Capacity to Customers
Customer Segmentation Report

31 August 2012

VERSION HISTORY

Version	Date	Author	Status
Final Draft	29 August 2012	K Quigley	Final Draft
v1.0	31 August 2012	C McNicol	First Issue

GLOSSARY OF TERMS

Abbreviation	Term
CEP	Customer Engagement Plan
C_2C	Capacity to Customers
DNO	Distribution Network Operator
DPS	Data Protection Statement
I&C	Industrial & Commercial
IIS	Information and Incentive Scheme
HV	High Voltage
COMA	COMA customers are typically HV customers who pay Electricity North West to control and maintain their private network
MIC	Maximum Import Capacity
MPAN	Meter Point Administration Number
Pay-per-usage	Payment method for C_2C whereby financial rewards are paid to customers upon usage of demand side response contracts post fault
Pre-paid	Payment method for C_2C whereby financial rewards are paid up front with no additional payment upon use of demand side response contracts in the event of a network fault
Hybrid	Payment method for C_2C whereby financial rewards are paid up front with an additional payment upon usage of demand side response contracts post fault
Stated preference	Stated preference exercise – a trade-off technique for testing the appeal of alternative customer offerings, in this case alternative contract configurations

CONTENTS

FOREWARD

This customer segmentation report marks the culmination of a four month customer engagement exercise that has involved approximately 1800 I&C (industrial and commercial) customers throughout the Electricity North West region. The customer survey from which this report is derived was jointly designed by Electricity North West and our market research provider, Impact Research. The research methodology and sampling approach was piloted and externally validated by two independent peer reviewers: Frontier Economics and Professor Ken Willis of Newcastle University. Impact Research then conducted the customer survey and summarised their findings in this customer segmentation report.

Electricity North West welcomes the report and recommends it to all Low Carbon Network Fund (LCN Fund) stakeholders. The report findings will be incorporated into the next phase of the Capacity to Customer (C_2C) Project which is to design our new demand side response C_2C contracts and to secure 20 Trial participants that are willing to sign a contract for an agreed duration.

Throughout the Trial we shall continue to engage with Trial participants in order to continuously refine our understanding of the market for demand response contracts. Each time we do this we will document our findings and ensure that we incorporate them into learning and dissemination material such as future documents or industry knowledge dissemination presentations.

This report and any related learning material will be published on our website.

1. EXECUTIVE SUMMARY

This report is submitted as part of the Electricity North West C_2C Tier 2 LCN Fund Project.

C_2C seeks to test if new and existing customers are willing to adopt new forms of commercial arrangements which allow the local distribution network operator (DNO) to place short duration restrictions on their demand and / or generation as necessary in response to infrequent fault outage events.

This document and the analysis therein forms part of the Project's learning dissemination and specifically details the learning from a strategic piece of market research undertaken to understand the potential take-up of new demand side response commercial offerings across various customer segments.

In addition to assessing the potential for new demand side response C_2C contracts, this report also informs the commercial terms of any offering for such a service.

In terms of research limitations, it should be noted that analysis has used customers' existing load sacrifice as a benchmark for future load sacrifice such as EV charging. While this is considered likely to result in a lower acceptance rate, it will nevertheless provide a baseline to enable the Project to proceed to the contract sale stage. Future research is planned to establish customer interest in load sacrifice for future loads such as electric vehicles (EV) and this will be undertaken using Electricity North West's engaged customer panel (ECP).

The research approach referenced within this document was submitted as part of the Electricity North West Capacity to Customers customer engagement plan (CEP) approved by Ofgem on 21 June 2012.

1.1. Research hypothesis

The research was specifically tasked to explore the hypothesis:

"*The C_2C Method will effectively engage customers in a new form of demand and/or generation side response thereby stimulating the market and promoting the future use of commercial solutions to address the problem of insufficient network capacity to satisfy growing customer demand*."

This hypothesis is supported if it can be demonstrated that Electricity North West's target customer base of I&C customers show a manifest interest in participating in the scheme.

The research was designed to identify any variations in the needs of different customer segments and the value they place on the constituent parts of the proposition being put to them, including their preferences on further engagement regarding C_2C.

The design of the study is such that Electricity North West are able to not only understand the potential interest in C_2C but also the type of customers who are likely to have greatest interest in the C_2C concept and the specific attributes any eventual contract would need to be acceptable to them.

The analysis included within this document examines four key questions:

- Is there an appetite in the I&C market for C_2C?
- What is the level of interest by sector?
- How does interest by sector correlate to the size of demand of that sector?
- For the I&C market what contract elements are required to make C_2C as attractive as possible?

1.2. The research approach

To ensure that C_2C delivers results and learning that is transferable to all UK DNOs, the C_2C method will be tested on over 300 HV circuits comprising a mix of low/medium and high fault rate circuits and a smaller number of EHV circuits across the network. The target networks supply electricity to about 317 000 customers, close to 13% of Electricity North West's customer base.

All I&C customers on the selected circuits were contacted to take part in the research, the population size being such that the results are statistically representative of Electricity North West's I&C customer base.

The research methodology and sampling approach was piloted and externally validated by two independent peer reviewers; Professor Ken Willis and Frontier Economics. A detailed summary of the research framework and pilot results can be found in supporting documents[1].

A total of 180 online self-completion questionnaires were completed by customers over the period 12 July to 10 August 2012. This sample size is statistically robust and all analysis has been significance tested at the 95% confidence level.

The questionnaire was preceded by customers reviewing a pack of materials that explained the Project and its objectives. Respondents were responsible for decision making for their organisation's electricity supply and required an average of 30 minutes to complete the survey.

The survey and subsequent analysis was undertaken by Impact Research.

1.3. Summary of the key findings

This section summarises the key findings that are documented in detail within section 2. It maps those keys findings to the four key questions detailed in the executive summary.

Is there an appetite in the I&C market for C_2C?

We believe the feedback from the survey shows there is an appetite in the market for the C_2C concept. When the concept of C_2C was described to customers, 52% of customers found the C_2C concept appealing and 31% indicated that they would recommend[2] their organisation consider opting into a C_2C contract. However this number dropped to 26% when they saw the potential scope of the contracts in more detail (eg the size of the financial reward as presented in the survey). In forming this judgement customers were balancing the reward offered against the notional cost as represented by their current demand. We believe this represents the worse case scenario for cost; as the interruption of future loads such as EV charging are likely to be less costly than current demand. The reward presented to customers was derived from the present IIS levels of incentive. In summary, 52% of customers found the C_2C concept appealing, rewards based on present levels of IIS incentive would only secure 26% under contract.

What is the level of interest by sector?

For the purposes of the survey I&C customers were split into 14 industry standard market sectors, manufacturing and processing accounted for 46% of total survey respondents. The next largest sector accounted for 8% of the total survey respondents. To preserve the statistical robustness of the data it was decided to combine all other sectors and to compare these with the manufacturing and process sector.

[1] 120709- ENWL C2C- Customer Engagement- Framework Document and 120702- ENWL C2C- Customer Engagement- Pilot Review

[2] Recommend = Those indicating a score of 5 or more on a 7 point scale, where 1 is 'very likely' and 7 is 'not at all likely'

Returning to the three questions of appeal, take-up prior to seeing scope of contracts and take-up after seeing scope of contracts the survey shows the follow;

- There is no statistical difference in level of Appeal between Manufacturing & Processing and the 'other sectors' with a range of 49-54% finding the concept appealing
- With regards to potential take-up of contracts, the gap between Manufacturing and Process and 'other sectors' is more significant with the Manufacturing & Processing sector being 10% less likely to take up a contract both prior to and after seeing scope of contracts.

Despite the relatively lower levels of general interest, the actual potential take-up is higher for manufacturing and processing organisations than for other sectors when asked to indicate their likelihood to take up specific examples of contract. This indicates the effect that optimising the C_2C contract proposition can have on likely take-up amongst sub-sectors of the overall customer base. It can be concluded from this finding that for C_2C to be attractive across sectors the contract format will need to be specifically tailored to each sector.

Whilst the manufacturing and process sector appears to be initially more cautious, the findings are not significant enough to require a differential future demand response sales approach. They do however indicate that the contract form will need to be carefully tailored to each target sector.

How does interest by sector correlate to the size of demand of that sector?

Amongst the 180 customers surveyed, their Maximum Import Capacity (MIC) value was established and aggregated to understand the total maximum capacity of the population surveyed. The total capacity value was 178 609kW, with manufacturing and processing customers accounting for 54% of that total capacity.

50% of the total capacity amongst all customers surveyed is held by those that would be open to making some of their non-essential capacity 'managed'. However, having seen the potential scope of the contracts in more detail this number drops to 17% that are likely to recommend their organisation opts into a C_2C contract. So whilst customers found the concept appealing, it appears they expected more attractive levels of incentive than the current IIS arrangements would allow.

For the I&C market what contract elements are required to make C_2C as attractive as possible?

In the section of the research where respondents were presented with differing contracts, the following commercial components were varied: the maximum number of managed interruptions per year, the maximum cumulative interruption duration per year, the payment method, the length of contract, the number of safeguarded days and various levels of payment.

The analysis indicates two general patterns, namely:

- An increase in the payment level outweighs the inconvenience for accepting longer durations eg customers responded positively to the prospect of increased payments to compensate for accepting longer duration. Varying the level of payment increases take-up by 0.3% for every 1% increase in payment,
- The payment is less of a compensation for the number of managed interruptions per year, if duration is more than an hour eg customers responded negatively to the prospect of increased payments to compensate for accepting increased interruptions.

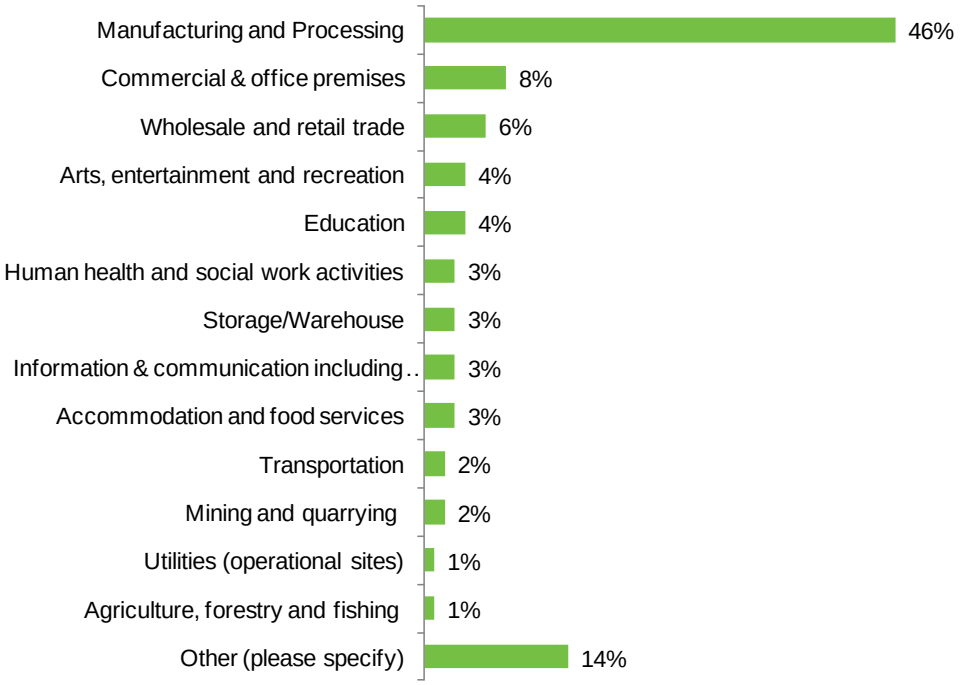
When customers considered specific examples of contracts in the stated preference exercise, the length of contract had the biggest single influence on take-up. Method of payment ('pay-per-usage') and safeguarded days also significantly increased take-up rates. The size of reward is therefore important but not as critical as the other components.

2. KEY FINDINGS

2.1. Is there an appetite in the I&C market for C_2C?

Amongst the 180 customers who completed the survey, the largest number of respondents was from the manufacturing and processing sector, representing just under half the sample. To preserve the statistical robustness of the data the large majority of analysis was conducted at the total sample level (*n=180*) and manufacturing and processing (*n=82*) versus all other sectors (*n=98*).

Chart 2.1a: Sample composition



To address the question of whether there is an appetite for C_2C in the market, the analysis looked to three key research performance metrics. The first metric understands the level of appeal for the C_2C concept; a common market research concept testing measurement which ascertains an interest level in a product or service.

The second metric asks customers the likelihood that they would recommend that their organisation considers opting into the C_2C contract, which is a stronger measurement of interest given that it implies an intention to opt in to C_2C. This measurement was asked before and after showing consumers variations of C_2C contract propositions in a stated preference exercise. Thus the impact of the level of financial reward offered can be assessed through the difference in interest levels pre- and post- the stated preference exercise.

The third metric and the most direct assessment of the interest in C_2C is demonstrated through analysis of the responses to the stated preference exercise. Customers were shown variations of C_2C specific contract offerings and asked which they would be likely to take-up.

It is important to note that all assessments of C_2C by customers reflect only their current energy consumption and behaviour, and are likely to be conservative as a result.

The level of financial reward used to test the price sensitivity of acceptance rates was based on the Information and Incentive Scheme (IIS) rate for unplanned interruptions. This was selected as representing the upper end of the value range for a DNO. To offer customers a reference framework for these payments a mobile telephony analogy was used, specifically ‘Pay per use’, ‘Pre paid’ and a hybrid of the two.

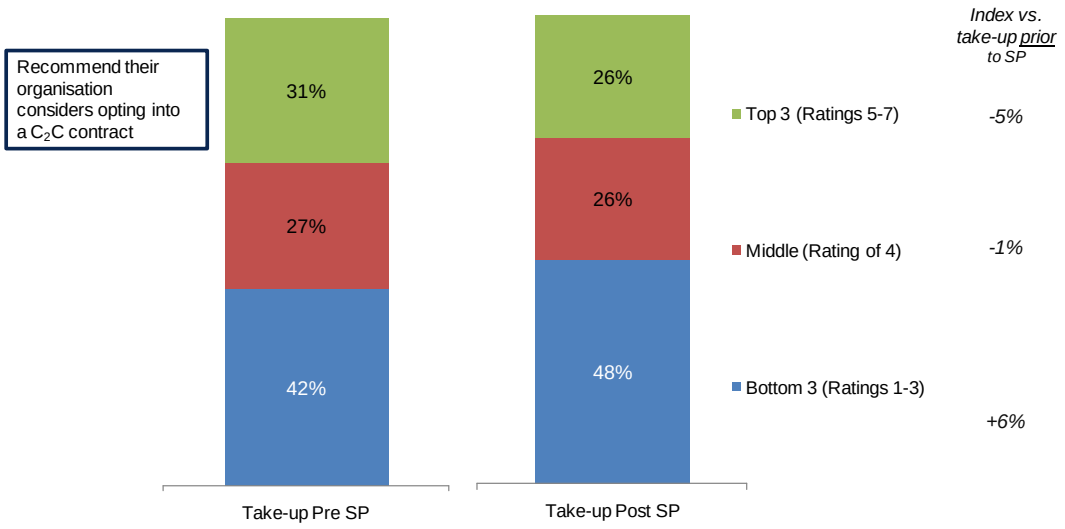
The appeal of the C_2C concept

52% of customers found the C_2C concept appealing, compared to 19% who were ambivalent and 29% who found it unappealing[3].

The likelihood of customers recommending that their organisation opts into a new C_2C contract

When the concept of C_2C was described to customers, 31% indicated that they would recommend their organisation consider opting into a C_2C contract[4], dropping to 26% when they had seen the potential scope of the contracts in more detail (eg the size of the financial reward as presented in the stated preference exercise).

Chart 2.1b: Likelihood of recommending C_2C pre- and post-stated preference



The likelihood of customers taking up a new C_2C contract stated preference

When asked to indicate the likelihood that they would take up specific single examples of a C_2C contract[5] at the anticipated levels of payment (based on IIS pricing structure), the highest potential proportion of all customers taking up a C_2C contract is approximately 15% for the most attractive contract, falling to about 7% for the least attractive.

The highest take-up of 15% can be observed for a one year C_2C contract with one managed interruption of up to three hours duration, with financial rewards paid through a pay-per-usage mechanism and up to 10 safeguarded days during which interruptions cannot be applied. Take-up rates drop to 7% of all customers should the safeguarded days element be removed and the contract extended to 10 years.

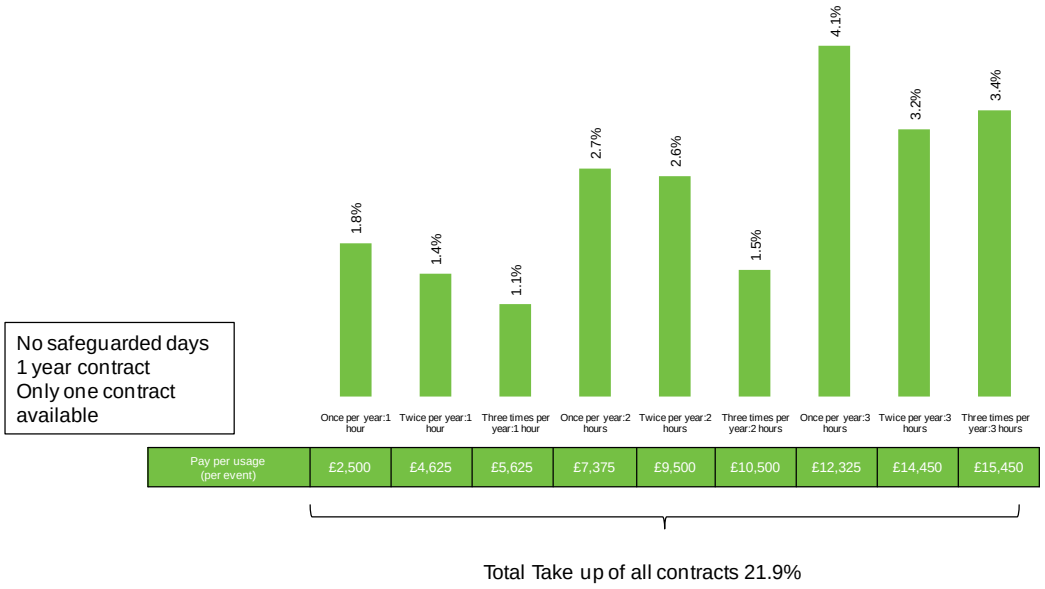
When a full range of contracts are all offered together, spanning all possible combinations of number of managed interruptions and durations, the total take-up of all contracts combined is 22%:

[3] Appealing = Those indicating a score of 5 or more on a 7 point scale; unappealing = a score of 3 or less, where 1 is 'not at all appealing' and 7 is 'very appealing'

[4] Recommend = Those indicating a score of 5 or more on a 7 point scale, where 1 is 'very likely' and 7 is 'not at all likely'

[5] Stated preference exercise

Chart 2.1c: Potential take-up from a full range of contracts (pay-per-usage payment)



2.2. What is the level of interest by sector in C_2C?

Variations in interest levels by sector, as defined by two of the three key metrics described in section 2.1, are not significantly different relative to the total sample. Nevertheless, in directional terms we can see that interest is highest amongst non-manufacturing sectors, with the same differential in interest between the manufacturing and non-manufacturing sectors pre- and post-stated preference exercise.

Table 2.2a: Interest in C_2C by sector

Question	Key interest metric	All customers (180)	Manufacturing & processing (82)	Other sectors (98)
QD6	Appeal	52%	49%	54%
QD8	Take-up (Pre-SP)	31%	25%	35%
QD9	Take- up (Post-SP)	26%	21%	31%

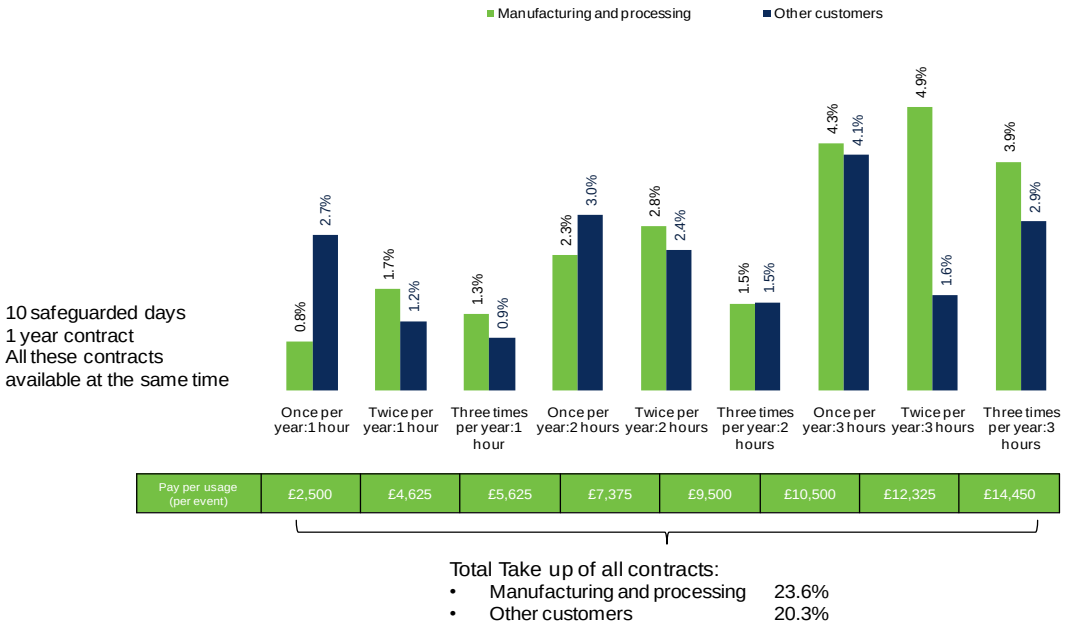
There is evidence that interest levels, as defined by two of the three key metrics described in section 2.1, are influenced by the main perceived barriers to C_2C, particularly amongst manufacturing and processing customers. These customers are significantly more likely to have concerns over getting senior/board approval to join the Trial and providing reassurance over the reliability of supply (*frequency of power cuts*). Electricity North West will need to ensure their customer marketing exercise specifically addresses these customer concerns.

When asked in the stated preference exercise to indicate their likelihood to take up a C_2C contract from a full range of possible contracts[6], a significantly higher uptake was observed among customers in manufacturing and processing versus those in other sectors (24% vs 20%):

[6] Stated preference exercise

[5] In the interests of caution, the likelihood to take-up rating scale asked *after* the stated preference exercise was used to establish interest levels

Chart 2.2b: Potential take-up from a full range of contracts by manufacturing and processing vs other

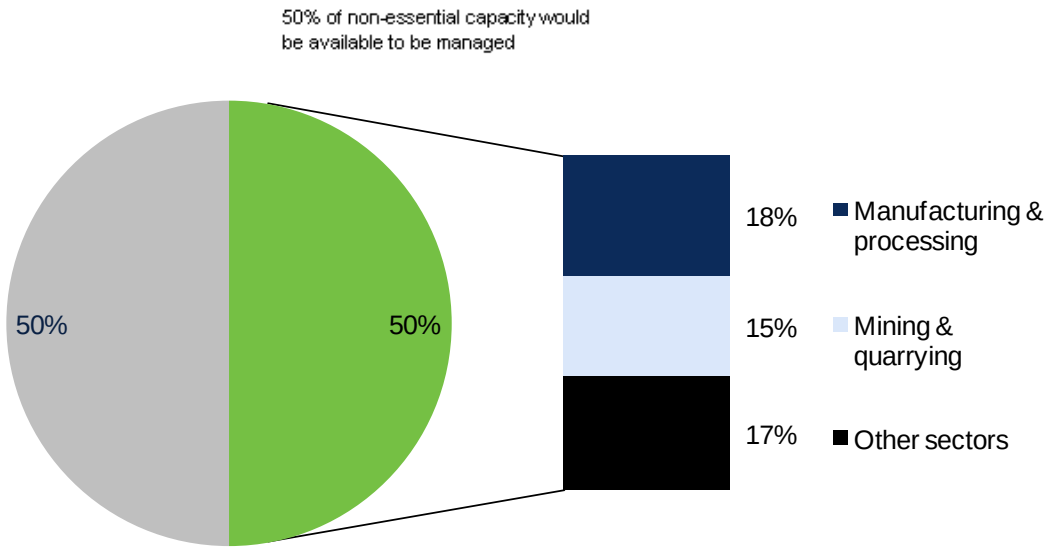


2.3. How does interest by sector correlate to the size of demand of that sector?

Amongst the 180 customers surveyed their Maximum Import Capacity (MIC) value was established and aggregated to understand the total maximum capacity of the population surveyed. Manufacturing and processing customers account for 54% of that total capacity.

50% of the total capacity amongst all customers surveyed is held by those that would be open to making some of their non-essential capacity 'managed'. The 50% capacity consists of 18% manufacturing and processing, 15% mining and quarrying and 17% other sectors.

Chart 2.3a: 50% of non-essential capacity would to be 'managed'



17% of the original total capacity amongst all customers surveyed is held by customers that would be open to making some of their non-essential capacity 'managed' *and* are interested in C_2C[5]. The 17% consists of 11% manufacturing and processing and 6% other sectors.

Manufacturing and processing is therefore the key target segment. The relatively small proportion of Mining and Quarrying customers (*with a relatively large total capacity*) showed less interest in C_2C. This lower interest only relates to C_2C when presented as a concept: the small size of this customer group meant there was insufficient sample to test their separate potential take-up of specific contracts and payments.[7]

2.4. For each sector, what contract elements are required to make C_2C as attractive as possible?

The key contract elements

In the section of the research where respondents were presented with differing contracts, the following commercial components were varied: the maximum number of managed interruptions per year, the maximum cumulative duration per year, the payment method, the length of contract, the number of safeguarded days and the levels of payment.

The complex interplay of the number of managed interruptions, duration and financial reward means that the individual contribution of each of these elements cannot be reliably separated out; however several general patterns can be discerned:

- An increase in the payment level matches or outweighs the inconvenience for accepting longer durations
- The payment is less of a compensation for the number of managed interruptions per year, if duration is more than an hour.

Approximately one quarter of all customers do not expect to have any added flexibility clauses (safe guarded days etc) in C_2C contracts, particularly those with their own generation capability. Amongst the remaining three quarters who would like added flexibility, the actual contract length is the main discussion point; one year being the optimal length required to secure a contract.

When customers considered specific examples of contracts in the stated preference exercise, the length of contract has the biggest single influence on take-up (enough to double it). Method of payment ('pay-per-usage') and safeguarded days each increased take-up by about 20% more.

Varying the level of payment increases take-up by 0.3% for every 1% increase in payment, so even a 25% increase (the highest level tested in the research) raises take-up by less than 10%. The size of reward is therefore important but not as critical as the other components.

The manufacturing and processing sector

When asked to consider a single contract, the key target sector of manufacturing and processing show a higher propensity to take up C_2C than other customers, provided the contract is less than 10 years and payment is 'pay-per-usage'.

Take-up is almost 50% higher for manufacturing and processing when compared to other customers (eg a single contract that attracted 15% of Manufacturing customers only attracted 10% among other customers, a proportional difference of almost +50%).

To make the C_2C contract as attractive as possible to other sectors, a hybrid payment plan option (part 'pay-per-usage', part guaranteed annual payment) would maximise their take-up.

[7] At the time of writing, fieldwork has been extended in order to recruit more customers, but the achievable response rate indicates that it is unlikely that sufficient numbers of this or any other sub-group can be greatly increased.

Excluding specific days of the week and times of the day are also significantly more appealing to other industries.

3. FIELDWORK MANAGEMENT

3.1. Introduction

This section of the report seeks to inform the reader as to the process followed for selecting and contacting customers to take part in the research, how progress was monitored during the interviewing phase, how individual participants could represent multiple sites (each identified by a unique MAPN) and why the survey has been extended beyond the publication of this report.

3.2. Sample

Electricity North West provided Impact Research with a database of customers on the selected C_2C circuits which contained the customer's name and address. However the database contained no telephone numbers or email addresses. In total, the database had 2071 records, of which Impact Research were able to source telephone records for 1994. Duplicates were removed from the database so that each organisation was only contacted once. Where a customer had responsibility for multiple sites, the results were appropriately weighted to represent a greater proportion of records (*sites*) in the database.

Table 3.2a: Database summary

Result	Quantity	%
Numbers sourced	1994	96%
Blanks	77	4%
Total	**2071**	**100%**
Amongst 1,994 numbers sourced:		
Company duplicates	454	23%
Of which…		
Same-site (same postcode)	190	42%
Multi-site (multiple postcodes)	264	58%

In total, across the two aggregated data sets, there were 1,513 unique and usable records.

3.3. Pilot survey

A Pilot Survey was conducted in advance of the main fieldwork and the learning used to inform the design of the final questionnaire and fieldwork approach (See supporting document 120702- ENWL C2C- Customer Engagement- Pilot Review).

3.4. Interviewing team

As in the pilot survey, Feedback Research was appointed to lead the engagement with customers over the telephone during the main fieldwork period.

A team of five dedicated interviewers and one supervisor worked on sub-sets of the database and were responsible for calling customers, engaging with them, often over several calls, and updating the database to reflect their engagement activity.

Large customers (defined as having multiple sites and/or a MIC capacity value of over 105), representing 31% of the database, were handled by one senior interviewer with telemarketing experience.

Table 3.4a: Distribution of contacts by interviewer

Name	# of contacts in sample file	%
Jon	139	16%
Louise	175	20%
Chelsea	160	18%
Pauline	137	15%
John S	276	31%

3.5. Survey process

Feedback Research was instructed to follow a consistent survey process of:

- Contact customers [switchboard, or direct number where available]
- Find most appropriate person to speak to [approx three calls]
- Recruit the customer to take part in the survey [email address required]
- Send out warm up letter and leaflet and a unique online survey link
- If requested, guide customer through survey over the phone
- Or arrange a face to face interview
- Make call backs to encourage survey participation [approx three further calls]
- Monitor fieldwork progress and review Interim data at regular intervals

3.6. Monitoring progress

Daily updates on the status of every unique customer survey link enabled interviewers to keep track of those customers in their respective sample lists who had taken part. An online report which updated in real time, enabled the team to see which customers hadn't entered the survey, which had started but not finished and which customers had completed the survey. These updates enabled interviewers to then send reminders (calls/emails) to those that hadn't participated.

Fieldwork updates were then sent to Electricity North West at appropriate intervals.

Table 3.6a: Client fieldwork update

		Week 1	Week 2	Week 2	Week 2	Week 2	Week 3	Week 3	Week 3	Week 4	Week 4	Week 4	Week 4	Week 4	
Recruitment *by team*		13/07/2012	16/07/2012	17/07/2012	19/07/2012	20/07/2012	24/07/2012	25/07/2012	27/07/2012	01/08/2012	06/08/2012	07/08/2012	08/08/2012	10/08/2012	14/08/2012
Feedback: Louise	*I&C*	9	20	35	35	42	45	45	45	45	57	60	60	60	60
Feedback: Jon	*I&C*	5	5	17	17	21	22	22	22	22	22	22	22	22	22
Feedback: Pauline	*I&C*	10	18	28	29	29	29	29	29	29	32	32	32	32	32
Feedback: Louise	*COMA*	15	19	56	108	132	193	224	261	261	262	262	262	262	262
Feedback: Chelsea	*I&C*	0	0	9	15	15	15	15	15	15	19	19	19	19	19
John Stephens	*I&C Large*	3	3	12	12	44	61	87	97	99	99	99	99	99	99
		42	65	157	216	283	365	422	469	471	491	494	494	494	494
Methodology															
Online Self Complete		41	41	155	211	274	353	409	452	454	474	478	478	478	474
Telephone		1	1	2	5	9	12	13	17	17	17	17	17	17	20
Face to Face		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		42	42	157	216	283	365	422	469	471	491	495	495	495	494
Completion															
Feedback: Not Started	*I&C*	606	586	576	564	562	560	558	557	557	552	548	539	527	526
Feedback: Incomplete	*I&C*	1	9	12	18	18	20	20	20	20	19	20	26	34	35
Feedback: Completed	*I&C*	4	16	23	29	31	31	33	34	34	40	43	46	50	50
Feedback: Not Started	*COMA*	621	616	605	583	564	539	521	496	491	489	489	485	472	460
Feedback: Incomplete	*COMA*	1	3	8	17	27	34	42	50	51	53	51	49	55	62
Feedback: Completed	*COMA*	4	5	11	24	33	51	61	78	82	82	84	90	97	102
John Stephens: Not Started	*I&C Large*	276	268	263	256	253	242	234	225	218	217	217	217	217	217
John Stephens: Incomplete	*I&C Large*	0	6	9	13	14	20	27	32	37	36	32	31	30	30
John Stephens: Completed	*I&C Large*	0	2	4	7	9	14	15	19	21	23	27	28	29	29
Total		**8**	**23**	**38**	**60**	**73**	**96**	**109**	**131**	**137**	**145**	**154**	**164**	**176**	**181**
Progress vs. 300 Target		3%	8%	13%	20%	24%	32%	36%	44%	46%	48%	51%	55%	59%	60%
% of database (before including duplicates)		1%	2%	3%	4%	5%	6%	7%	9%	9%	10%	10%	11%	12%	12%

To ensure that the highest possible survey completion rate was attained in the time permitted, several incentives and support arrangements were implemented, namely:

- Offering interviewer assisted telephone surveys as opposed to just an online self-completion method
- Online vouchers. Between £15-£40 was offered to customers and then processed if they took part within a specified time
- A Kindle prize draw to all participants, with a one in ten chance of winning.

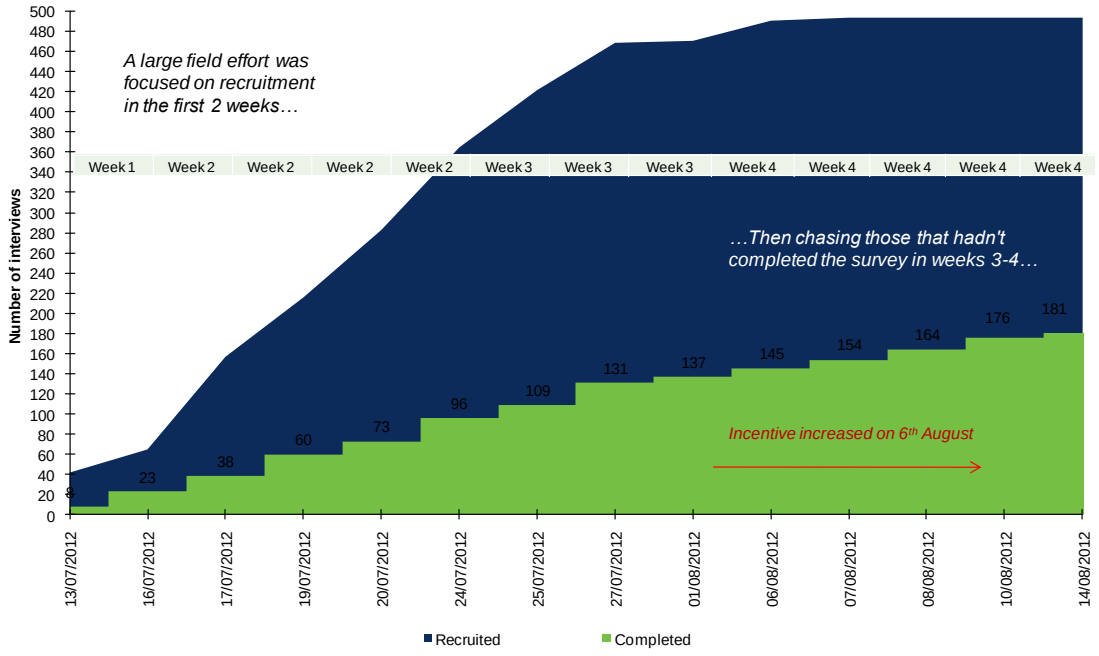
3.7. Fieldwork report

Fieldwork commenced on the 12 July 2012 and although at the time of publication, the survey is still live; this report is based on a data set of customers that have taken part up to and including 10 August 2012. Since this date approximately 10 additional surveys have been completed. Whilst the data from them is not included, their results support the trends outlined in this report.

180 completed surveys were achieved from a total of 494 recruited to take part[8]. This level of recruitment represents 29% of the unique and usable database records available and the completion rate is equal to a 12% response rate. Feedback research spent 305 hours on fieldwork activity in order to generate the 180 surveys.

Chart 3.7a illustrates how the number of customers recruited to take part built up over time and the cumulative number of completed surveys over the four week time period.

Chart 3.7a: Recruited vs completed surveys



In total, 89% of customers took part in the research through an online self-completion methodology which proved to be the most convenient way for people to take part, giving them the flexibility to take part when they could or wanted to. 11% of customers took part with the assistance of a telephone interviewer. Some of these customers had started the survey themselves and stopped after running out of time to complete it, and when called back by an interviewer, agreed to finish it over the phone.

[8] 180 is the number of surveys that had been completed at the time of extracting a data file for analysis and is the volume of surveys the analysis in this report has been based on.

3.8. Sample duplications

Amongst the 180 participants who took part in the survey, some had multiple sites listed. The number of sites represented in the database was 208.

In addition, some customers who had single sites in the database claimed that their organisation was actually located across multiples sites, through a wider geographical area. This feedback was collected in the survey.

After reviewing customer feedback as to whether their organisation was located across multiple sites, the number of sites represented on the database amongst the 180 participants was 314.

3.9. Sample size

Following discussion on the 15 August 2012 between Impact Research and Electricity North West regarding the need to attain a statistically robust sample size the decision was taken to continue the fieldwork until such point that the number of completed surveys amongst key sub-groups would reach 100; this being the recommended sample size for stated preference analysis:

'for contextual, non Discrete Choice Exercise data [sample] can be as low as 30-50 interviews per segment of interest. However, it should be remembered that the recommended minimum for achieving robust DCE data is 100, so minimum sample sizes of 100 business interviews should be sought for WTP survey.'

UKWIR, 2011, Carrying Out Willingness to Pay Surveys, ref 11/RG/07/22, p61

At the time of extracting a data file on the 14 August 2012, 180 surveys were available for analysis. Given the majority of the analysis was based on the total sample, this represented a statistically robust sample to critically evaluate customers reaction to the C_2C concept.

4. CUSTOMERS GENERAL PERCEPTION OF THE C_2C CONCEPT

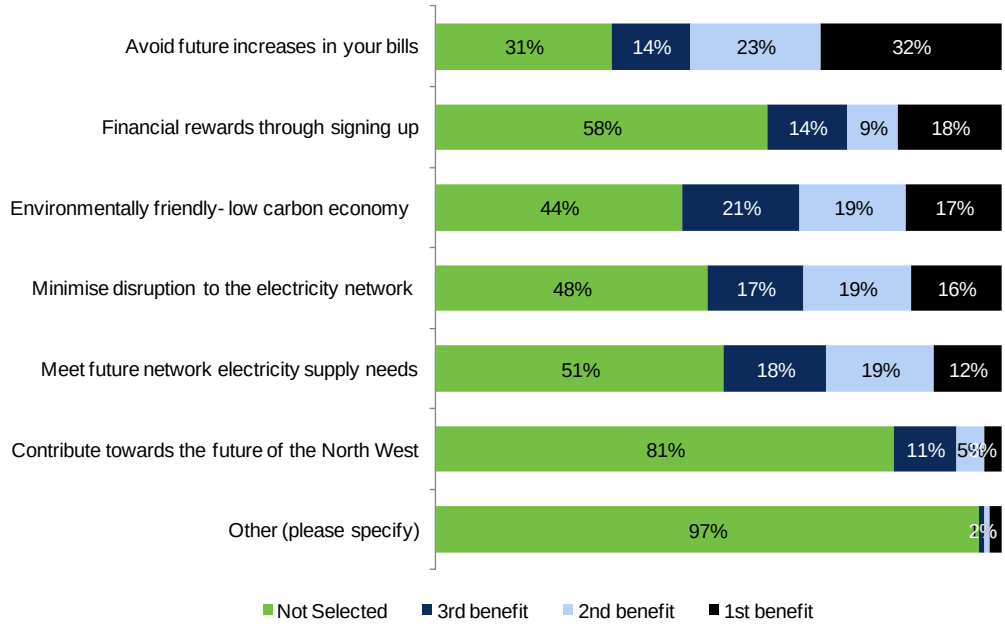
4.1. Introduction

This section summarises the analysis of the non-stated preference element of the research. The stated preference exercise exposed customers to a range of differing C_2C contract terms and is described in section 5. To supplement this work, a number of more generic questions were asked in order to better understand the profile of organisations and their attitudes towards C_2C. The learning from this section will enable Electricity North West to develop C_2C marketing and future engagement to ensure the key benefits of C_2C are communicated and that reassurance is given where barriers to opting into C_2C are perceived.

4.2. Perceived benefits of C_2C

The main perceived benefit of C_2C is that it will facilitate avoidance of large increases in the size of customers' bills. 32% of customers gave this as their first answer, twice as many people as the nearest other benefit. Although earning financial rewards through opting into flexible commercial contracts is amongst the top rated benefits, consumers tend to reserve judgement on the value of this as a benefit until financial rewards are presented to them.

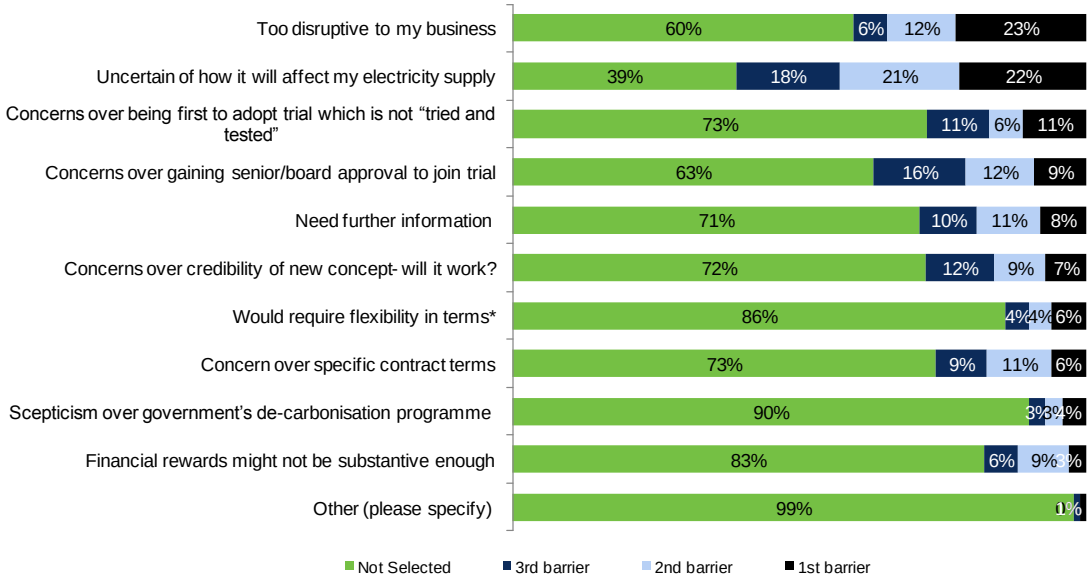
Chart 4.2a: Perceived benefits of C_2C



4.3. Perceived barriers to C_2C

A key learning is that 61% of customers rate '*uncertainty over how it will affect my electricity supply*' as either their first, second or third barrier, far outweighing any other concern. This supports other research from the ECP that suggests the C_2C stimulus material presented to customers so far has failed to reassure customers regarding the impact on the frequency of power cuts. However, the description was limited to one screen in the questionnaire and a more comprehensive explanation should adequately address this concern.

Chart 4.3a: Perceived barriers to C_2C



4.4. Interest in C_2C

As stated in the key findings section in this report, interest levels in C_2C can be measured in several ways which compliment stated preference analysis methods.

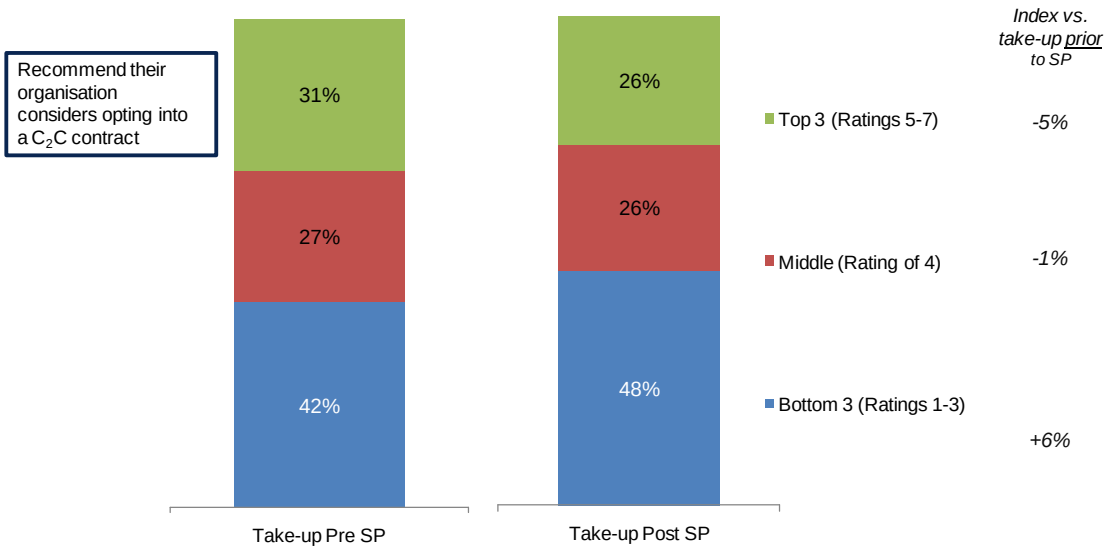
52% of all customers found C_2C appealing, with little variation by type of customer for this single measure. Verbatims that were collected point to financial rewards and contract flexibility as being the main reasons for this appeal.

Interest was also measured by a customer's likelihood to recommend that their organisation opts in to a C_2C contract. This was asked both before and after they were exposed to contract specifics, such as the size of financial reward, in the stated preference exercise.

Prior to the stated preference exercise, the interest level amongst all customers is 31%. This increases to 39% if no power-cuts have been experienced in the last year. The absence of power-cuts for these customers can be interpreted as a way of increasing the reassurance they have of their reliability of supply (a key barrier to C_2C; see Chart 4.3a above).

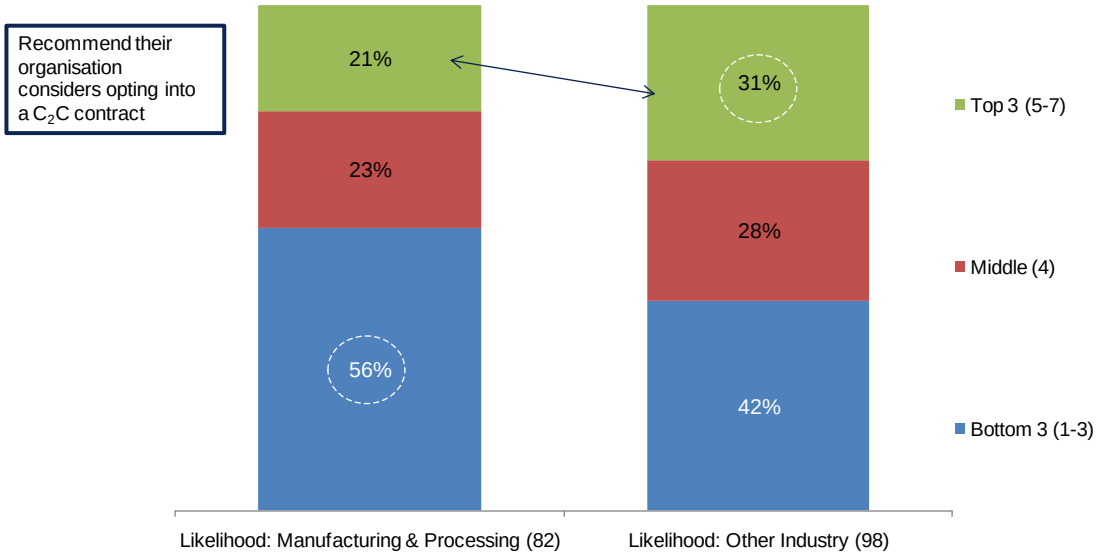
After the stated preference exercise, interest levels drop from 31% to 26% amongst all customers, a drop of 5%, as illustrated in Chart 4.4a below.

Chart 4.4a: Likelihood of recommending C_2C pre- and post-stated preference



Whilst the change in interest level is similar across all customers, the final level of interest among manufacturing and processing is significantly lower relative to other industries, as shown in Chart 4.4b below.

Chart 4.4b: Likelihood to recommend that their organisation opts in to a C_2C contract



There is also a 15% drop in interest levels amongst those with their own generation capability, significantly larger than for the total sample of customers, implying that the financial rewards offered fall particularly short these customers' expectations.

As illustrated in Table 4.4c below, interest levels are relatively equal between single and multiple site organisations before they are shown the stated preference, but multi-sites decrease by 8% after they have seen the stated preference exercise versus a 2% increase in single site organisations.

Table 4.4c: Interest levels

Question	Key Interest Metric	All customers (180)	Single Site (61)	Multi Site (119)
DD6	Appeal	52%	56%	50%
QD8	Take-up (no trade-offs)	31%	33%	30%
QD9	Take- up (after trade-offs)	26%	35%	22%

It is important to note that there is evidence as shown in Table 4.4d (below) that multi-site customers are more likely to feel that gaining board approval to join the Trial would be a relatively high barrier. This perception is likely to have adversely impacted upon their interest levels. The drop in take-up after the stated preference implies that for some multi-site customers the financial reward, combined with the perceived barrier, have not been enough to sustain their interest.

Table 4.4d: Perceived barrier to opting in to a C_2C contract

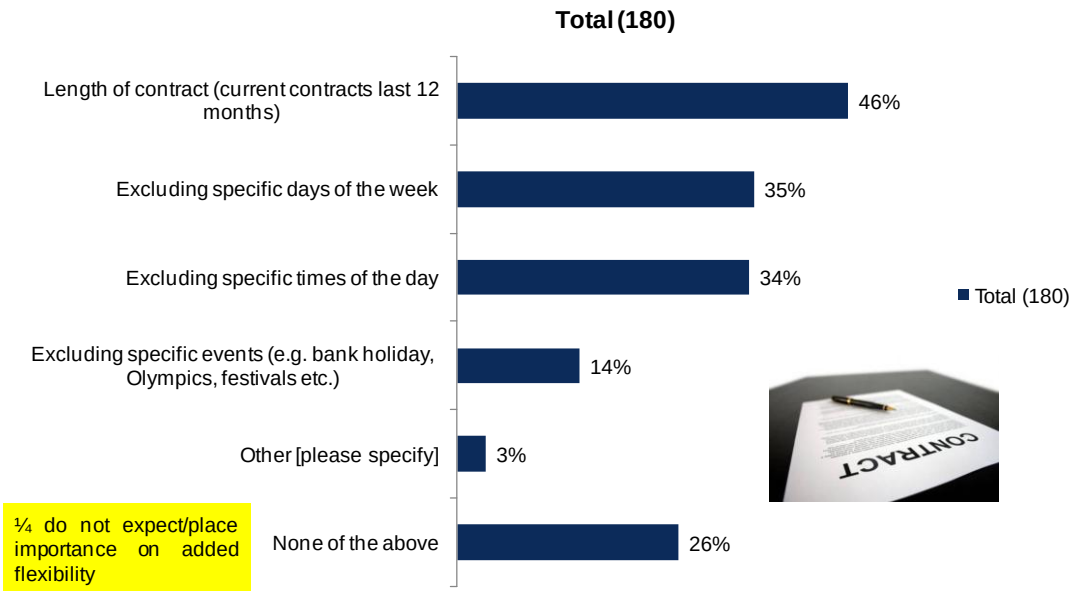
Barrier to signing up to C_2C – Significant difference	Single Site (61)	Multi Site (119)	Diff %
Concerns over gaining board approval to join Trial	28%	42%	14%

4.5. Contract flexibility

26% of all customers do not look for any added flexibility in C_2C contracts. Significantly more customers with their own generation capability are likely to say they do not require any added flexibility (37% representing an over index of 11% vs all customers).

As illustrated in Chart 4.5a below, amongst the 74% that would like an element of added flexibility, the actual contract length is the main influence on the acceptability of a contract.

Chart 4.5a: Optional flexibility that could be built into C_2C contracts



When comparing manufacturing and processing with other customers, the facility in a contract to exclude specific days of the week (40%- index +11% vs manufacturing) and times of the day (40%- index +12% vs manufacturing) are significantly more appealing to other industries relative to manufacturing and processing.

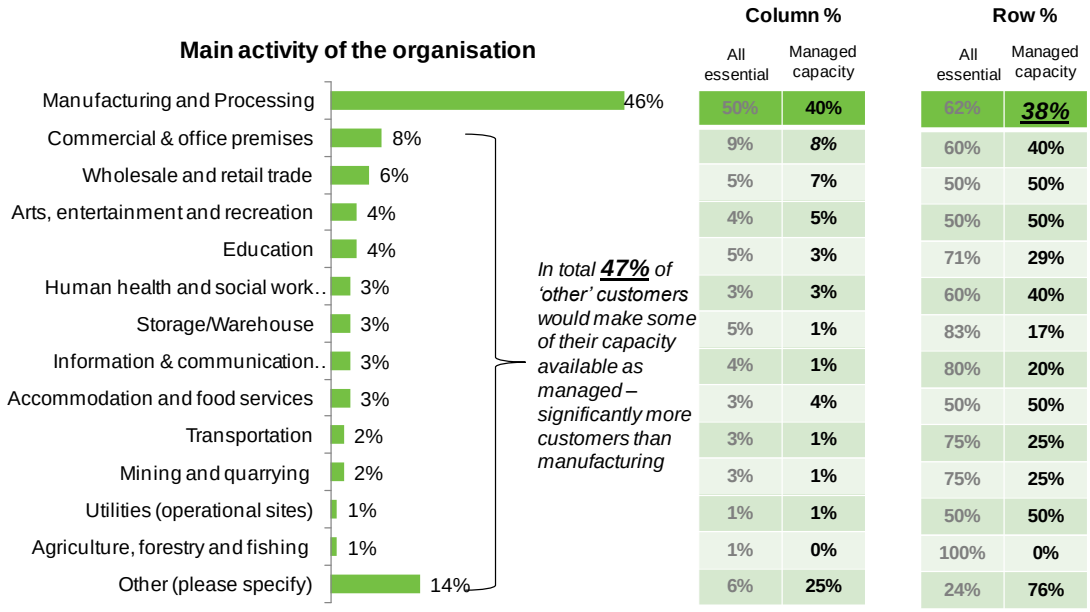
4.6. Essential vs managed supply

All customers were asked to think about the main activities of their business and which aspects of their supply which could be delayed (managed) and which would be non-managed (ie excluded from the C_2C contract) in a power cut situation. They were given the example of a supermarket which might allocate air conditioning to 'managed' and electricity for tills and lighting to 'non-managed'.

57% of all customers felt all of their electricity supply is essential, 34% felt they would be able to allocate some aspects of their supply as 'managed' and 8% felt all of their supply could be managed, effectively meaning 42% felt they could have some element of managed capacity.

38% of manufacturing and processing organisations, the largest sector in the sample, allocated at least some of their supply as potential managed capacity compared to 47% in other sectors, as illustrated in Chart 4.6a below.

Chart 4.6a: The proportion of participants supply capacity considered to be non-essential



4.7. MIC capacity values

Amongst the 180 customers surveyed, a MIC maximum capacity value (kW) was established and aggregated to understand the total maximum capacity of the population surveyed. The total capacity value was 178,609 kW, with manufacturing and processing customers accounting for 54% of that total capacity. This is illustrated in Table 4.7a;

Table 4.7a: Customer capacity by sector (kW)

Industry	Total capacity (kW)	Proportion of all capacity
Manufacturing and processing	96317	54%
Mining and quarrying	28870	16%
Other (please specify)	22416	13%
Commercial and office premises	9390	5%

Industry	Total capacity (kW)	Proportion of all capacity
Education	4859	3%
Wholesale and retail trade	4195	2%
Arts, entertainment and recreation	2920	2%
Accommodation and food services	2166	1%
Transportation	2057	1%
Human health and social work	1644	1%
Utilities (operational sites)	1500	1%
Information and communication including data centres	1264	1%
Storage/warehouse	891	0%
Agriculture, forestry and fishing	120	0%
	178609	**100%**

Analysis was then conducted to establish what proportion of this capacity was held by customers that had stated they would be open to making some of their capacity managed. Table 4.7b shown below, illustrates that 50% of the capacity amongst all customers is held by customers that would open to making some of their capacity managed. The 50% consists of 18% manufacturing and processing, 15% mining and quarrying and 17% other sectors.

Table 4.7b: Total capacity of the managed supply sub-sample (kW)

Industry	Maximum managed capacity (kW)	Proportion of all capacity
Manufacturing and processing	32888	18%
Mining and quarrying	27200	15%
Other (please specify)	19287	11%
Commercial and office premises	2673	1%
Education	813	0%
Wholesale and retail trade	1350	1%
Arts, entertainment and	1020	1%
Accommodation and food	736	0%
Transportation	170	0%
Human health and social work	1124	1%
Utilities (operational sites)	1300	1%
Information and communication including data centres	319	0%
Storage/warehouse	180	0%
Agriculture, forestry and fishing	0	0%
	89060	**50%**

Further analysis was carried out to establish what proportion of the customers who would be open to making some of their capacity managed were also interested in C_2C. The interest

measure asked after the stated preference exercise (likelihood to recommend that your organisation opts in to a C_2C contract) was used to establish interest levels. Table 4.7c below establishes that 17% of the original total capacity of all customers is held by customers that would be open to a managed supply ***and*** are interested in C_2C. The 17% consists of 11% manufacturing and processing and 6% other sectors.

Manufacturing and processing is a key target, given that the relatively small proportion of Mining and Quarrying customers surveyed (with a proportionally large total capacity) are not interested in C_2C. This is not to say that all Mining and Quarrying customers in the wider customer base will not be interested in C_2C or not targeted at all, rather that the analysis suggests that the manufacturing and processing segment offers the best chance of securing a given size demand side response..

Table 4.7c: Total capacity of the interested sample (kW)

Industry	Maximum managed capacity (kW) *amongst interested customers*	Proportion of all capacity
Manufacturing and Processing	19518	11%
Mining and quarrying	0	0%
Other (please specify)	7291	4%
Commercial and office premises	528	0%
Education	0	0%
Wholesale and retail trade	340	0%
Arts, entertainment and recreation	1000	1%
Accommodation and food services	406	0%
Transportation	0	0%
Human health and social work	124	0%
Utilities (operational sites)	1300	1%
Information and communication including data centres	319	0%
Storage/Warehouse	180	0%
Agriculture, forestry and fishing	0	0%
	31006	**17%**

4.8. Future engagement

78% of all customers would like further engagement in the form of a link to a published set of survey results. An equal proportion of customers would like to be kept informed about C_2C through the medium of a newsletter as indicated by Table 4.8a below.

Table 4.8a: Future engagement regarding C_2C

Customers who **don't mind** being re-contacted *(for research purposes)*	**66%**
Customers who **would not like** to be re-contacted	**34%**

Customers who **would like** to be sent the link to the survey results	**78%**
Customers who **would not like** to be sent the link to the survey results	**22%**

Customers who **would like** to be kept informed about C2C, e.g. through a newsletter	**77%**
Customers who **would not like** to be kept informed	**23%**

5. RESULTS FOR SPECIFIC EXAMPLES OF C_2C CONTRACTS

5.1. Introduction

This section presents the main findings from the stated preference analysis, exploring the variation in potential C_2C take-up for the different elements that could go into a single contract. The results are based on the responses of all respondents, regardless of the level of interest they expressed in C_2C before the stated preference exercise.

5.2. Take-up by number and duration of managed interruptions

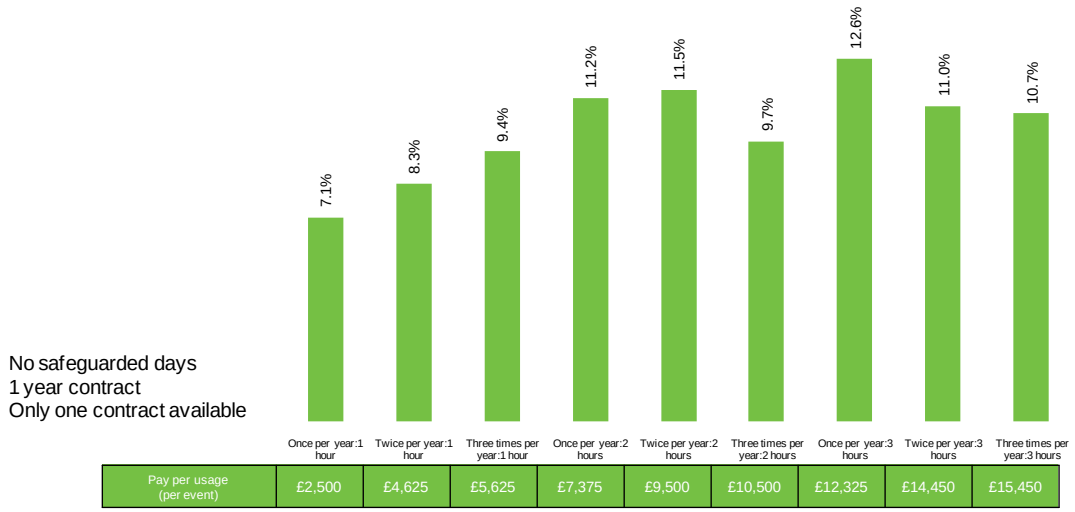
Table 5.2a below shows the percentage of respondents who indicated they would be very or fairly likely to take up C_2C, if only one type of contract was available, ie no safeguarded days are offered and the contract is for one year:

Table 5.2a: Take-up of a single contract

Electricity North West can use it once a year for a maximum duration of one hour; payment (if used) would be £2,500	Electricity North West can use it once a year for a maximum duration of three hours; payment (if used) would be £12,325
7.1% of all customers would take up this contract *if it was the only contract available*	**12.6%** of all customers would take up this contract *if it was the only contract available*

Chart 5.2b below shows the full variation in take-up by the combination of the number of managed interruptions and the maximum duration before supply is reinstated. The chart shows results only for when payment is made for actual use, as this was the payment option with the highest take-up. The monetary amounts below are the payments calculated from the combination of number of times per year and duration, using IIS to determine the test price point (this being a high relative value to the DNO). All other contract elements are fixed (no safeguarded days, one year contract, only one contract available).

Chart 5.2b: Potential take-up (pay-per-usage payment)



As with any results from a market research survey based on a sample of customers, these take-up estimates have a 'margin of error' around them. The likely actual take-up percentage for all Electricity North West's customers lies within ±10% of the results reported here.[9]. For example, if Electricity North West were to consider offering a single contract of once managed interruption a year for a maximum duration of three hours (take-up 12.6%), the likely value for the *total population* of Electricity North West customers lies in the range 11.3% to 13.9% (referred to as the confidence interval). When using these figures for planning purposes, a cautious approach would be to use the 11.3% figure; an optimistic approach would be to use the 13.9% figure.

The general trend emerging from the analysis is that:

- the payment for accepting longer duration matches or outweighs the inconvenience (so take-up actually increases or stays level as duration increases for the range tested)
- the payment is less of a compensation for the number of managed interruptions per year, if duration is more than an hour (take-up increases with the number of interruptions if duration is up to one hour, but stays level of decreases with the number of interruptions if duration is more than one hour).

5.3. Take-up by payment type

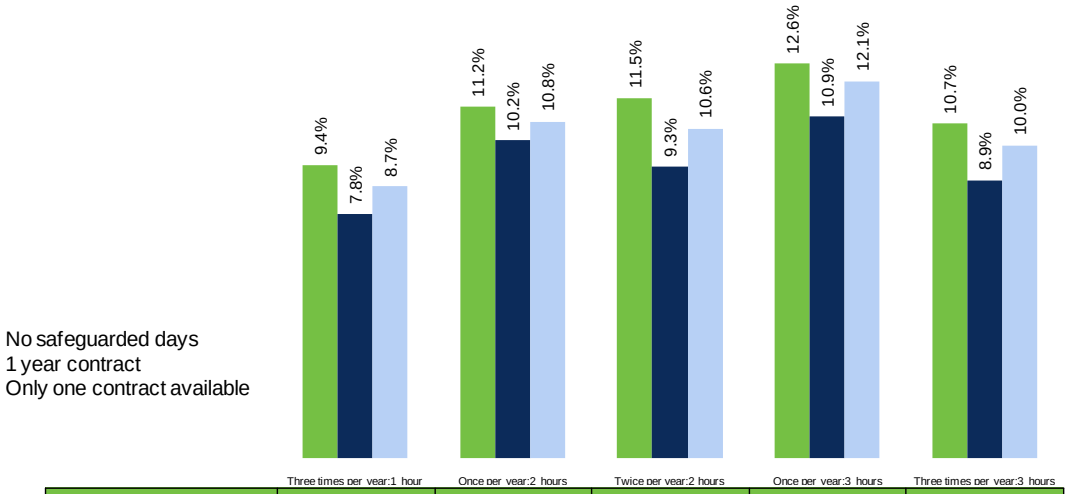
In the stated preference exercise, different types of payment were offered. The following description was given:

You could have the option of receiving financial rewards whenever the C_2C option is applied – pay-per-usage (ie if not power cuts, now rewards) or you could accept a lower fixed annual payment up front – pre-paid (regardless of whether C_2C is actually applied that year.

Chart 5.3a below summarises the variation in take-up by method of payment *for a single contract* (ie introduced with no other contracts available). For clarity, the chart focuses only on the number of times/duration combinations with the highest potential take-up.

[9] Calculated for the 95% level of confidence and derived from the standard error of the individual-level MNL estimations of take up

Chart 5.3a: Potential take-up by payment type



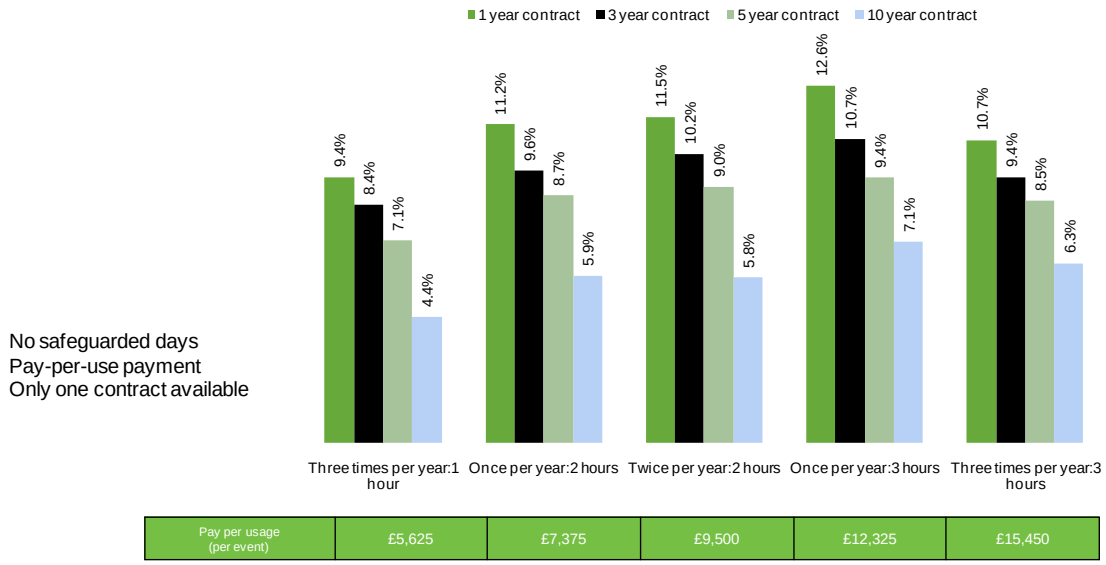
Pay per usage (per event)		£5,625	£7,375	£9,500	£12,325	£15,450
PRE-PAID (per annum)		£1,875	£2,458	£3,167	£4,108	£5,150
HYBRID	Pay per usage (per event)	£2,813	£3,688	£4,750	£6,163	£7,725
	PRE-PAID (per annum)	£938	£1,229	£1,583	£2,054	£2,575

'Pay-per-usage' payment is more attractive than 'pre-paid', while the hybrid payment is almost as strong as pay-per-usage. Given the confidence interval of ±10%, the significance of the difference between pay-per-usage and pre-paid is border-line, and not significant for hybrid v. pay-per-usage.

5.4. Take-up by length of contract

Length of contract has a significant effect on potential take-up *for a single contract* (ie introduced with no other contracts available), and shows that customers are reluctant to commit to longer term contracts, at least with their current understanding of C_2C.

Chart 5.4a: Potential take-up by length of contract

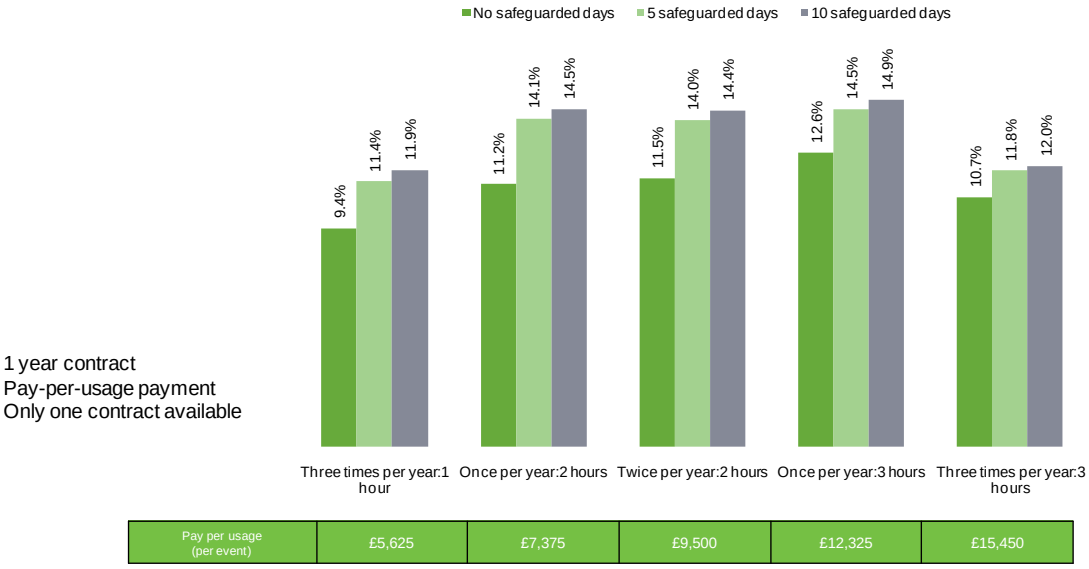


Pay per usage (per event)	£5,625	£7,375	£9,500	£12,325	£15,450

5.5. Take-up by safeguarded days

Offering five safeguarded days a year substantially boosts take-up, but 10 days offers little above this. Results are *for a single contract* (ie introduced with no other contracts available).

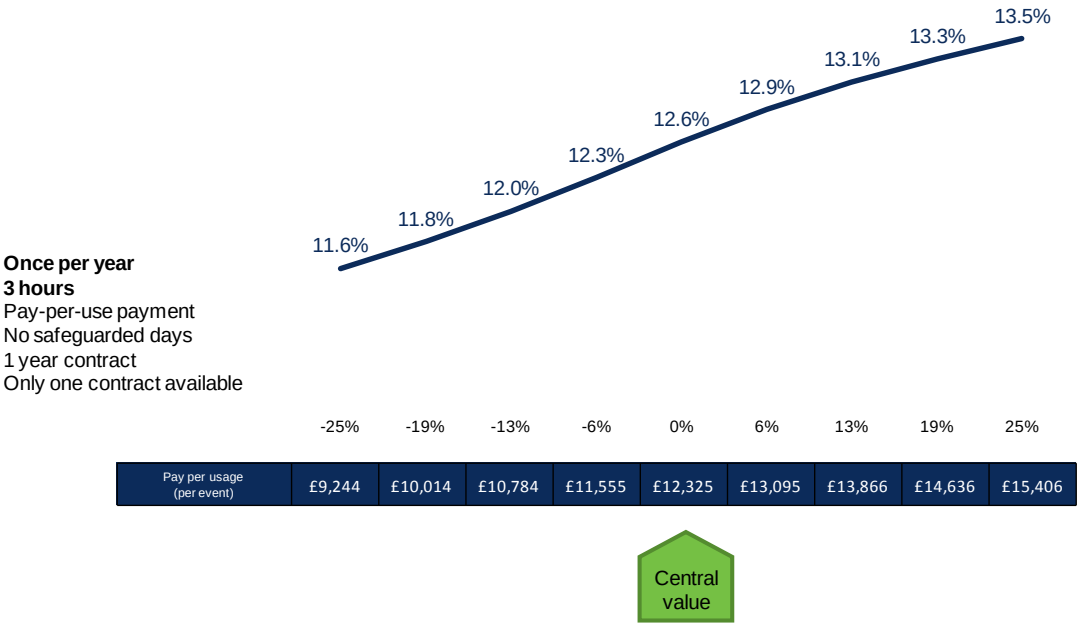
Chart 5.5a: Potential take-up by safeguarded days



5.6. Sensitivity to level of payment

Varying the calculated payment suggests an elasticity of 0.3[10] – that is, an increase of 0.3% proportional increase in take-up for every 1% increase in the maximum payment that customers can receive. Results are *for a single contract* (ie introduced with no other contracts available).

Chart 5.6a: Potential take-up by variation in financial reward



[10] ((13.5 - 12.6) / 12.6) / 25

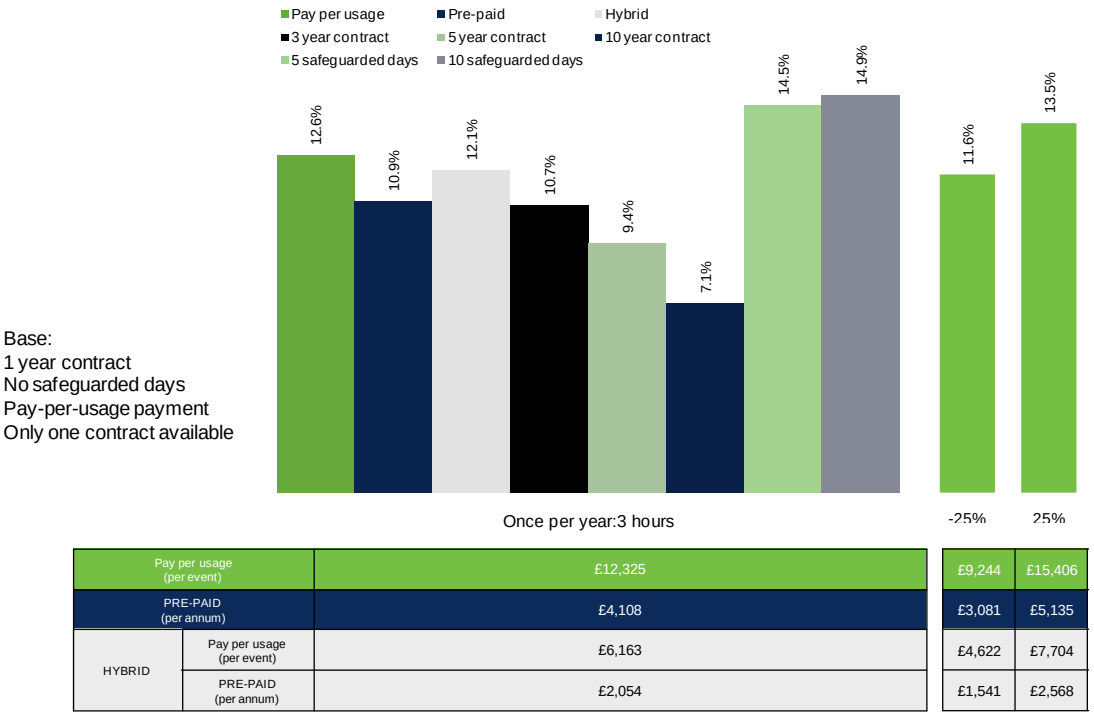
This indicates that payment has an influence on potential take-up, but as indicated in the section 5.7 below, it is a relatively small factor compared the other contract elements, at least for the payment variations tested in this research (±25% of the calculated payment).

5.7. Summary of C_2C contract elements

The contract with most appeal when introduced as a single contract (ie introduced with no other contracts available), is a one-year, 'pay-per-usage' contract with five safeguarded days, with managed interruption only once a year for up to three hours. Increasing payment by up to 25% from the offered reward of £12,325 would be likely to raise appeal further but only by approximately 10%.

Using this contract only as an example (other contracts may be more beneficial to Electricity North West, even if potential take-up is lower), Chart 5.7a below shows how take-up varies by the different components:

Chart 5.7a: Potential take-up by changes to the base example



Pay per usage (per event)		£12,325	£9,244	£15,406
PRE-PAID (per annum)		£4,108	£3,081	£5,135
HYBRID	Pay per usage (per event)	£6,163	£4,622	£7,704
	PRE-PAID (per annum)	£2,054	£1,541	£2,568

If all the above elements are offered together, with payment raised by 25%, the total potential take-up for this single contract is **15.2%** (13.6% to 16.8% margin of error).

The relative affect of each of these elements on the take-up of a *single contract* varies with the particular combination of elements; Table 5.7b below shows how the take-up for one particular single contract can build up with the different elements:

Table 5.7b: Example of incremental increases in take-up for individual components

Single contract	Payment	Take-up
10 year contract, one managed interruption per year, up to one hour duration, Pre-paid, no safeguarded days	£833 per annum	2.1%
five year contract, one managed interruption per year, up to one hour duration, pre-paid, no safeguarded days	£833 per annum	4.8%
three year contract, one managed interruption per year, up to one hour duration, pre-paid, no safeguarded days	£833 per annum	5.1%

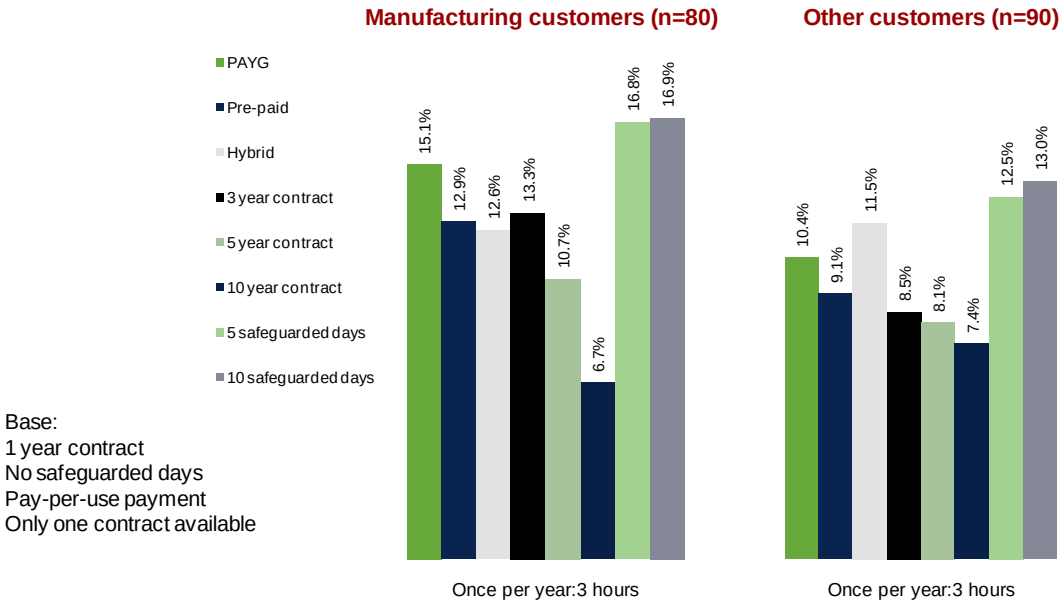
Single contract	Payment	Take-up
one year contract, one managed interruption per year, up to one hour duration, pre-paid, no safeguarded days	£833 per annum	6.2%
one year contract, one managed interruption per year, up to one hour duration, **pay-per-usage**, no safeguarded days	£2,500 max reward	7.1%
one year contract, one managed interruption per year, up to one hour duration, pay-per-usage, **five safeguarded days**	£2,500 max reward	9.2%
one year contract, **two managed interruptions** per year, up to one hour duration, pay-per-usage, five safeguarded days	£4,625 max reward	10.3%
one year contract, three managed interruptions per year, **up to two hours** duration, pay-per-usage, five safeguarded days	£10,500 max reward	10.9%
one year contract, three managed interruptions per year, **up to three hours** duration, pay-per-usage, five safeguarded days	£15,450 max reward	11.8%
one year contract, **three managed interruptions** per year, up to one hour duration, pay-per-usage, five safeguarded days	£5,625 max reward	11.4%
one year contract, **two managed interruptions per year**, up to three hours duration, pay-per-usage, five safeguarded days	£14,450 max reward	13.1%
one year contract, two managed interruptions per year, **up to two hours** duration, pay-per-usage, five safeguarded days	£9,500 max reward	14.0%
one year contract, **one managed interruption per year**, up to two hours duration, pay-per-usage, five safeguarded days	£7,375 max reward	14.1%
one year contract, one managed interruption per year, **up to three hours duration**, pay-per-usage, five safeguarded days	£12,325 max reward	14.5%

5.8. Differences by customer segment

The sample size of some segments restricts the extent to which the stated preference results can be robustly broken down but there is sufficient data to observe a significantly higher uptake among customers in manufacturing and processing versus those in non-manufacturing, as demonstrated in Chart 5.8a below.

Taking the following single contract only as an example, (one year contract, no safeguarded days, pay-per-usage payment), it can be seen that all customers have comparatively low take-up when the contract is changed to 10 years (6.7% for manufacturing and processing, 7.4% for other customers), but shorter contracts drive take-up much more for manufacturing and processing customers than other customers (eg to 15.1% one year contract for manufacturing and processing, against 10.4% for other customers). Changing from pay-per-usage to a hybrid payment structure, does not materially affect the take-up rate even for the one year contract.

Chart 5.8a: Customer comparison: manufacturing and processing vs others



Pay per usage (per event)		£12,325
PRE-PAID (per annum)		£4,108
HYBRID	Pay per usage (per event)	£6,163
	PRE-PAID (per annum)	£2,054

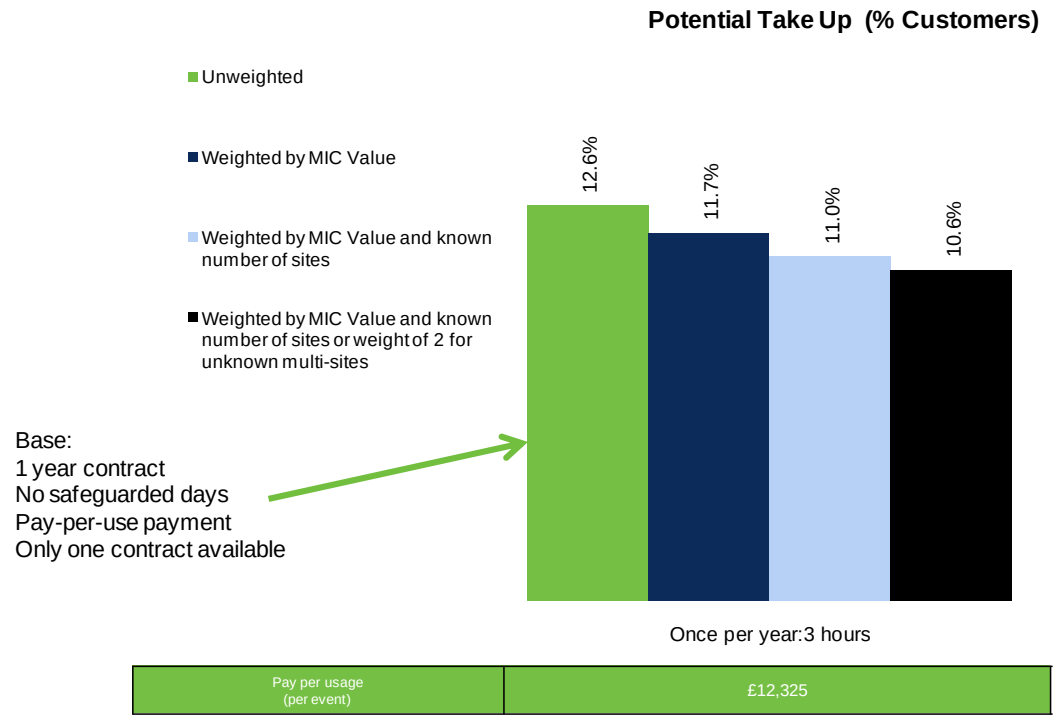
5.9. The impact of initial appeal for C_2C

The sample was divided into those who expressed an initial appeal for C_2C and those who did not. Interestingly, there were no significant differences in take-up, suggesting that a customer's initially positive or negative reaction to the concept did not translate into their responses to specific contracts. Their decisions appear to be based on the specific contract details presented to them highlighting the need to tailor contracts to a specific customer's needs.

5.10. The effect of weighting by capacity

All results have been reported as proportions of customers. To test the potential impact of current usage and multiple sites, the analysis was re-run, giving progressively more prominence to larger users. Chart 5.10a below is again only one example, using the contract with the highest potential overall take-up:

Chart 5.10a: Effects of weighting

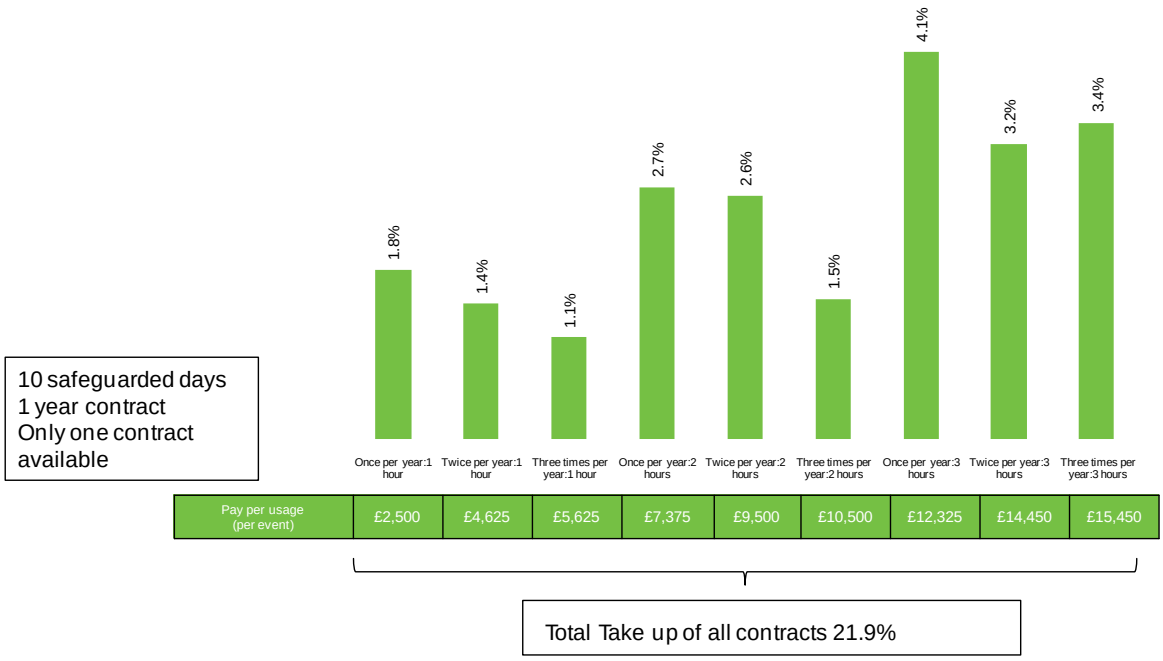


Weighting in these different ways reduces take-up by up to 2%, indicating that larger users have less propensity to take up the C_2C scheme at this point in time. This may partly reflect the fact that more people will be involved in the decisions for large and multiple-site companies, leading to more caution on the part of respondents.

5.11. The effect of a full range of contracts being offered

All results so far have been reported in terms of a single contract being available. The impact of a number of contracts all being available at the same time can be simulated from the stated preference utilities:

Chart 5.11a: Potential take-up from a full range of contracts (pay-per-usage payment)



This suggests that if all contracts are available and set at the most attractive payment method (pay per usage) and with safeguarded days, the total potential take-up would be 22%.

Using this approach, the comparison of manufacturing and processing against other customers is shown in Chart 5.11b below, where the total take-up for manufacturing and processing is 24% against 20% for other customers. The most notable difference is that manufacturing and processing are more open to the contracts with a higher number of interruptions and longer durations, compared to other customers.

Chart 5.11b: Potential take-up from a full range of contracts by manufacturing and processing vs other