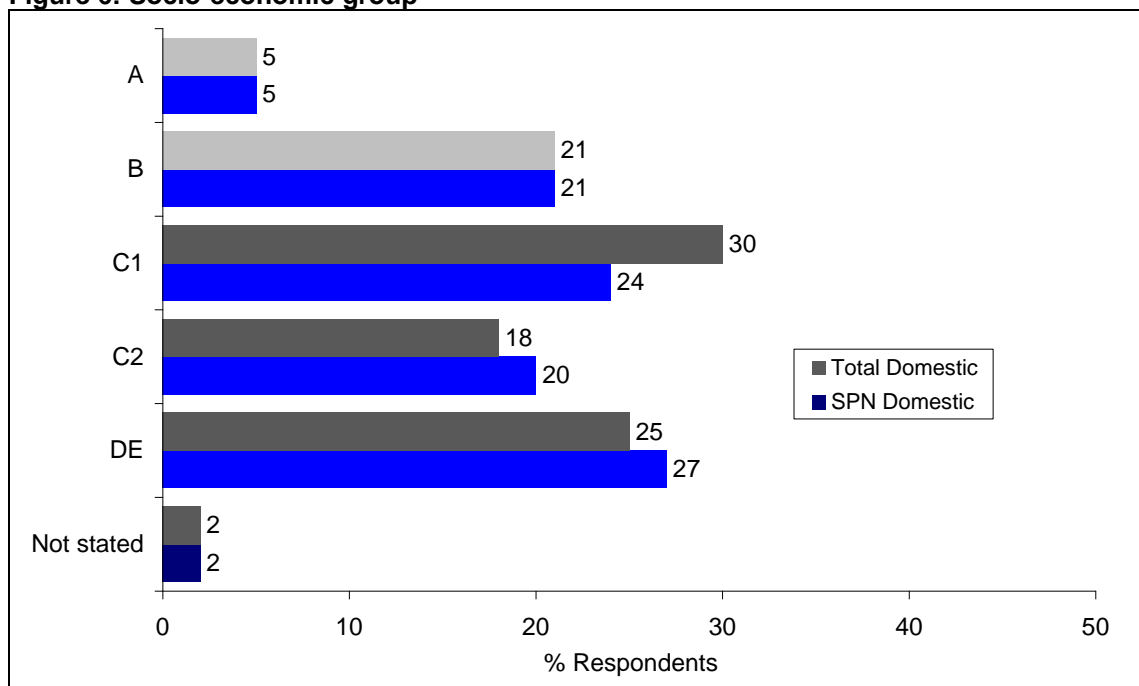


Base: all respondents – business: 301, SPN (101)

## Domestic

*“What is the job title of the chief wage earner of your household or, if you are the chief wage earner, your own job title?”*

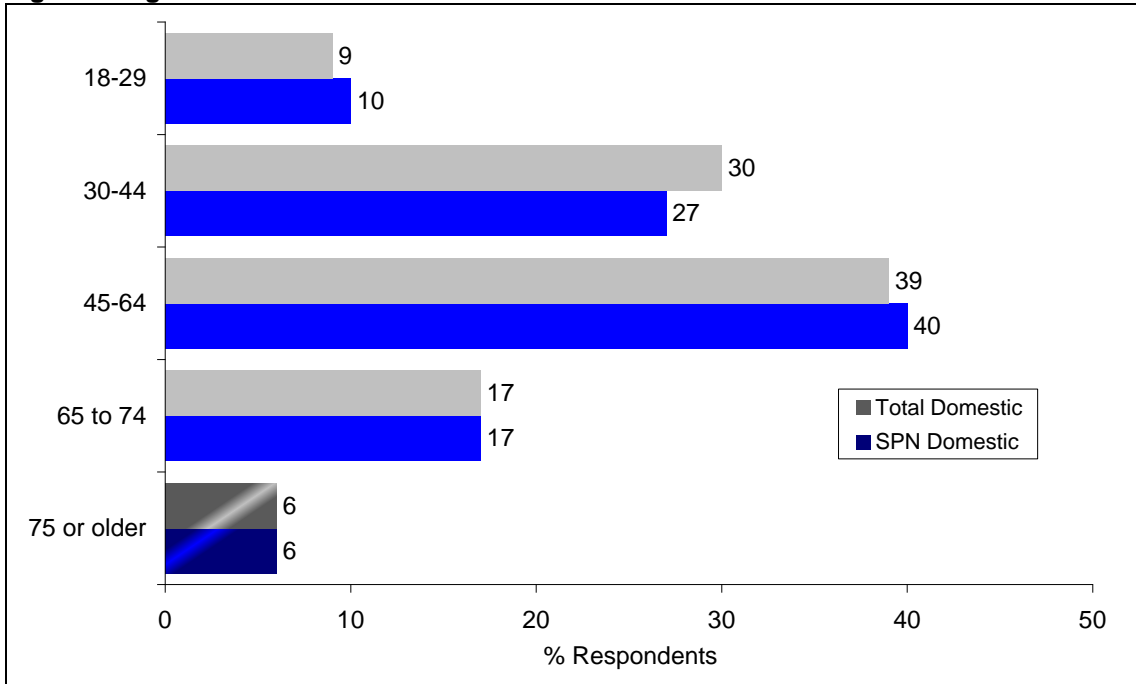
**Figure 6: Socio-economic group**



Base: all respondents – domestic: 1,200, SPN (412)

*“Which of the following age groups do you fall into?”*

**Figure 7: Age**



Base: all respondents – domestic: 1,200, SPN (412)

# **APPENDIX B**

## **Domestic Questionnaire**



Interviewer name:

Date:  Time:

**Recruitment Section – Client Supplied Sample**

Good morning/afternoon/evening. My name is ..... Please can I speak to whoever is responsible for paying your household’s electricity bills? (**WHEN SPEAKING TO APPROPRIATE CONTACT CONTINUE WITH EXPLANATION**)

Good morning/afternoon/evening. My name is ..... and I am calling from Accent. We are an independent market research company carrying out research for UK Power Networks. The research is looking at customer priorities and willingness to pay for maintaining and improving distribution services. Distribution companies own and operate the wires and other assets that distribute electricity to your home; they have responsibility for dealing with power cuts, connecting the supply of electricity to your property (although not for the meter) and for other related aspects such as flickering lights and trimming trees that are growing near electricity wires. This survey is not about your electricity supplier, that is, it is not about the company that you pay your bills to.

This is a bona fide market research exercise. It is being conducted under the Market Research Society Code of Conduct which means that any answers you give will be treated in confidence. Can you spare a few minutes to run through a few questions to see whether you are in scope to take part in this research?

- 1. yes
- 2. no **THANK & CLOSE**

Thank you. I just need to ask you a couple of questions to check that you fit within the customer segments that we need to survey for this particular research.

**GO TO Q1**

Q1. Do you or any of your close family work or have worked in the past in any of the following professions: marketing, advertising, public relations, journalism, market research or the energy sector?

Yes **THANK & CLOSE** No

Q2. What is the job title of the chief wage earner of your household or, if you are the chief wage earner, your own job title? if retired, probe whether state or private pension. if state only code as ‘e’. if private ask what their occupation was prior to retirement? probe

What are/were his/her/your qualifications/responsibilities? **PROBE**

**WRITE IN AND CODE SEG** .....

- |    |            |
|----|------------|
| A  | C2         |
| B  | DE         |
| C1 | Not stated |

Q3. Which of the following age groups do you fall into?

- |       |             |
|-------|-------------|
| 18-29 | 65 to 74    |
| 30-44 | 75 or older |
| 45-64 | Refused     |

**IF IN SCOPE PROCEED ELSE THANK & CLOSE**

---

Q4. How much is your annual electricity bill?  
**INTERVIEWER NOTE: IF THEY KNOW THEIR MONTHLY AMOUNT, PLEASE MULTIPLY BY 12. IF RESPONDENT DOES NOT KNOW SELECT "DON'T KNOW" AND TELL THEM THAT THE AVERAGE BILL FOR A DOMESTIC HOUSEHOLD IS [IF LPN SAY "£440"; IF EPN SAY "£450"; IF SPN SAY "£515"] AND THAT THAT WILL BE REFLECTED IN FUTURE QUESTIONS INVOLVING THEIR BILL IF THEY ARE ABLE TO TAKE PART IN THE FULL INTERVIEW. PLEASE RECORD EITHER THE KNOWN BILL OR THE AVERAGE FIGURE BELOW.**

£.....

Don't know

Thank you for answering those questions. You are in scope for this survey and I would be very grateful if you could spare another **20-25** minutes – either now or at a more convenient time – to run through some questions with me. If you are able to we will send you a £5 voucher to thank you for your time. You need to have some materials in front of you which I can email to you right now so that we can continue with the interview (**INTERVIEWER:** completing the interview real time must be your preferred option at all times).

email now **SEND EMAIL THEN PROCEED**  
cannot continue with interview now **SEND EMAIL THEN RECORD APPOINTMENT ON NEXT SCREEN**  
do not have access to email **BRING UP APPOINTMENT/ADDRESS BOX**  
no **ATTEMPT TO REASSURE & PERSUADE; IF STILL NO, THANK & CLOSE**

**IF CODE 1 OR 2 ABOVE, ELSE SKIP:** What name shall I send these documents to. We are happy even with a first name here if you want; this is only to address you at the start of the email.

**INTERVIEWER: NAME IS CORRECT - ID from sample**  
enter new name

Thank you. We can either do the interview now/in a few seconds, once you have received that, or at a later time today if that is more convenient to you.

Now  
Later **EMAIL SENT. PLEASE CLICK AND RECORD APPOINTMENT**

### **Introduction to Main Survey**

Thank you for agreeing to take part in this survey on behalf of UK Power Networks. This interview is about electricity distribution rather than supply; it is not about the company that you pay the bill to. If you look at Showcard 1 this explains the electricity supply chain for you. They are the ones who are responsible for the wires and cables; they are also responsible for:

- restoring the power supply if there is a power cut
- operating an emergency telephone line for any problems with power related issues
- connecting customers to their local network
- ensuring the right voltage gets to business and consumers
- investigating any complaints or problems that customers have regarding their electricity distribution service.

The questionnaire will take 20-25 minutes. You do not have to answer questions you do not wish to and you can terminate the interview at any point.

Can I check you have your materials ready to refer to? These will have either been sent in the post, sent by email or faxed to you. And what is the reference number on the materials? **INTERVIEWER: CHECK THE NUMBER IS CORRECT AND PROCEED OR RE-SCHEDULE AS APPROPRIATE.**

Correct – **PROCEED**

Incorrect – **GOT TO APPOINTMENTS SCREEN AND RE-SCHEDULE, RE-SENDING MATERIALS**

### **Background Questions**

---

Q5. DP - DO NOT ASK: INPUT FROM SCREENER Q2:

- |    |            |
|----|------------|
| A  | C2         |
| B  | DE         |
| C1 | Not stated |
- 

Q6. DP - DO NOT ASK: INPUT FROM SCREENER Q3

- |       |             |
|-------|-------------|
| 18-29 | 65 to 74    |
| 30-44 | 75 or older |
| 45-64 | Refused     |
- 

Q7. DP - do not ask: input from screener Q4:

£.....

Don't know

---

Q8. dummy2: dp calculate 18% of Q7 value

---

Q9. if Q7 = don't know, say: The average annual household electricity bill in your area is [INSERT RESPONSE FROM value code at Q7].

**IF Q7 NE DON'T KNOW SAY:** Previously you told me that your annual electricity bill is [INSERT RESPONSE FROM VALUE CODE AT Q7].

**ASK ALL:** Roughly 18% of this, ie [DP INSERT FROM Q8] goes to your electricity distributor; the rest is distributed as shown in Showcard 2. Given what we have told you about the role of the distributor, how do you feel about the amount that goes towards your distributor? Is it ...

- Too little
  - About right
  - Slightly too much
  - Far too much
- 

### **Customer Experiences**

---

Q10. Have you experienced any unplanned power cuts lasting more than 3 minutes (that is, any that you were not warned about) in the last year?

- Yes
- No
- Can't remember

---

Q11. **IF NO AT Q10 ASK, ELSE GO TO Q13:** Have you experienced any unplanned power cuts lasting more than 3 minutes (that is, any that you were not warned about) in the last 5 years?

- Yes
- No
- Can't remember

---

Q12. **IF NO AT Q11 ASK, ELSE GO TO Q13:** Have you experienced any unplanned power cuts lasting more than 3 minutes (that is, any that you were not warned about) in the last 10 years?

- Yes
- No
- Can't remember

---

Q13. **IF 'YES' IN Q10 or Q11 or Q12 ask; else GO TO Q20.** How many of these unplanned cuts have you had in the last [insert "year" if Q10 = 1; insert "5 years" if Q11 = 1 or insert "10 years" if Q12 = 1]?

---

Q14. On the last occasion that you had an unplanned power cut in excess of 3 minutes, how long did it last?  
**INTERVIEWER: RECORD IN MINUTES (EG 1 HOUR = 60, 2 HOURS = 120 ETC); ENTER NUMBER OF 999 FOR DON'T KNOW**

---

Q15. Who, if anybody, did you contact on the last occasion you experienced a power cut?

- Supplier
- Distributor
- Both supplier and distributor
- No one
- Don't know/can't remember

---

Q16. **IF 2 OR 3 IN Q15; OTHERS GO TO Q20.** Did you manage to get through to either an operator or a recorded message at your distributor?

- Yes , operator
- Yes, recorded message
- Yes, both
- No
- Don't know/can't remember

---

Q17. if le 3 in Q16 ask; others go to Q19. Did you get all the information you wanted when you made the call to your distributor?

- Yes
- No
- Don't know/can't remember

---

Q18. Using a scale of 1 to 5, where 5 is very accurate and 1 is very inaccurate, how accurate would you say the information you were given was?

- 5: Very accurate
- 4: Quite accurate
- 3: Neither accurate nor inaccurate
- 2: Quite inaccurate
- 1: Very inaccurate



---

Q19. **ASK ALL** Has your distributor ever contacted you or called you back during an unplanned power cut?

- Yes
- No
- Don't know

---

Q20. Where your distributor is aware of a power cut affecting an area, would you like to receive information about the cut via an automatic contact via text or phone call, or are you content simply to call the call centre if you need information?

- Yes, would like call
- Yes, would like text
- Yes would like both
- No, neither
- Maybe **SPECIFY, IE WHY DO THEY SAY THAT?**
- Don't know

---

Q21. Where your distributor has information about a power cut they will usually prepare a recorded message for callers to listen to when they make contact about the cut. Is your preference to stay on the line to speak with an advisor after hearing the recorded message, or would you hang up after hearing it?

- Stay online
- Hang up
- Depends **SPECIFY, IE WHY DO THEY SAY THAT?**
- Don't know

---

Q22. if they say "stay online" or "depends" at Q21 ask, else go to Q23: What is an acceptable time to wait to speak to an advisor after hearing a recorded message? Record in seconds and/or minutes

**CAN WE HAVE TWO BOXES, ONE FOR MINUTES, ONE FOR SECONDS?**

---

Q23. In the event of a power cut, how likely would you be to visit a UK Power Networks (ie your distributor's) webpage?... mobile app? Please use a scale of 1 to 5, where 1 is very unlikely, 2 is quite unlikely, 3 is neither likely nor unlikely, 4 is quite likely and 5 is very likely?

	Very unlikely	Quite unlikely	Neither likely nor unlikely	Quite likely	Very likely	Don't know
webpage .....	1	2	3	4	5	6
mobile app .....	1	2	3	4	5	6

---

Q24. Would you be interested in receiving reports on, and updates about, power cuts via social media such as Twitter or Facebook?

- Yes
- No
- Maybe
- Don't know

---

Q25. Again, thinking about the event of a power cut, when a cut occurred would you like staff, or an engineer, from UK Power Networks to knock on your door and explain the reason for the fault?

- Yes
- No
- Don't know

---

Q26. Would you value them doing so once the power was restored?

- Yes
- No
- Don't know

---

Q27. Have you – or have any of your family or friends that live in your area – ever experienced a power cut due to severe weather (eg a major storm or flooding) or due to any other emergency or unforeseen event (for example, an unforeseen attack on the network or theft of cables)? **MULTICODE**

- Yes, severe weather
- Yes, attack
- Yes, cable theft
- Yes, reason unknown
- No
- Don't know

---

Q28. **ASK IF Q27=1, ELSE GO TO Q29:** Specifically, have you – or have any of your family or friends that live in your area – ever experienced a power cut due to flooding affecting an electricity substation?

- Yes
- No
- Don't know

---

Q29. ask if Q27=1 or 2 or 3 or 4, else go to Q30: And did you contact your distributor when this occurred?

- Yes
- No
- Can't remember

---

Q30. **IF YES AT Q29 ASK, ELSE GO TO Q31:** Using a scale of 1 to 5, where 5 equals very well and 1 equals very poorly how well do you feel that your distributor dealt with the fault that resulted from this severe event?

- 5: very well
- 4: quite well
- 3: neither well nor poorly
- 2: quite poorly
- 1: very poorly

---

Q31. Have you ever suffered inconvenience as a result of roadworks caused by UK Power Networks or another utility (ie your water company)?

- Yes, UKPN
- Yes, other utility
- Yes, organisation unknown
- No
- Don't know

---

Q32. **ASK IF Q31=1 OR 2 OR 3Q33:** How inconvenient was the work to you? Please use a scale of 1 to 3, where 3 is extremely inconvenient and 1 is quite, or moderately, inconvenient.

- 3: Extremely inconvenient
- 2: Very inconvenient
- 1: Quite or moderately inconvenient

---

Q33. And have you ever had to contact your distributor to get a quote for a new electricity connection?

- Yes
- No
- Don't know

---

Q34. if yes to Q33 ask, else go to Q35: And did they undertake the new connection for you? ie was the work completed?

- Yes
- No
- Don't know/can't remember

---

Q35. Prior to this interview had you heard of UK Power Networks?

- Yes
- No

---

Q36. Would you welcome their brand being more visible?

- Yes
- No
- Don't know
- Don't care

---

Q37. Would it enhance the service they provide if you knew more about them, how to find them etc?

- Yes
- No
- Maybe
- Don't know

---

Q38. Before moving on to the next section of questions, I would like to understand your attitude towards the environment. Which of the following best describes your attitude towards the environment, or how "green" you consider yourself to be?

- I think I am very green; I care about the environment: I use energy efficiently and recycle whatever I can
- I think I am quite green; I care about the environment, but I could recycle more and do more to reduce my energy usage
- I'm not very green; I take some, but not much, interest in the environment
- I am not at all green; I don't care about the environment, other things are more important

## **Choice Experiment Intro**

We are now going to go through a set of choices between service levels you could experience from your distributor.

### **START OF 1ST ROTATION**

## **Choice Experiments: Set A – NEW CONNECTIONS WORK**

Please look at Showcard A. **[INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD A IN FRONT OF THEM]**

Showcard A describes 5 aspects of a distributor's new connections service, including:

- The timescale for provision of quotations for simple, low voltage new connections work
- The timing of any new connections work
- Contact for any new connections work
- Time to complete simple, low voltage new connections work
- The type of new connections service offered.

The first service aspect on Showcard A is “**The timescale for provision of quotations for simple new connections work**”. Currently UK Power Networks is required to provide a quotation for simple new connections work within 15 working days. This could be improved to within 10 working days, within 7 working days or to being provided on a date agreed by the customer.

Do you have any questions about this? **[INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN. WHEN 100% CLEAR, CONTINUE]**

[\*] Please now read the rest of Showcard A yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of this exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation. You may not like all the parts of a package but you must decide overall which one you would prefer.

First look at Choice Card A1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD A1 IN FRONT OF THEM]**

The 5 service areas from Showcard A are presented alongside two options for the level of service in each case. Please take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q39. Looking at Choice Card A1, which Option do you prefer, A or B?

- A
- B

---

Q40. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q41. Now turn to Choice Card A2. [INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD A2 IN FRONT OF THEM] Which Option do you prefer, A or B?

- A
- B

---

Q42. Now turn to Choice Card A3. Which Option do you prefer, A or B?

- A
- B

---

Q43. Now turn to Choice Card A4. Which Option do you prefer, A or B?

- A
- B

**END OF 1<sup>ST</sup> ROTATION**

**START OF 2<sup>ND</sup> ROTATION**

**Choice Experiments – Set B: TECHNOLOGY & LOW CARBON TECHNOLOGY INVESTMENTS**

Please look at Showcard B. [INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD B IN FRONT OF THEM]

Showcard B describes 5 aspects of a distributor's service, including:

- Investment in infrastructure to enable UKPN to detect loss of supply
- Investment to enable greater uptake of electric vehicles
- Investment in infrastructure to enable greater uptake of low carbon electric heating technologies
- Investment to enable largescale renewable generation (e.g onshore wind farms, biomass plants etc)
- Investment to enable uptake of micro-generation e.g, solar panels etc.

The first aspect on this card is “**Investment in infrastructure to enable UKPN to detect loss of supply**”. Currently UK Power Networks is reliant upon customers calling in to alert them to a power cut. They could invest in infrastructure which would enable them to detect loss of supply (i.e. a power cut) at individual or small groups of premises.

Do you have any questions about this? [INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN; WHEN 100% CLEAR, CONTINUE]

[\*] Please now read the rest of Showcard B yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of the exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation. You may not like all the parts of a package but you must decide overall which one you would prefer.

Please look at Choice Card B1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD B1 IN FRONT OF THEM]**

The 5 service areas from Showcard B are presented alongside two options for the future level of service in each case. Please take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q44. Looking at Choice Card B1. Which Option do you prefer, A or B?

- A
- B

---

Q45. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q46. Now turn to Choice Card B2. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD B2 IN FRONT OF THEM]** Which Option do you prefer, A or B?

- A
- B

---

Q47. Now turn to Choice Card B3. Which Option do you prefer, A or B?

- A
- B

---

Q48. Now turn to Choice Card B4. Which Option do you prefer, A or B?

- A
- B

**END OF 2ND ROTATION**

**START OF 3<sup>RD</sup> ROTATION**

## Choice Experiments – Set C: NETWORK RELIABILITY

Please look at Showcard C. **[INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD C IN FRONT OF THEM]**

Showcard C describes **[FOR LPN SAY “4”; FOR EPN AND SPN SAY “5”]** aspects of a distributor’s service, including:

- frequency of power cuts over 3 mins
- **[DO NOT READ FOR LPN]** time to restore 80% of affected **rural** customers for power cuts longer than 3 minutes
- time to restore 80% of affected **urban** customers for power cuts longer than 3 minutes
- information during a power cut
- contingency services.

The first aspect on this Showcard is “**frequency of power cuts over 3 mins**”. Currently, the average number of power cuts in your region is **[FOR LPN INSERT “1 every 36 months”; FOR EPN INSERT “1 every 13 months”; FOR SPN INSERT “1 every 15 months”]**. UK Power Networks could invest to reduce this to **[FOR LPN INSERT “1 every 42 months or 1 every 48 months”; FOR EPN INSERT “1 every 18 months or 1 every 24 months”; FOR SPN INSERT “1 every 18 months or 1 every 24 months”]**..

Do you have any questions about this? **[INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN. IF/WHEN 100% CLEAR, CONTINUE]**

[\*] Please now read the rest of Showcard C yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of the exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation. You may not like all the parts of a package but you must decide overall which one you would prefer.

Now look at Choice Card C1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD C1 IN FRONT OF THEM]**

The **[FOR LPN SAY “4”; FOR EPN AND SPN SAY “5”]** service areas from Showcard C are presented alongside two options for the future level of service in each case. Take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q49. Looking at Choice Card C1. Which Option do you prefer, A or B?

- A
- B

---

Q50. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q51. Now turn to Choice Card C2. [INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD C2 IN FRONT OF THEM] Which Option do you prefer, A or B?

- A
- B

---

Q52. Now turn to Choice Card C3. Which Option do you prefer, A or B?

- A
- B

---

Q53. Now turn to Choice Card C4. Which Option do you prefer, A or B?

- A
- B

### **END OF 3RD ROTATION**

### **Choice Experiments – Package**

In this fourth exercise I would like you to consider all of the factors that I have shown you in the first three exercises. This will help us to understand how you value specific services across the entire package that could be offered by your distributor.

In order to simplify the exercise, we have put the services into three groups, as presented in the previous exercises, and the levels of services in each group will all move together. Each group is separated by a thick black line.

We will also show you the associated change in your annual electricity bill year on year from 2015 to 2023.

Investment by UK Power Networks could maintain or improve service levels across all the areas shown. Alternatively, by spending less in some areas, UK Power Networks will be able to spend more in others, or reduce bills.

Please bear in mind when considering these choices that increased investment activity is required simply to maintain services at their current level. This activity is undertaken to ensure that:

- The distribution network continues to comply with relevant legislation
- The distribution networks continues to operate safely
- The overall condition and health of the distribution network does not deteriorate, which would otherwise cause an increase in the number of power cuts experienced by customers.

When making your choices between the different service packages, please also bear in mind the following:

- That your bill would also increase by the rate of inflation each year and by any increases imposed by your electricity supplier
- That any money you would pay for better service levels here will not be available for you to spend on other things
- That other household bills may go up or down affecting the amount of money you have to spend in general; and
- That the new bill level (from 2015) will also apply in all later years, from 2023 onwards, your bill will not drop back to the level it was prior to the service improvement.



Please look at Choice Card P1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD P1 IN FRONT OF THEM]**

There are **[FOR LPN SAY “14”; FOR EPN & SPN SAY “15”]** different service areas presented, plus the impact on your electricity bill. As in the previous exercise, you are shown two different options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service group.

Take a moment to review these options.

---

Q54. Looking at Choice Card P1. Which Option do you prefer, A or B?

- A
- B

---

Q55. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q56. Now turn to Choice Card P2. Which Option do you prefer, A or B?

- A
- B

---

Q57. Now turn to Choice Card P3. Which Option do you prefer, A or B?

- A
- B

---

Q58. Now turn to Choice Card P4. Which Option do you prefer, A or B?

- A
- B

---

Q59. Now turn to Choice Card P5. Which Option do you prefer, A or B?

- A
- B

---

Q60. Now turn to Choice Card P6. Which Option do you prefer, A or B?

- A
- B **GO TO Q62**

---

Q61. Keep looking at Choice Card P6. The cost of providing Option B on this card is not fully determined at this stage. If the cost of Option B was £X(-) each year for 8 years, from £X in 2015 to £X in 2023, would you still choose Option A or would you now choose Option B? **[SKIP Q62]**

- A
- B

---

Q62. Keep looking at Choice Card P6. The cost of providing Option B on this card is not fully determined at this stage. If the cost of Option B was an increase of £X(+) each year for 8 years, from £X in 2015 to £X in 2023, would you still choose Option B or would you now choose Option A?

- A
- B

### Follow-up Questions

I would now like to ask you a few questions about the choices you have just made.

---

Q63. Did you feel able to make comparisons between the choices I presented to you?

- 1. Yes **GO TO Q65**
- 2. No

---

Q64. Why weren't you able to make the comparisons in the choices?

---

Q65. In the choices, did you find each of the levels of service we described realistic & easy to understand?

- 1. Yes **GO TO Q67**
- 2. No

---

Q66. Which levels did you feel were not realistic or easy to understand?

### Demographics

---

Q67. Which of these statements best describes your current employment status?

- Self employed 1
- Employed full-time (30+ hrs) 2
- Employed part-time (up to 30 hrs) 3
- Student 4
- Unemployed – seeking work 5
- Unemployed – other 6
- Looking after the home/children full-time 7
- Retired 8
- Unable to work due to sickness or disability 9
- Other (please specify)

---

Q68. Thinking about all the people in your household, including yourself, please indicate how many people there in each age group

Q69.

Up to 15 years	.....0.....	1.....	2.....	3.....	4.....	5+
16 to 60 years	.....0.....	1.....	2.....	3.....	4.....	5+
61+	.....0.....	1.....	2.....	3.....	4.....	5+

---

Q70. Would you describe the area that you live in as... **READ OUT**

- Remote rural
- Rural
- Semi rural
- Urban

---

Q71. To help us analyse your responses can you tell me which band on **SHOWCARD D** best describes your total annual household income, before tax and other deductions?

Per Week	Per Year
Up to £100	Under £5,200
£101-£200	£5,201-£10,400
£201-£300	£10,401 - £15,600
£301-£400	£15,601 - £20,800
£401-£500	£20,801,-£26,000
£501-£600	£26,001-£31,200
£601-£800	£31,201-£41,600
£801-£1000	£41,601 - £52,000
£1001-£1200	£52,001 - £62,400
£1201-£1400	£62,401 - £72,800
£1401-£1600	£72,801 - £83,200
More than £1601	More than £83,201
Prefer not to say	

---

Q72. We really appreciate the time that you have given us today. Would you be willing to be contacted again for clarification purposes or be invited to take part in other research for UK Power Networks?

- Yes, for both clarification and further research
- Yes, for clarification only
- Yes, for further research only
- No

**that was the last question. Thank you very much for your help in this research**

Please can I take a note of your name and telephone number for quality control purposes?

Respondent name: .....

Telephone: home:..... work:.....

**Thank you**

I confirm that this interview was conducted under the terms of the MRS code of conduct and is completely confidential

Interviewer's signature: .....

---

**Debriefing Questions – to be completed by the interviewer when interview is over**

---

Q73. In your judgement, did the respondent understand what he/she was being asked to do in the questions?

- Did not understand at all
- Did not understand very much
- Understood a little
- Understood a great deal
- Understood completely

---

Q74. Which of the following best describes the amount of thought the respondent put into making their choices?

- Gave the questions very careful consideration
- Gave the questions careful consideration
- Gave the questions some consideration
- Gave the questions little consideration
- Gave the questions no consideration

---

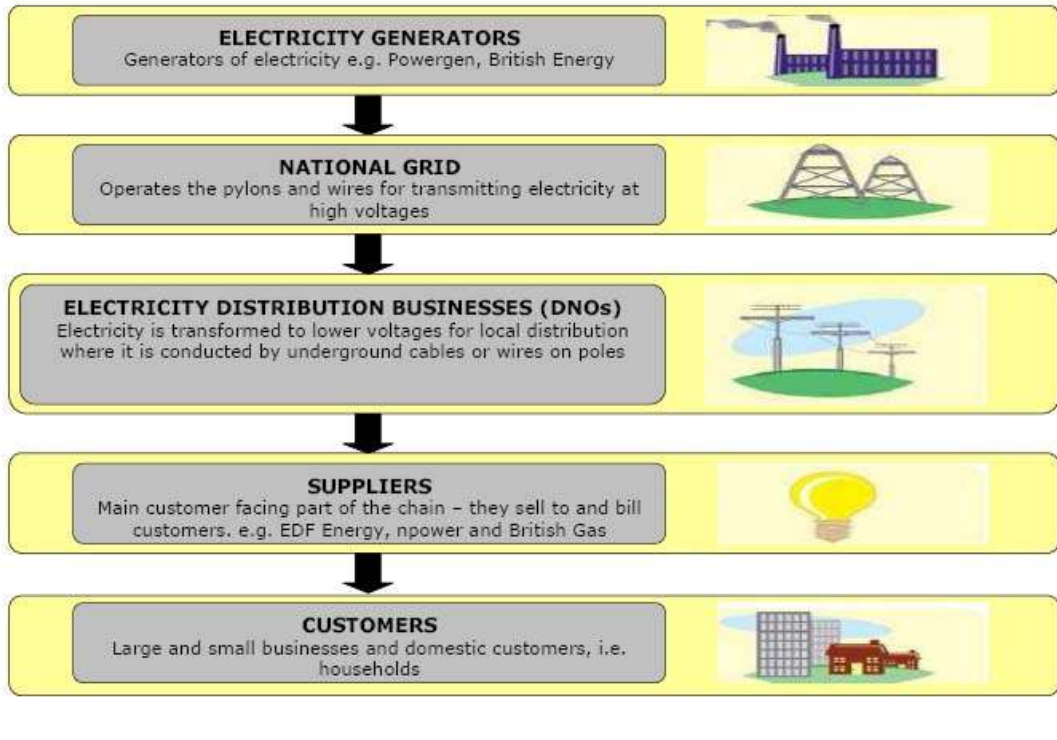
Q75. Which of the following best describes the degree of fatigue shown by the respondent when doing the choice experiments?

- Easily maintained concentration throughout the survey
- Maintained concentration with some effort throughout the survey
- Maintained concentration with a deal of effort throughout the survey
- Lessened concentration in the later stages
- Lost concentration in the later stages

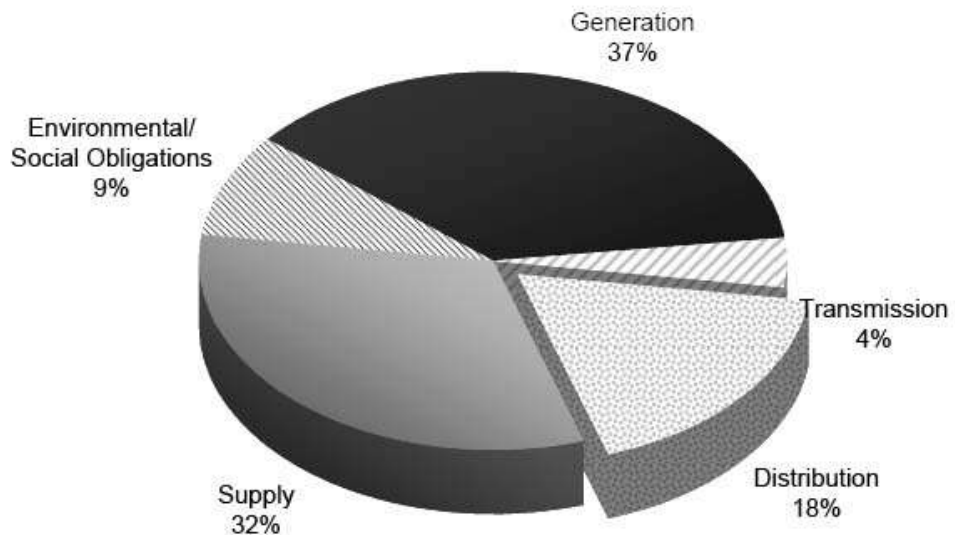
# **APPENDIX C**

## **Domestic Showcards**

## SHOWCARD 1: OVERVIEW OF THE ENERGY SUPPLY CHAIN



## SHOWCARD 2: ELECTRICITY BILL ALLOCATION



# **SHOWCARD A: NEW CONNECTIONS WORK**

## **Timescale for provision of quotations for simple, low voltage new connections work:**

Currently UK Power Networks is required to provide a quotation for simple new connections work within 15 working days. They could invest to improve this to within 10 working days, within 7 working days or to being provided on a date agreed by the customer.

Simple new connections work refers to making up to 4 domestic (100amp) connections. It will involve the provision of a service cable from the electricity main cable to the property and the subsequent testing and energisation of this cable. Typically the electricity main cable is a relatively short distance from the new property (up to 10s of metres).

## **Timing of any new connections work:**

New connections work is currently undertaken in normal business hours, i.e. between 8.00am and 5pm. They could invest to enable work to be undertaken in the evening or at weekends if preferred, or within a banded time (i.e. morning, afternoon or evening) in normal business hours, evenings or at weekends.

## **Contact for any new connections work:**

Currently, contact for new connections work is made via telephone or e-mail to a general call centre. UK Power Networks could invest to enable contact for new connections to be made by phone or email to a dedicated new connections call centre, a named co-ordinator or through an on-line web portal.

## **Time to complete simple, low voltage new connections work**

Currently UK Power Networks is required to complete low voltage new connections work within 90 days. They could invest to improve this to within 60 days, within 30 days or within 15 days.

## **Type of new connections service offered:**

UK Power Networks currently offers a standard new connections service, where they define what elements they will do and what activities must be done by the customer's builder or electrician.

However, UK Power Networks could broaden the range of services it offers to include those typically undertaken by the customer's builder or electrician and allow the customer to decide what they wanted to commission from UK Power Networks.

Alternatively, UK Power Networks could undertake all elements of the work so that the customer does not have to worry about commissioning any other supplier.

# **SHOWCARD B: TECHNOLOGY & LOW CARBON TECHNOLOGY INVESTMENTS**

## **Investment in infrastructure to enable UKPN to detect loss of supply:**

Currently UK Power Networks is reliant upon customers calling in to alert them to a power cut. They could invest in infrastructure which would enable them to detect loss of supply (i.e. a power cut) at individual or small groups of premises.

## **Investment to enable greater uptake of electric vehicles:**

UK Power Networks is not currently making any specific investments in infrastructure to support the uptake of electric vehicles. They could invest ahead of need to support the take up of electric vehicles.

## **Investment in infrastructure to enable greater uptake of low carbon electric heating technologies:**

Similarly, UK Power Networks is not currently making any specific investments in infrastructure to support the take up of low carbon electric heating technologies. These could include more efficient radiators, air source heat pumps or ground source heat pumps for example:

- an air source heat pump is a low carbon technology that replaces an existing heating system. Rather than burning fuel to produce heat, it uses electricity to absorb heat from the outside air

- a ground source heat pump is a low carbon technology that replaces an existing heating system. Rather than burning fuel to produce heat, it uses electricity to pump liquid around plastic tubes in the ground, to extract the heat stored there.

They could invest ahead of need to support the take up of low carbon electric heating technologies.

## **Investment to enable largescale renewable generation:**

UK Power Networks is not currently making any specific investments in infrastructure to support the growth of largescale renewable generation; each new connection is currently charged at cost. They could invest in network technologies which would allow cheaper and quicker connection of new low carbon generators of electricity such as onshore wind farms or biomass plants.

## **Investment to enable uptake of micro-generation:**

UK Power Networks is not currently making any specific investments in infrastructure to support the take up of home-based micro-generation technologies; rather, they invest as needed. They could invest in infrastructure ahead of need to support the uptake of micro-generation technologies such as solar panels or wind turbines etc.



# SHOWCARD C: NETWORK RELIABILITY

## Frequency of power cuts over 3 mins - average number:

Currently, the average number of power cuts in your region is 1 every 15 months. UK Power Networks could invest to reduce this to 1 in every 18 months or 1 in every 24 months.

## Time to restore 80% of affected rural customers for power cuts longer than 3 minutes:

Currently UK Power Networks restores 80% of customers in rural areas who have been affected by a cut within an average of 180 minutes of being made aware of the cut. They could invest to reduce this to within 120 minutes or within 60 minutes.

## Time to restore 80% of affected urban customers for power cuts longer than 3 minutes:

Currently UK Power Networks restores 80% of customers in urban areas who have been affected by a cut within an average of 20 minutes of being made aware of the cut. They could invest to reduce this to within 10 minutes or, alternatively, the average time to restore them could be worsened to within 60 minutes or within 180 minutes in return for a lower bill.

## Information during a power cut:

Currently customers can get information about a power cut by contacting UK Power Network's call centre. They could invest to offer other means of getting information on a cut, including:

- provision of automatic text messages to registered customers (i.e. customers that provided their mobile phone details when they contacted the call centre) with details of power cut and updates
- provision of automatic update calls to customer from the call centre and a follow-up call when the power cut is over
- provision of additional information services such as real-time information on the internet, use of social media, customer service staff 'knocking on doors' etc.

## Contingency services

It is currently the responsibility of customers to provide themselves with any back-up services, such as a generator, in the event of a power cut. UK Power Networks could provide services in this area, including:

- the provision of generator hire e.g. for an event
- provision of back-up services to customers e.g. regular testing of customer-owned generators and back-up systems.

## SHOWCARD D

	Per Week	Per Year
1	Up to £100	Under £5,200
2	£101-£200	£5,201-£10,400
3	£201-£300	£10,401 – £15,600
4	£301-£400	£15,601 - £20,800
5	£401-£500	£20,801,-£26,000
6	£501-£600	£26,001-£31,200
7	£601-£800	£31,201-£41,600
8	£801-£1000	£41,601 - £52,000
9	£1001-£1200	£52,001 - £62,400
10	£1201-£1400	£62,401 - £72,800
11	£1401-£1600	£72,801 - £83,200
12	More than £1601	More than £83,201

# **APPENDIX D**

## **Business Questionnaire**

Interviewer name:

Date:

Time:

**Recruitment Section – Client Supplied Sample**

Good morning/afternoon. My name is ..... Please could I speak to whoever is responsible for paying your organisation’s electricity bills or for liaising with your electricity distributor (for example, in the event of a power cut, to arrange a new connection etc)? **(WHEN SPEAKING TO APPROPRIATE CONTACT CONTINUE WITH EXPLANATION)**

My name is ..... from Accent, an independent research consultancy, and we are carrying out an important research study for your electricity distribution company, UK Power Networks, to investigate what is most important to business customers and what they would like the company to invest in the coming years. This is a *bona fide* market research exercise. It is being conducted under the Market Research Society Code of Conduct which means that any answers you give will be treated in confidence. Could you please spare a couple of minutes to see if you are the type of customer we need to speak to for this research?

Q1. dummy: insert company name from sample

- UKPN LPN
- UKPN EPN
- EKPN SPN

Q2. Do you or any of your close family work or have worked in the past in any of the following professions: marketing, advertising, public relations, journalism, market research or the energy sector?

Yes **THANK & CLOSE** No

Q3. How much is your site’s annual electricity bill?  
**INTERVIEWER NOTE: IF THEY KNOW THEIR MONTHLY AMOUNT, PLEASE MULTIPLY BY 12.**

£.....

Don’t know **ASK IF THEY CAN GIVE A GOOD ESTIMATE; ELSE THANK & CLOSE**

Q4. How many people are employed by your company **at this site?** **READ OUT BANDS IF NECESSARY**

- Less than 10 **SMALL BUSINESS**
- 10-49 **SMALL BUSINESS**
- 50-149 **MEDIUM BUSINESS**
- 150-249 **MEDIUM BUSINESS**
- 250 or more **LARGE BUSINESS**

**CHECK QUOTAS**

---

Q5. And what business sector best defines the core activity of your company?

Agriculture  
Food, Drink & Tobacco  
Other Manufacturing  
Banking, Finance, Transport & Distribution  
Hotel, catering & Camp sites  
Education & Health  
Government & Defence  
Other Services  
Other **SPECIFY**

**IF IN SCOPE PROCEED ELSE THANK & CLOSE**

Thank you for answering those questions. As I mentioned, we are carrying out an important research study for UK Power Networks to investigate what is most important to their business customers and what their priorities are for the company for the coming years.

Your organisation is in scope for this research and I would be very grateful if you could spare another 20-25 minutes – either now or at a more convenient time – to run through some questions with me. You need to have some materials in front of you which I can email to you right now so that we can continue with the interview (**INTERVIEWER:** completing the interview real time must be your preferred option at all times).

email now **SEND EMAIL THEN PROCEED**  
cannot continue with interview now **SEND EMAIL THEN RECORD APPOINTMENT ON NEXT SCREEN**  
do not have access to email **BRING UP APPOINTMENT/ADDRESS BOX**  
no **ATTEMPT TO REASSURE & PERSUADE; IF STILL NO, THANK & CLOSE**

**IF CODE 1 OR 2 ABOVE, ELSE SKIP:** What name shall I send these documents to. We are happy even with a first name here if you want; this is only to address you at the start of the email.

**INTERVIEWER: NAME IS CORRECT -** ID from sample  
enter new name

Thank you. We can either do the interview now/in a few seconds, once you have received that, or at a later time today if that is more convenient to you.

Now  
Later **EMAIL SENT. PLEASE CLICK AND RECORD APPOINTMENT**

## Introduction to Main Survey

Thank you for agreeing to take part in this survey on behalf of UK Power Networks. This interview is about electricity distribution rather than supply; it is not about the company that you pay the bill to. If you look at Showcard 1 this explains the electricity supply chain for you. They are the ones who are responsible for the wires and cables; they are also responsible for:

- restoring the power supply if there is a power cut
- operating an emergency telephone line for any problems with power related issues
- connecting customers to their local network
- ensuring the right voltage gets to business and consumers
- investigating any complaints or problems that customers have regarding their electricity distribution service.

The questionnaire will take 20-25 minutes. You do not have to answer questions you do not wish to and you can terminate the interview at any point.

Can I check you have your materials ready to refer to? These will have either been sent in the post, sent by email or faxed to you. And what is the reference number on the materials? **INTERVIEWER: CHECK THE NUMBER IS CORRECT AND PROCEED OR RE-SCHEDULE AS APPROPRIATE.**

Correct – **PROCEED**

Incorrect – **GOT TO APPOINTMENTS SCREEN AND RE-SCHEDULE, RE-SENDING MATERIALS**

## Background Questions

---

Q6. DP - DO NOT ASK: INPUT FROM SCREENER Q1:

UKPN LPN  
UKPN EPN  
EKPN SPN

---

Q7. DP - DO NOT ASK: INPUT FROM SCREENER Q3

£.....

---

Q8. DP - do not ask: input from screener Q4:

Less than 10 **SMALL BUSINESS**  
10-49 **SMALL BUSINESS**  
50-149 **MEDIUM BUSINESS**  
150-249 **MEDIUM BUSINESS**  
250 or more **LARGE BUSINESS**

---

Q9. DP - do not ask: input from screener Q5:

Agriculture  
Food, Drink & Tobacco  
Other Manufacturing  
Banking, Finance, Transport & Distribution  
Hotel, catering & Camp sites  
Education & Health  
Government & Defence  
Other Services  
Other

---

Q10. dummy2: dp calculate 18% of Q7 value

---

Q11. Previously you told me that your annual electricity bill is [insert response from value code at Q7].

**ASK ALL:** Roughly 18% of this, ie [**DP INSERT FROM Q10**] goes to your electricity distributor; the rest is distributed as shown in Showcard 2, ie the company that you pay your bills to. Given what we have told you about the role of the distributor, how do you feel about the amount that goes towards your distributor? Is it ...

Too little  
About right  
Slightly too much  
Far too much

---

## Customer Experiences

---

Q12. Has your business experienced any unplanned power cuts lasting more than 3 minutes (that is, any that you were not warned about) at this site in the last year?

Yes  
No  
Can't remember

---

Q13. **IF NO AT Q12 ASK, ELSE GO TO Q14:** Has your business experienced any unplanned power cuts lasting more than 3 minutes (that is, any that you were not warned about) at this site in the last 5 years?

- Yes
- No
- Can't remember

---

Q14. **IF NO AT Q13 ASK, ELSE GO TO Q15:** Has your business experienced any unplanned power cuts lasting more than 3 minutes at this site in the last 10 years?

- Yes
- No
- Can't remember

---

Q15. **IF 'YES' IN Q12 or Q13 or Q14 ask; else GO TO Q22.** How many of these unplanned cuts have you had in the last [insert "year" if Q12 = 1; insert "5 years" if Q13 = 1 or insert "10 years" if Q14 = 1] at this site?

---

Q16. On the last occasion that you had an unplanned power cut in excess of 3 minutes at this site, how long did it last? **INTERVIEWER: RECORD IN MINUTES (EG 1 HOUR = 60, 2 HOURS = 120 ETC); ENTER NUMBER OF 999 FOR DON'T KNOW**

---

Q17. Who, if anybody, did you contact on the last occasion your business experienced a power cut?

- Supplier
- Distributor
- Both supplier and distributor
- No one
- Don't know/can't remember

---

Q18. **IF 2 OR 3 IN Q17; OTHERS GO TO Q22.** Did you manage to get through to either an operator or a recorded message at your distributor?

- Yes , operator
- Yes, recorded message
- Yes, both
- No
- Don't know/can't remember

---

Q19. **if le 3 in Q18 ask; others go to Q20.** Did you get all the information you wanted when you made the call to your distributor?

- Yes
- No
- Don't know/can't remember

---

Q20. Using a scale of 1 to 5, where 5 is very accurate and 1 is very inaccurate, how accurate would you say the information you were given was?

- 5: Very accurate
- 4: Quite accurate
- 3: Neither accurate nor inaccurate
- 2: Quite inaccurate
- 1: Very inaccurate

---

Q21. **ASK ALL** Has your distributor ever contacted you or called you back during an unplanned power cut?

- Yes
- No
- Don't know

---

Q22. Where your distributor is aware of a power cut affecting an area, would you like to receive information about the cut via an automatic contact via text or phone call, or are you content simply to call the call centre if you need information?

- Yes, would like call
- Yes, would like text
- Yes would like both
- No, neither
- Maybe SPECIFY, IE WHY DO THEY SAY THAT?
- Don't know

---

Q23. Where your distributor has information about a power cut they will usually prepare a recorded message for callers to listen to when they make contact about the cut. Is your preference to stay on the line to speak with an advisor after hearing the recorded message, or would you hang up after hearing it?

- Stay online
- Hang up
- Depends SPECIFY, IE WHY DO THEY SAY THAT?
- Don't know

---

Q24. IF THEY SAY "STAY ONLINE" OR "DEPENDS" AT Q23 ASK, ELSE GO TO Q25: What is an acceptable time to wait to speak to an advisor after hearing a recorded message? RECORD IN SECONDS AND/OR MINUTES

**CAN WE HAVE TWO BOXES, ONE FOR MINUTES, ONE FOR SECONDS?**

---

Q25. In the event of a power cut, how likely would you be, as a business, to visit a UK Power Networks (ie your distributor's) webpage?... mobile app? Please use a scale of 1 to 5, where 1 is very unlikely, 2 is quite unlikely, 3 is neither likely nor unlikely, 4 is quite likely and 5 is very likely?

	Very unlikely	Quite unlikely	Neither likely nor unlikely	Quite likely	Very likely	Don't know
webpage .....	1	2	3	4	5	6
mobile app .....	1	2	3	4	5	6



---

Q26. Would you be interested, as a business, in receiving reports on, and updates about, power cuts via social media such as Twitter or Facebook?

- Yes
- No
- Maybe
- Don't know

---

Q27. Again, thinking about the event of a power cut, when a cut occurred would you like staff, or an engineer, from UK Power Networks to come to your premises and explain the reason for the fault?

- Yes
- No
- Don't know

---

Q28. Would you value them doing so once the power was restored?

- Yes
- No
- Don't know

---

Q29. Have you ever experienced a power cut due to severe weather (eg a major storm or flooding) or due to any other emergency or unforeseen event (for example, an unforeseen attack on the network or theft of cables) at this site? **MULTICODE**

- Yes, severe weather
- Yes, attack
- Yes, cable theft
- Yes, reason unknown
- No
- Don't know

---

Q30. **ASK IF Q29=1, ELSE GO TO Q31:** Specifically, have you ever experienced a power cut at this site due to flooding affecting an electricity substation?

- Yes
- No
- Don't know

---

Q31. **ask if Q30=1 or 2 or 3 or 4, else go to Q33:** And did you contact your distributor when this occurred?

- Yes
- No
- Can't remember

---

Q32. **IF YES AT Q31 ASK, ELSE GO TO Q33:** Using a scale of 1 to 5, where 5 equals very well and 1 equals very poorly how well do you feel that your distributor dealt with the fault that resulted from this severe event?

- 5: very well
- 4: quite well
- 3: neither well nor poorly
- 2: quite poorly
- 1: very poorly

---

Q33. Has your business ever suffered inconvenience as a result of roadworks caused by UK Power Networks or another utility (ie your water company)?

- Yes, UKPN
- Yes, other utility
- Yes, organisation unknown
- No
- Don't know

---

Q34. **ASK IF Q33=1 OR 2 OR 3, ELSE GO TO Q35:** How inconvenient was the work to your business? Please use a scale of 1 to 3, where 3 is extremely inconvenient and 1 is quite, or moderately, inconvenient.

- 3: Extremely inconvenient
- 2: Very inconvenient
- 1: Quite or moderately inconvenient

---

Q35. And has your organisation ever had to contact your distributor to get a quote for a new electricity connection?

- Yes
- No
- Don't know

---

Q36. **if yes to Q35 ask, else go to Q37:** And did they undertake the new connection for you? ie was the work completed?

- Yes
- No
- Don't know/can't remember

---

Q37. Which of the following best describes your organisation's attitude towards the environment, or how "green" you consider your organisation to be?

- I think we are very green; we care about the environment: we use energy efficiently and recycle whatever we can
- I think we are quite green; we care about the environment, but we could recycle more and do more to reduce our energy usage
- We are not very green; we take some, but not much, interest in the environment
- We are not at all green; we don't care about the environment, other things are more important

## Choice Experiment Intro

We are now going to go through a set of choices between service levels your organisation could experience from your distributor.

### START OF 1ST ROTATION

## Choice Experiments: Set A

Please look at Showcard A. **[INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD A IN FRONT OF THEM]**

Showcard A describes 5 aspects of a distributor's service, including:

- The timescale for provision of quotations for simple, low voltage new connections work
- The timing of any new connections work
- Contact for any new connections work
- Time to complete simple, low voltage new connections work

- The type of new connections service offered.

The first service aspect on Showcard A is “**The timescale for provision of quotations for simple new connections work**”. Currently UK Power Networks is required to provide a quotation for simple new connections work within 15 working days. This could be improved to within 10 working days, within 7 working days or to being provided on a date agreed by the customer.

Do you have any questions about this? **[INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN. WHEN 100% CLEAR, CONTINUE]**

[\*] Please now read the rest of Showcard A yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of this exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation. You may not like all the parts of a package but you must decide overall which one you would prefer for your business premises.

First look at Choice Card A1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD A1 IN FRONT OF THEM]**

The 5 service areas from Showcard A are presented alongside two options for the level of service in each case. Please take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q38. Looking at Choice Card A1, which Option do you prefer for your business premises, A or B?

- A
- B

---

Q39. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q40. Now turn to Choice Card A2. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD A2 IN FRONT OF THEM]** Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q41. Now turn to Choice Card A3. Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q42. Now turn to Choice Card A4. Which Option do you prefer for your business premises, A or B?

- A
- B

**END OF 1<sup>ST</sup> ROTATION**

**START OF 2<sup>ND</sup> ROTATION**

### **Choice Experiments – Set B**

Please look at Showcard B. **[INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD B IN FRONT OF THEM]**

Showcard B describes 5 aspects of a distributor's service, including:

- Investment in infrastructure to enable UKPN to detect loss of supply
- Investment to enable greater uptake of electric vehicles
- Investment in infrastructure to enable greater uptake of low carbon electric heating technologies
- Investment to enable largescale renewable generation (e.g onshore wind farms, biomass plants etc)
- Investment to enable uptake of micro-generation e.g, solar panels etc.

The first aspect on this card is “**Investment in infrastructure to enable UKPN to detect loss of supply**”. Currently UK Power Networks is reliant upon customers calling in to alert them to a power cut. They could invest in infrastructure which would enable them to detect loss of supply (i.e. a power cut) at individual or small groups of premises.

Do you have any questions about this? **[INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN; WHEN 100% CLEAR, CONTINUE]**

[\*] Please now read the rest of Showcard B yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of the exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation for your business premises. You may not like all the parts of a package but you must decide overall which one you would prefer.

Please look at Choice Card B1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD B1 IN FRONT OF THEM]**

The 5 service areas from Showcard B are presented alongside two options for the future level of service in each case. Please take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q43. Looking at Choice Card B1. Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q44. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q45. Now turn to Choice Card B2. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD B2 IN FRONT OF THEM]** Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q46. Now turn to Choice Card B3. Which Option do you prefer, A or B?

- A
- B

---

Q47. Now turn to Choice Card B4. Which Option do you prefer, A or B?

- A
- B

**END OF 2ND ROTATION**

**START OF 3<sup>RD</sup> ROTATION**

### **Choice Experiments – Set C**

Please look at Showcard C. **[INTERVIEWER CHECK THAT RESPONDENT HAS SHOWCARD C IN FRONT OF THEM]**

Showcard C describes **[FOR LPN SAY “4”; FOR EPN AND SPN SAY “5”]** aspects of a distributor’s service, including:

- frequency of power cuts over 3 mins
- **[DO NOT READ FOR LPN]** time to restore 80% of affected **rural** customers for power cuts longer than 3 minutes
- time to restore 80% of affected **urban** customers for power cuts longer than 3 minutes
- information during a power cut
- contingency services.

The first aspect on this Showcard is “**frequency of power cuts over 3 mins**”. Currently, the average number of power cuts in your region is **[FOR LPN INSERT “1 every 36 months”; FOR EPN INSERT “1 every 13 months”; FOR SPN INSERT “1 every 15 months”]**. UK Power Networks could invest to reduce this to **[FOR LPN INSERT “1 every 42 months or 1 every 48 months”; FOR EPN INSERT “1 every 18 months or 1 every 24 months”; FOR SPN INSERT “1 every 18 months or 1 every 24 months”]**.

Do you have any questions about this? **[INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS. IF LESS THAN 100% CLEAR, READ AGAIN. IF/WHEN 100% CLEAR, CONTINUE]**

[\*] Please now read the rest of Showcard C yourself, and feel free to ask me any questions you may have about any of the material on it.

**[INTERVIEWER WAIT A FEW MOMENTS, THEN ASK:]**

Would you like more time? **[IF YES, ALLOW MORE TIME. IF NO, CONTINUE]**

The next four questions will each ask you to choose between two packages of service levels. Some service levels will be better in one option, and some will be better in the other. The aim of the exercise is to encourage you to consider your preferences carefully and decide which is the best option in each situation for your business premises. You may not like all the parts of a package but you must decide overall which one you would prefer.

Now look at Choice Card C1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD C1 IN FRONT OF THEM]**

The **[FOR LPN SAY “4”; FOR EPN AND SPN SAY “5”]** service areas from Showcard C are presented alongside two options for the future level of service in each case. Take a moment to review these options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service.

---

Q48. Looking at Choice Card C1. Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q49. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q50. Now turn to Choice Card C2. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD C2 IN FRONT OF THEM]** Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q51. Now turn to Choice Card C3. Which Option do you prefer, A or B?

- A
- B

---

Q52. Now turn to Choice Card C4. Which Option do you prefer, A or B?

- A
- B

**END OF 3RD ROTATION**

### **Choice Experiments – Package**

In this fourth exercise I would like you to consider all of the factors that I have shown you in the first three exercises. This will help us to understand how your business values specific services across the entire package that could be offered by your distributor.

In order to simplify the exercise, we have put the services into three groups, as presented in the previous exercises, and the levels of services in each group will all move together. Each group is separated by a thick black line.

We will also show you the associated change in your site’s annual electricity bill year on year from 2015 to 2023.

Investment by UK Power Networks could maintain or improve service levels across all the areas shown. Alternatively, by spending less in some areas, UK Power Networks will be able to spend more in others, or reduce bills.

Please bear in mind when considering these choices that increased investment activity is required simply to maintain services at their current level. This activity is undertaken to ensure that:

- The distribution network continues to comply with relevant legislation,
- The distribution networks continues to operate safely
- The overall condition and health of the distribution network does not deteriorate, which would otherwise cause an increase in the number of power cuts experienced by customers.

When making your choices between the different service packages, please also bear in mind the following:

- That your bill would also increase by the rate of inflation each year and by any increases imposed by your electricity supplier
- That any money you would pay for better service levels here will not be available for your business to spend on other things
- That other business bills may go up or down affecting the amount of money you have to spend in general; and
- That the new bill level (from 2015) will also apply in all later years, from 2023 onwards, your bill will not drop back to the level it was prior to the service improvement.

Please look at Choice Card P1. **[INTERVIEWER CHECK THAT RESPONDENT HAS CHOICE CARD P1 IN FRONT OF THEM]**

There are **[FOR LPN SAY “14”; FOR EPN & SPN SAY “15”]** different service areas presented, plus the impact on your site’s electricity bill. As in the previous exercise, you are shown two different options. Please note that if a level is shaded it means that it is worse than the alternative option shown; where neither the option A nor the option B level is shaded, this means that both options are the same for that service group.

Take a moment to review these options.

---

Q53. Looking at Choice Card P1. Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q54. Why did you choose the option you did?

**RECORD VERBATIM**

---

Q55. Now turn to Choice Card P2. Which Option do you prefer for your business premises, A or B?

- A
- B

---

Q56. Now turn to Choice Card P3. Which Option do you prefer, A or B?

- A
- B

---

Q57. Now turn to Choice Card P4. Which Option do you prefer, A or B?

- A
- B

---

Q58. Now turn to Choice Card P5. Which Option do you prefer, A or B?

- A
- B

---

Q59. Now turn to Choice Card P6. Which Option do you prefer, A or B?

- A
- B **GO TO Q61**

---

Q60. Keep looking at Choice Card P6. The cost of providing Option B on this card is not fully determined at this stage. If the cost of Option B was £X(-) each year for 8 years, from £X in 2015 to £X in 2023, would you still choose Option A or would you now choose Option B? **[SKIP Q61]**

- A
- B

---

Q61. Keep looking at Choice Card P6. The cost of providing Option B on this card is not fully determined at this stage. If the cost of Option B was an increase of £X(+) each year for 8 years, from £X in 2015 to £X in 2023, would you still choose Option B or would you now choose Option A?

- A
- B

### Follow-up Questions

I would now like to ask you a few questions about the choices you have just made.

---

Q62. Did you feel able to make comparisons between the choices I presented to you?

1. Yes **GO TO Q64**
2. No

---

Q63. Why weren't you able to make the comparisons in the choices?

---

Q64. In the choices, did you find each of the levels of service we described realistic & easy to understand?

1. Yes **GO TO Q66**
2. No

---

Q65. Which levels did you feel were not realistic or easy to understand?



## Demographics

---

Q66. Finally, to help us analyse your responses, can you please tell me how many employees there are at your business premises?

1. 0 – 4
  2. 5 – 9
  3. 10 - 19
  4. 20 - 49
  5. 50 - 99
  6. 100 - 249
  7. 250 - 499
  8. 500 - 999
  9. 1,000 +
  10. Don't know/not stated
- 

Q67. We really appreciate the time that you have given us today. Would you be willing to be contacted again for clarification purposes or be invited to take part in other research for UK Power Networks?

- Yes, for both clarification and further research
- Yes, for clarification only
- Yes, for further research only
- No

**That was the last question. Thank you very much for your help in this research**

Please can I take a note of your name and telephone number for quality control purposes?

Respondent name: .....

Telephone: home:..... work:.....

### **Thank you**

I confirm that this interview was conducted under the terms of the MRS code of conduct and is completely confidential

Interviewer's signature: .....

---

**Debriefing Questions – to be completed by the interviewer when interview is over**

---

Q68. In your judgement, did the respondent understand what he/she was being asked to do in the questions?

- Did not understand at all
- Did not understand very much
- Understood a little
- Understood a great deal
- Understood completely

---

Q69. Which of the following best describes the amount of thought the respondent put into making their choices?

- Gave the questions very careful consideration
- Gave the questions careful consideration
- Gave the questions some consideration
- Gave the questions little consideration
- Gave the questions no consideration

---

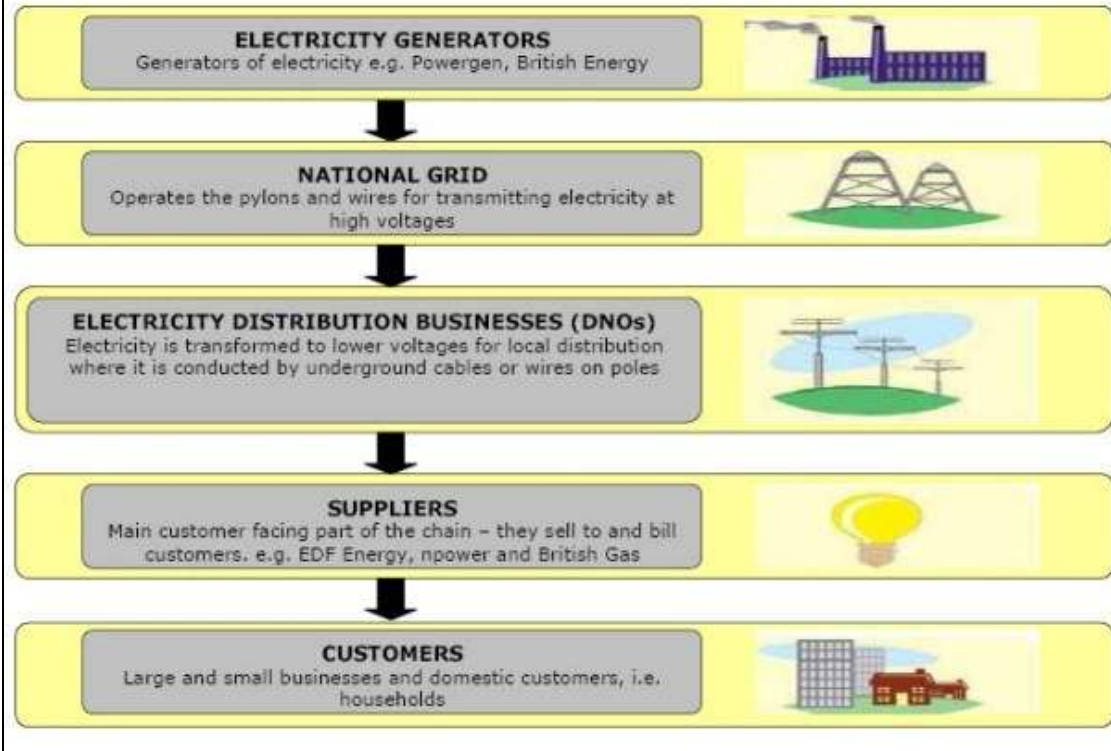
Q70. Which of the following best describes the degree of fatigue shown by the respondent when doing the choice experiments?

- Easily maintained concentration throughout the survey
  - Maintained concentration with some effort throughout the survey
  - Maintained concentration with a deal of effort throughout the survey
  - Lessened concentration in the later stages
  - Lost concentration in the later stages
-

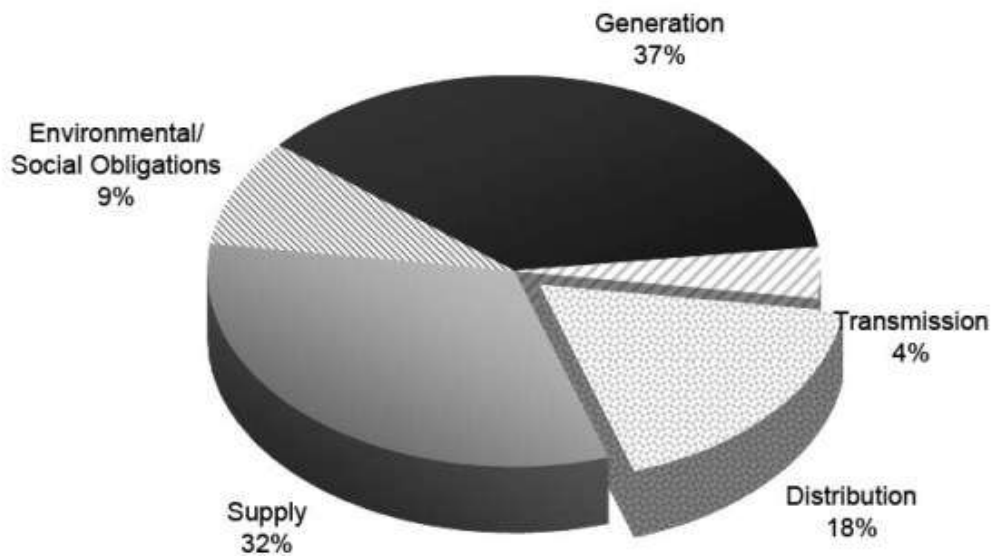
# **APPENDIX E**

## **Business Showcards**

# SHOWCARD 1: OVERVIEW OF THE ENERGY SUPPLY CHAIN



# SHOWCARD 2: ELECTRICITY BILL ALLOCATION



# **SHOWCARD A: NEW CONNECTIONS WORK**

## **Timescale for provision of quotations for simple, low voltage new connections work:**

Currently UK Power Networks is required to provide a quotation for simple new connections work within 15 working days. They could invest to improve this to within 10 working days, within 7 working days or to being provided on a date agreed by the customer.

Simple new connections work refers to making up to 4 domestic (100amp) connections. It will involve the provision of a service cable from the electricity main cable to the property and the subsequent testing and energisation of this cable. Typically the electricity main cable is a relatively short distance from the new property (up to 10s of metres).

## **Timing of any new connections work:**

New connections work is currently undertaken in normal business hours, i.e. between 8.00am and 5pm. They could invest to enable work to be undertaken in the evening or at weekends if preferred, or within a banded time (i.e. morning, afternoon or evening) in normal business hours, evenings or at weekends.

## **Contact for any new connections work:**

Currently, contact for new connections work is made via telephone or e-mail to a general call centre. UK Power Networks could invest to enable contact for new connections to be made by phone or email to a dedicated new connections call centre, a named co-ordinator or through an on-line web portal.

## **Time to complete simple, low voltage new connections work**

Currently UK Power Networks is required to complete low voltage new connections work within 90 days. They could invest to improve this to within 60 days, within 30 days or within 15 days.

## **Type of new connections service offered:**

UK Power Networks currently offers a standard new connections service, where they define what elements they will do and what activities must be done by the customer's builder or electrician.

However, UK Power Networks could broaden the range of services it offers to include those typically undertaken by the customer's builder or electrician and allow the customer to decide what they wanted to commission from UK Power Networks.

Alternatively, UK Power Networks could undertake all elements of the work so that the customer does not have to worry about commissioning any other supplier.

# SHOWCARD B: TECHNOLOGY & LOW CARBON TECHNOLOGY INVESTMENTS

## **Investment in infrastructure to enable UKPN to detect loss of supply:**

Currently UK Power Networks is reliant upon customers calling in to alert them to a power cut. They could invest in infrastructure which would enable them to detect loss of supply (i.e. a power cut) at individual or small groups of premises.

## **Investment to enable greater uptake of electric vehicles:**

UK Power Networks is not currently making any specific investments in infrastructure to support the uptake of electric vehicles. They could invest ahead of need to support the take up of electric vehicles.

## **Investment in infrastructure to enable greater uptake of low carbon electric heating technologies:**

Similarly, UK Power Networks is not currently making any specific investments in infrastructure to support the take up of low carbon electric heating technologies. These could include more efficient radiators, air source heat pumps or ground source heat pumps for example:

- an air source heat pump is a low carbon technology that replaces an existing heating system. Rather than burning fuel to produce heat, it uses electricity to absorb heat from the outside air
- a ground source heat pump is a low carbon technology that replaces an existing heating system. Rather than burning fuel to produce heat, it uses electricity to pump liquid around plastic tubes in the ground, to extract the heat stored there.

They could invest ahead of need to support the take up of low carbon electric heating technologies.

## **Investment to enable largescale renewable generation:**

UK Power Networks is not currently making any specific investments in infrastructure to support the growth of largescale renewable generation; each new connection is currently charged at cost. They could invest in network technologies which would allow cheaper and quicker connection of new low carbon generators of electricity such as onshore wind farms or biomass plants.

## **Investment to enable uptake of micro-generation:**

UK Power Networks is not currently making any specific investments in infrastructure to support the take up of home-based micro-generation technologies; rather, they invest as needed. They could invest in infrastructure ahead of need to support the uptake of micro-generation technologies such as solar panels or wind turbines etc.

# SHOWCARD C: NETWORK RELIABILITY

## Frequency of power cuts over 3 mins - average number:

Currently, the average number of power cuts in your region is 1 every 15 months. UK Power Networks could invest to reduce this to 1 in every 18 months or 1 in every 24 months.

## Time to restore 80% of affected rural customers for power cuts longer than 3 minutes:

Currently UK Power Networks restores 80% of customers in rural areas who have been affected by a cut within an average of 180 minutes of being made aware of the cut. They could invest to reduce this to within 120 minutes or within 60 minutes.

## Time to restore 80% of affected urban customers for power cuts longer than 3 minutes:

Currently UK Power Networks restores 80% of customers in urban areas who have been affected by a cut within an average of 20 minutes of being made aware of the cut. They could invest to reduce this to within 10 minutes or, alternatively, the average time to restore them could be worsened to within 60 minutes or within 180 minutes in return for a lower bill.

## Information during a power cut:

Currently customers can get information about a power cut by contacting UK Power Network's call centre. They could invest to offer other means of getting information on a cut, including:

- provision of automatic text messages to registered customers (i.e. customers that provided their mobile phone details when they contacted the call centre) with details of power cut and updates
- provision of automatic update calls to customer from the call centre and a follow-up call when the power cut is over
- provision of additional information services such as real-time information on the internet, use of social media, customer service staff 'knocking on doors' etc.

## Contingency services

It is currently the responsibility of customers to provide themselves with any back-up services, such as a generator, in the event of a power cut. UK Power Networks could provide services in this area, including:

- the provision of generator hire e.g. for an event
- provision of back-up services to customers e.g. regular testing of customer-owned generators and back-up systems.