

August 2015

nationalgrid

Report on the Gas Demand Side Response trial

UK Gas Transmission



Executive Summary

In response to Ofgem's *Security of Supply (SoS) Significant Code Review (SCR)*¹ the draft Demand Side Response (DSR) Framework and Methodology was developed which set out the details of a potential new gas market DSR product. The DSR product would, if implemented, provide an additional 'route to market' through which Gas Consumers could offer to turn down their consumption of gas at times of gas system stress in return for a payment. The aim is that by providing DSR prior to entering a Gas Deficit Emergency² (GDE) Gas Consumers have the potential to protect their critical loads by turning down other, less critical loads. Any DSR procured through this mechanism would only be used to try and avert a GDE.

The Authority reviewed the 'Report on the Draft Demand Side Response Framework and Methodology'³ and in May 2015 confirmed that they were satisfied that it was ready to progress to the trial phase of the process. The trial forms part of National Grid Gas' licence obligation and was incorporated as a means of assessing the effectiveness of the DSR Methodology.

This report aims to describe the gas DSR trial process that was developed to fulfil National Grid Gas' Special licence condition 8I. The web based trial was run over two phases between the 13th to 21st July 2015 and the 27th to 29th July 2015. The trial primarily sought to test the DSR process outlined in the draft DSR Framework and Methodology. In doing so it could reveal any potential issues with the existing product design so that these could be addressed and resolved within the final methodology. It also served to increase DSR awareness amongst those who participated in the trial and provided a useful platform for discussion and feedback.

Further details of the DSR trial process are described in Section two of this report.

The report contains the results of both phases of the trial and aims to highlight the behaviour exhibited by participants throughout the trial. This could also provide some indication of industry appetite for the DSR product and the volumes that could potentially become available during a GDE which may help to inform the Authority's decision on whether to progress to implementation.

¹ The SoS SCR document <https://www.ofgem.gov.uk/ofgem-publications/40922/120731gasscrp.pdf>

² UNC section Q3.2 Gas Deficit Emergency

³ <http://www.gasgovernance.co.uk/sites/default/files/Report%20on%20the%20Draft%20Gas%20Demand%20%20Side%20Response%20Framework%20and%20Methodology%20-%20Non%20confidential.pdf>

Executive Summary

Following completion of the trial, National Grid Gas is required under Special Licence Condition 8l.10 to progress with implementation of the DSR Framework and Methodology, unless the Authority directs otherwise within twenty eight days of submission of the trial report.

Contents

Executive Summary	2
Contents	4
Section 1: Background to the development of the DSR methodology and trial ...	5
Section 2: The DSR trial process	7
Development of the DSR trial	7
Trial eligibility	8
Web based trial process.....	9
First phase registration	10
DSR offers	11
DSR trial conference call.....	11
Second phase	12
Trial feedback	14
Section 3: Stakeholder Engagement	15
DSR trial engagement.....	15
Identify key stakeholders	15
Determine stakeholder requirements	15
Stakeholder communication and feedback	16
Section 4: DSR Trial Results	18
First phase trial results	18
Participants	18
First phase offers	19
First phase volumes received	19
First phase volume and price (gas-fired power stations)	21
First phase volume and price (non gas-fired power stations).....	21
Second phase trial results	22
Second phase offers	22
Second phase volume and price received	24
Appendix 1: Glossary	27
Appendix 2: GT Licence Special Condition 8I	28
Appendix 3: DSR Trial Guidance Document: Phase 1	31
Appendix 4: DSR Trial Guidance Document: Phase 2	32

Section 1

Background to the development of the DSR methodology and trial

Ofgem's Security of Supply (SoS) Significant Code Review (SCR) identified that, in the build up to a Gas Deficit Emergency (GDE), there may be benefit in developing a mechanism to further encourage Gas Consumers, to signal their willingness to reduce their gas consumption, at times of system stress in return for a payment.

During the SoS SCR review it was noted that Demand Side Response (DSR) from Gas Consumers may in some circumstances provide sufficient additional system balancing volumes to avoid entering into a GDE. This may therefore prevent Gas Consumers with more critical loads being unilaterally interrupted during a GDE Stage 2 – Firm Load Shedding⁴, whilst simultaneously mitigating the high costs and risks on the industry, associated with an escalation into a Gas Deficit Emergency.

As part of the SoS SCR Final Policy Decision Document (12 February 2014), Ofgem included a consultation on the Draft Gas Transporter Licence Obligation 'Special Condition 8I (SC8I) – Development and Implementation of a Demand Side Response Methodology for use after a Gas Deficit Warning'.

Following a consultation on the draft licence obligation, Ofgem published their Gas SoS SCR Conclusions in September 2014. This confirmed their decision to proceed with the development of a centralised DSR Mechanism and to place the licence obligation on National Grid Gas to develop the Methodology. The decision to modify the Gas Transporter licence to include Special Condition 8I took effect on 19th November 2014.

In June 2014, National Grid initiated the Gas Demand Side Response Workgroup⁵, which sought to develop the DSR Framework and Methodology in consultation with the industry. National Grid, with the help of a wide range of industry representatives carried out a series of workgroups sessions, which sought to develop and recommend a Gas DSR Methodology and Framework that may best meet the needs of all interested parties and comply with the NG Transporter licence requirements set out in SC8I.

Based on the workgroup's recommendations, National Grid drafted the DSR Methodology and Framework, which was released to the industry for consultation in December 2014. Respondents were asked to provide their views on the draft Framework and Methodology and answer a series of questions that aimed to assess the DSR service against the requirements

⁴ Firm Load Shedding is described in the UNC Section Q – Emergency 3.2.2 During stage 2 (and higher) Gas Deficit Emergency (d) National Grid NTS may require the reduction or discontinuance of offtake of gas at Firm as well as Interruptible Supply Points, in which case the provisions of paragraph 3.5 will apply.

⁵ UNC Modification Proposal 0504 - Development of a Demand Side Response Methodology for use after a Gas Deficit Warning

set out in licence obligation Special Condition 8I. The responses to this consultation were published in February 2015 when National Grid submitted the 'Report on the draft Gas Demand Side Response Framework and Methodology' to Ofgem.

In May 2015 Ofgem confirmed that they were satisfied that the Draft Methodology and Framework was ready to progress to the next phase of the process. National Grid Gas were directed to progress with a trial of the draft Methodology. The trial forms part of National Grid's licence obligation⁶ and was incorporated as a means of assessing the effectiveness of the DSR Methodology.

The trial was ran over two phases in July 2015 and the purpose of this document is to provide the results obtained through this process.

Following submission of this document National Grid will begin implementing the DSR Framework and Methodology unless the Authority directs otherwise.

⁶ SC8I.1 The Licensee must: (c) where Directed by the Authority to do so, run a trial of the approved draft Demand Side Response Methodology; (d) following such a trial, submit to the Authority a report on the outcome of the trial and a final version of the Demand Side Response Methodology amended to address issues identified by the Licensee during the trial;

Section 2

The DSR Trial Process

2.1 Development of the DSR trial

National Grid Gas aimed to develop a trial that was capable of testing key elements of the high level principles of the framework and methodology to ensure that any potential issues could be identified and then resolved within the final methodology. It also sought to provide participants with a greater awareness of DSR by giving them the opportunity to test the product and then interact with National Grid to raise questions or provide feedback. Participation in the trial and any feedback received could be used to refine the process where necessary and could help to inform the Authority's decision on whether to progress the final methodology to implementation.

The draft DSR Framework and Methodology had initially allowed for the inclusion of a paper based trial as a means of satisfying National Grid's licence obligation to conduct a trial of the proposed methodology. Following Ofgem's decision to progress the DSR Framework and Methodology to the trial phase of the process, this approach was reconsidered based upon discussions held through the DSR development workgroups in which it was suggested that there may be limited industry interest in participating in a paper based trial.

In order to run a successful DSR trial, which met the principles set out in the DSR licence condition, the trial had to be accessible and attractive to as many interested parties as possible and to this end National Grid Gas developed three possible approaches:

- Paper Based Trial – A trial which would be ran over one day and would involve participants emailing or calling in their DSR offers
- Day Event – A trial that would be ran over one day and would involve Shippers and End Consumers taking part in a DSR exercise
- Web Based Trial – A trial that would have an offer window for a number of days and would involve participants submitting their DSR offer electronically at any point during this window

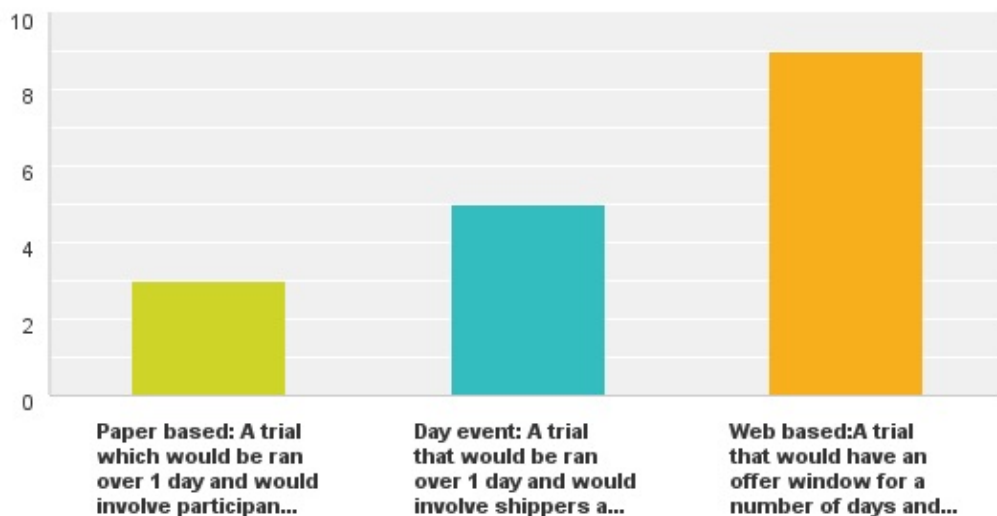
These approaches were assessed against a series of key success criteria in order to determine whether they could fulfil National Grid Gas's licence obligation and industry expectation. When assessed against these criteria, National Grid Gas determined that all three options had the potential to be able to deliver a successful trial.

To understand which of these options could most readily meet the requirements of interested parties, a survey was conducted that asked respondents to confirm which option(s) could fulfil their needs.

The results of this survey confirmed that a web based approach was the preferred trial option by interested parties. National Grid Gas confirmed that they would progress with the web based option as it was the approach that the greatest number of respondents had endorsed.

Q2 Which trial option(s) would meet your requirements? Select as many options as applicable

Answered: 12 Skipped: 1



2.2 Trial eligibility

In the interest of removing barriers to participation, for the trial only, both Shipper and End Consumers were permitted to submit DSR offers. Although this was not in line with the DSR Framework and Methodology, this decision was made based upon feedback that suggested there may be difficulties in both parties being able to commit to take part in the trial over the busy summer period and therefore maximise potential participation in the Trial.

For the web based trial, participants had to meet the eligibility criteria determined in the DSR Framework and Methodology. Trial participants were expected to meet the minimum Annual Quantity⁷ (AQ) of 2 million therms and be able to make a DSR trial offer of at least 100,000 kWhs/day. End Consumers interested in participating in the trial, and who met these minimum criteria, could either enter into discussions with their Shipper or place the DSR offer themselves.

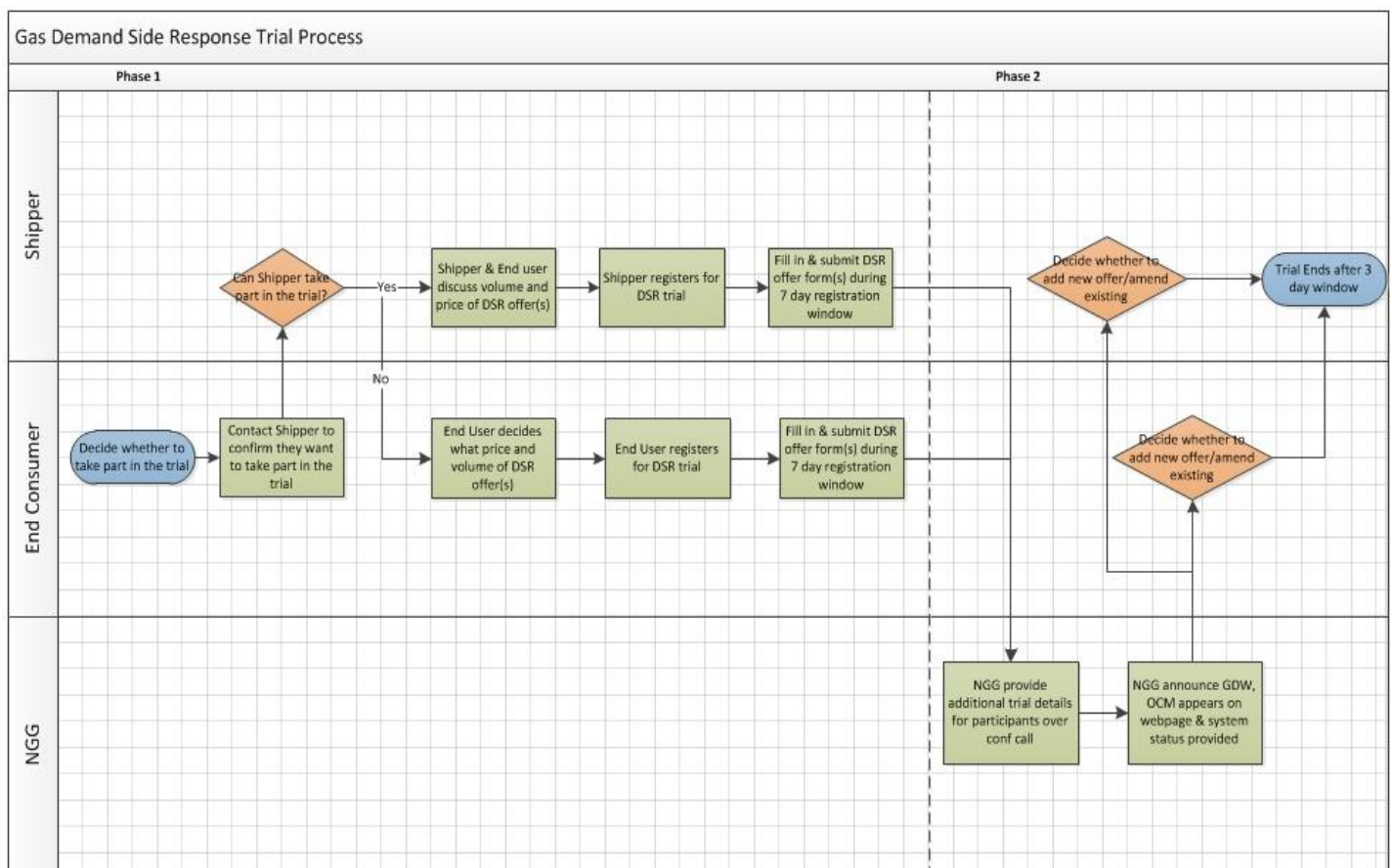
⁷ AQ referenced in UNC section TPD G1.6.7. The Annual Quantity of a Supply Point should represent reasonable assumption(s) as to the quantity offtaken from the Total System in the period of 12 months.

2.3 Web based trial process

The web based trial, where possible, aimed to simulate the processes outlined in the DSR Framework and Methodology document. Where this was not possible, for example due to limitations caused by not having the On the Day Commodity Market ⁸(OCM) system changes in place, National Grid Gas aimed to provide simple and accessible alternatives.

Participants were able to provide their DSR offers electronically during trial windows that lasted a number of days. This provided a greater degree of flexibility and accessibility to participants, enabling them to submit offers at their own convenience.

The web based trial was split into two distinct phases. The first phase invited interested parties to register for the trial and submit their initial DSR offer(s). It took place between the 13th and the 21st of July 2015. The second phase allowed participants to add new offers, or amend and withdraw existing offers based on fictional market intelligence provided by National Grid Gas. This phase of the trial took place between the 27th and 29th of July 2015.



⁸ Referenced in UNC TPD section D2.1 National Grid NTS appoints a person who has established a market for the purposes referred to in Standard Special Condition A11(22A and 22B), inserted by Special Condition C6 of National Grid NTS's Transporter's Licence, such person will provide and operate an electronic trading system by means of which Users and National Grid NTS may post and accept offers to effect Market Transactions.

2.4 First phase registration

The first phase of the trial opened on the morning of the 13th of July 2015. The National Grid Gas DSR web page⁹ was also released to coincide with the opening of the trial. The webpage contained relevant information for those wishing to understand more about DSR in general and for those looking for greater detail on the trial. This included eligibility criteria, relevant DSR documentation and information on how they could become a trial participant.

Registration forms were sent to all members of the DSR mailing list; were made available on the DSR web page; were distributed via the Joint Office mailing list and were sent out to consumer group representatives to distribute amongst their members. Additionally, the trial was advertised through external media including Connecting and LinkedIn™. By distributing the trial registration information through multiple channels National Grid Gas aimed to ensure that the maximum numbers of potential interested parties were aware of the how they could register to take part in the trial. Participants were also sent a detailed guidance document that demonstrated how to fill in the registration and offer forms in order to further support their participation.

In addition to the contact information fields included on the registration form, National Grid Gas also asked participants to specify the type of Industry that the End Consumer was from and the average daily offtake of that End Consumer. This information was useful to help National Grid Gas understand the type and range of industry participants that may be interested in taking part in the implemented DSR product.

Once a registration form was completed, participants were sent an automated response that contained their unique participant number and a link to the types of offer forms that they could populate. The unique participant number needed to be referenced when making an offer to ensure that the participant would be able to identify their offer in phase two of the trial.

The participant (Shipper or End Consumer) needed to fill in the offer form(s) that met their requirements and include the participant number, volume and price of their DSR offer(s). There was no limit on the number of forms that could be submitted, but each offer had to meet the minimum amount of 100,000 kWh/day.

⁹ The DSR webpage can be viewed at <http://www2.nationalgrid.com/UK/Industry-information/Gas-transmission-system-operations/Balancing/Gas-DSR/>

2.5 DSR offers

The offer forms imitated the types of offer(s) that a participant would be able to make if the DSR product progresses to implementation. Three types of offer form were made available;

- Daily offer – A Seven Day Profiled offer enable the participant to offer differing values of volume and price for each day of the week (the same values can be offered each day if preferred). This allowed the participant to tailor the offer to their load profile. The offer would continuously roll over once the initial seven day profiled offer had been completed. These offers would be accepted on an individual day basis and would not be accepted as a seven day lot
- Fixed offer - A multi day offer allowed the participant to offer DSR energy quantity for a set duration of time at a pre-determined price up to a maximum of seven days e.g. a gas consumer could offer to turn down their DSR energy quantity for four days in a row at a set price. A multi day offer would be accepted as one offer for the number of days specified
- A within day offer allowed the participant to offer DSR energy quantity at a set volume and price for one day

The offer(s) could be made in multiple and separate tranches which could be priced individually according to the value of Lost Load (VoLL) associated with each tranche; but each tranche had to meet the eligibility criteria e.g. minimum size of 100,000 kWhs/day.

All offers received were auto-populated in an offer stack that was owned and collated by National Grid Gas. First phase offers could be submitted at any point over a seven day window that lasted from the 13th July 2015 until 5pm on the 21st of July 2015. There were a series of reminders that were sent by email to the DSR mailing list members over this time to inform registered participants and interested parties that they needed to submit their offers by this deadline.

2.6 DSR trial conference call

In order to ensure that participants were comfortable with the process for the second phase of the trial, National Grid Gas held a teleconference prior to the second phase commencing. On the 23rd of July 2015 phase one participants were invited to attend a teleconference that was aimed at running through the phase two guidance document¹⁰ and providing a forum for DSR trial questions. National Grid Gas also invited anyone who could not attend the teleconference

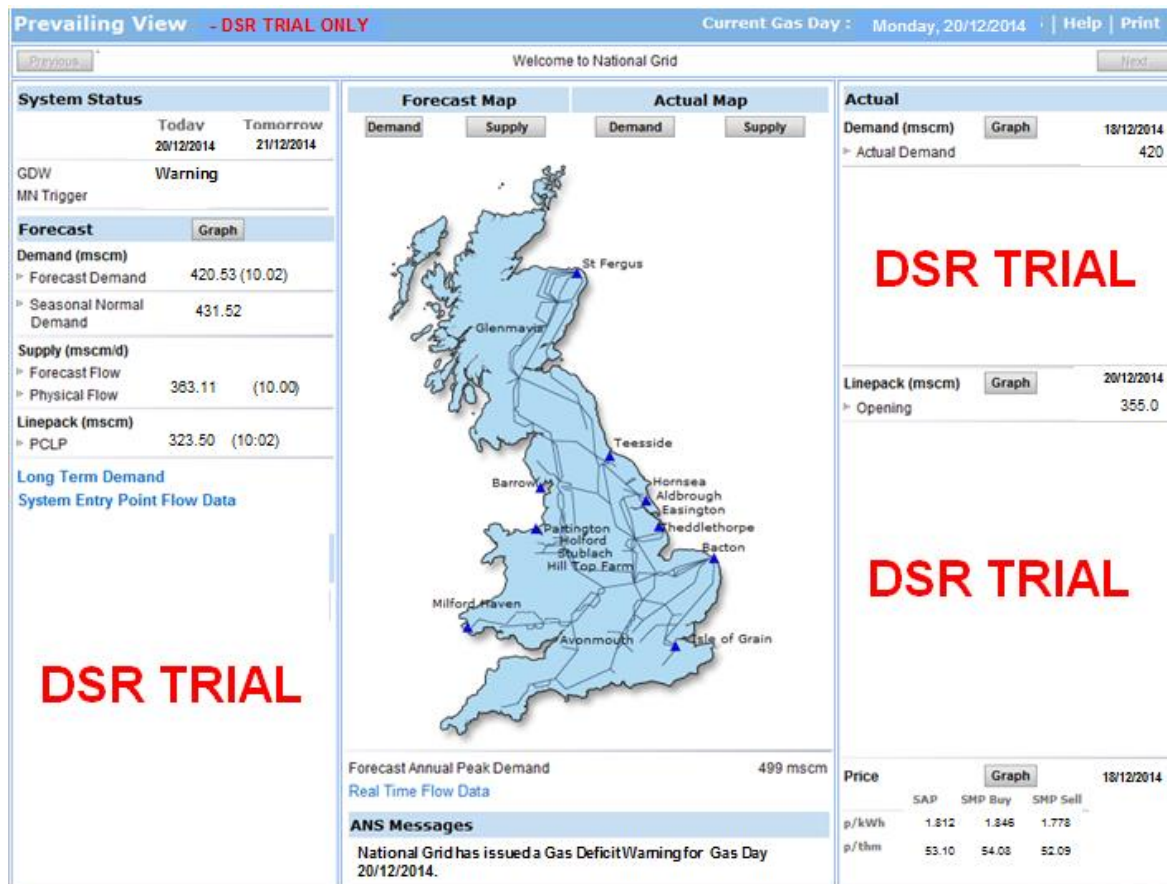
¹⁰ The phase two guidance document can be found on the Gas DSR webpage <http://www2.nationalgrid.com/UK/Industry-information/Gas-transmission-system-operations/Balancing/Gas-DSR-Trial/>

to call or email directly with any questions or queries they may have had. The conference call received three participants and a further participant requested a separate call back.

2.7 Second phase

The second phase of the trial began on the morning of the 27th of July 2015. For the second phase, only registered participants who had submitted offers in the first phase could take part. Participants were informed of the second phase of the trial via an email that contained a mock Gas Deficit Warning¹¹ (GDW). Within this email there was also a link to an image of a mock Prevailing View screen from Market Information Provision Initiative¹² (MIPI). This screen provided high level market intelligence including the gas supply and demand for this fictional gas day.

The diagram below is the Prevailing View screen provided to the DSR trial participants at the beginning of the second phase of the trial. The image aimed to replicate the type of information that would be available to the industry during a real GDW.



¹¹ Gas Deficit Warning ref: UNC Section V5.9

¹² MIPI can be accessed at <http://www2.nationalgrid.com/uk/industry-information/gas-transmission-operational-data/>

A further email was sent to participants, which contained the unique offer numbers assigned to all of the offers they had submitted during phase one. These offer numbers needed to be referenced if the participant wanted to amend or withdraw any of their existing offers. This allowed National Grid Gas to match the amended or withdrawn offer forms with the existing offer.

After the GDW and offer number emails had been sent, a mock OCM style table was released on the gas DSR webpage. This table displayed all of the offers that were submitted during the first phase of the trial, but the content was limited to the participant number, offer number, volume and price so as to not release confidential participant information.

The image below is the OCM style table that was present on the DSR webpage for the second phase of the trial. The offers are arranged in price order with the lowest price at the top of the stack, and the highest priced offers at the bottom.

Gas DSR Trial First Phase Offers

			Offer number	Participant number	Volume (kWh/day)	Price (p/thm)
1			28	252	0	0
2			29	252	150000	45
3			18	250	20500000	90
4			47	251	19200000	94.44
5			46	251	19200000	94.44
6			45	245	1000000	99
7			15	246	1000000	100
8			31	249	303518	100
9			35	249	135329	100
10			34	249	315784	100
11			33	249	413747	100
12			19	250	82000000	110
13			17	250	102500000	110
14			44	248	185000	143.5
15			43	248	2000000	143.5
16			21	251	1950000	144
17			23	251	1950000	144
18			38	245	2700000	245
19			39	245	2700000	255
20			40	245	2700000	315
21			42	244	250000	500

Participants could use this information to make a decision as to whether they wanted to add new offers or amend or withdraw existing offers using the appropriate forms that were attached within the GDW email.

To input a new offer the participant could use offer forms that were identical to those provided during the first phase. For amended offers or withdrawn offers there were new offer forms created; these offer forms contained the inclusion of a field that required the unique number of the existing phase one offer to be populated.

Upon receiving the phase two offers National Grid Gas updated the offer stack and published changes on the OCM style table on the DSR webpage. Throughout the course of the three days that the second phase remained open, all changes were updated in this table. This allowed a participant to continue to react to the behaviour of their fellow participants over the duration of the second phase of the trial.

The trial ended at 5pm on Wednesday the 29th July 2015. After this point, National Grid Gas collated the results of the trial and on Monday 3rd August 2015, released an email update to all members of the DSR mailing list providing the volume received during the trial and thanking them for their participation.

2.8 Trial Feedback

As part of National Grid's aim to understand whether the draft DSR Framework and Methodology had the ability to fulfil participant's requirements, a short survey was sent to participants after the trial completion. The survey asked participants whether the offer forms had provided them with the necessary flexibility to be able to participate and whether they had any additional feedback about DSR. Any feedback provided could be used to help inform whether amendments to the methodology were required.

Section 3

Stakeholder Engagement

3.1 DSR Trial Engagement

National Grid Gas were mindful that DSR stakeholders have many priorities and commitments that may impact their ability to participate in the trial. However, in order to develop and run a successful DSR trial, which met the principles set out in the DSR licence condition, it was essential that the trial attracted as many interested parties as possible. To achieve this, National Grid Gas aimed to make the trial as accessible and flexible as possible so that the maximum number of interested parties had the opportunity to participate should they wish to.

3.2 Identify key stakeholders

National Grid Gas used the existing stakeholder list obtained through the methodology development stage of the process as the foundations for the DSR trial stakeholder list. This ensured that parties who had an interest in the DSR development stages were also included in the DSR trial communications.

National Grid Gas separated the stakeholder list into specific categories including Shippers, Consumer Group Representatives and interested parties so that communications could be better tailored to each group.

These stakeholder groups were created so that communications could easily be managed and reported on. New interested parties could become a member of the mailing list by using the DSR subscription function that was published on National Grid's LinkedIn™ page and through the Connecting article - 'Security Measures'¹³.

3.3 Determine stakeholder requirements

To understand the type of trial that interested parties would be most willing to participate in, and how they thought their requirements could be most readily met, National Grid Gas undertook a short survey asking for opinions on the proposed trial approach. The approaches that National Grid developed aimed to address how the maximum number of interested parties could gain a greater awareness of DSR without imposing a significant time commitment for participants over the busy summer period.

The survey received twelve responses with the web based trial approach being favoured. National Grid Gas listened to feedback received by stakeholders and selected the preferred option as the trial approach. By selecting the preferred option National Grid Gas hoped to

¹³ The Connecting article 'Security Measures' can be found at <http://www.nationalgridconnecting.com/security-measures/>

ensure increased numbers of participation. The Day Event approach was the second most popular option with feedback received that emphasised the merit of having face-to-face interactions with National Grid Gas on the DSR Methodology. National Grid recognise the benefits of having a Day Event as a means of increasing awareness of the final methodology and this is something that would be considered closer to implementation.

A further survey was also sent to stakeholders requesting their feedback on whether they would prefer to take part in a trial that had one phase or two phases. The five respondents all said that they would prefer to take part in a trial with two phases. National Grid Gas listened to this stakeholder feedback and used it to shape the development of the web based trial approach.

National Grid Gas also invited participants to provide comments and feedback at any point during the DSR trial. This was further supported by a teleconference call that was held between phase one and phase two and that aimed to provide a platform for participants to raise any questions or concerns that they may have. As National Grid Gas were conscious of the fact that not everyone may be able to attend the call, participants were also encouraged to contact them at their convenience and through their preferred method. Consequently National Grid Gas responded to questions that were submitted both through email and via telephone throughout the course of the trial process.

3.4 Stakeholder communication and feedback

Stakeholders are increasingly turning to alternative forms of media to access information. National Grid Gas wanted to utilise some of these forms of media to communicate with its stakeholders and ensure that all potential interested parties were aware of the DSR trial. In order to achieve this, a number of tools were used to promote the trial. An article on the DSR trial was published on National Grids Connecting website. The article aimed to provide an overview of the DSR trial and inform interested parties about how they could participate. It also included the function to subscribe to the mailing list thus ensuring that additional interested parties not included in the original mailing list could join.

Further promotion of the trial was conducted using National Grid's LinkedIn™¹⁴ account. The Connecting article was included on National Grid's LinkedIn™ page and was advertised to potential Interested parties by using targeted promotion. As a result, the article appeared 59,288 times on relevant news feeds in LinkedIn™ with seventy four people liking, sharing or adding comments and a further twenty nine people becoming 'Followers' of the National Grid page. Following publication of the Connecting article and subsequent advertising on

¹⁴ The National Grid LinkedIn™ site can be accessed at:
<https://www.linkedin.com/company/5913>

LinkedIn™, an additional ten external parties joined the DSR mailing list thus increasing interest and potential participation in the trial.

In order to further support DSR education and awareness a Gas DSR webpage was created. The webpage aimed to provide an additional resource for interested parties to use to increase their knowledge and affirm their understanding of the methodology and trial.

Throughout the DSR trial, National Grid Gas used email marketing software to coordinate the communication campaign. The software was used to split the mailing list into groups of stakeholders and then tailor communication based on these groups. It was also used to understand the level of engagement in each email communication that went out; it does this by calculating the percentage of recipients that have received and opened the email. This was useful when determining whether to send follow up communications and reminders. A total of twenty nine email communications were sent out using this method and there were sixty four external subscribers in the combined mailing lists.

Upon completion of the trial, National Grid Gas once more sought to understand the opinions of the trial participants by asking them to undertake a survey giving their opinions on whether the 'trial offer forms' provided them with the flexibility that they required. They were also asked whether they had any additional feedback on the trial. National Grid Gas was keen to understand whether there was any feedback that would necessitate changes to the DSR Framework and Methodology. Three participants chose to fill in this survey. Two of the participants felt that the offers forms did provide them with required level of flexibility and had no further feedback. One participant thought that the offer forms didn't enable the required level of flexibility. A follow up conversation with this participant revealed that there was a misunderstanding in the way the offer forms could be used and that the flexibility they required would be available under the draft DSR Framework and Methodology.

DSR Trial Results

4.1 First phase trial results

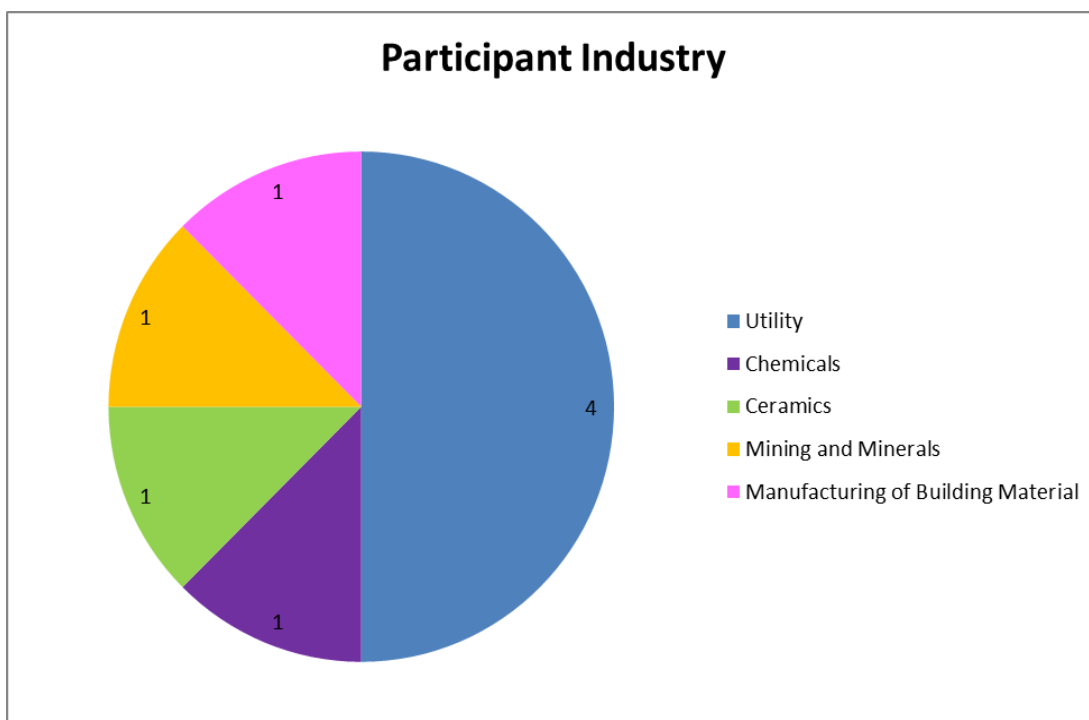
The DSR trial was an opportunity to test some of the principles of the draft DSR Framework and Methodology to determine whether there were any additional changes that needed to be made before progressing to implementation. Although the results cannot give us a definitive view of the DSR offers that may be available during a GDW, it does provide an indication of the level of interest in participating in the DSR mechanism and the potential volumes that could be made available during times of system stress. It also provides some information on the types of industry that may be in a position to offer DSR volume, and the prices that might be offered.

The first phase of the trial took place between the 13th and 21st of July 2015. For the purpose of the report National Grid Gas have used offers made for 'Day One' of a multi-day or seven day profiled offer.

4.2 Participants

During the first phase ten interested parties registered for the trial. Of these ten, eight progressed to participation in the trial by submitting DSR offer forms.

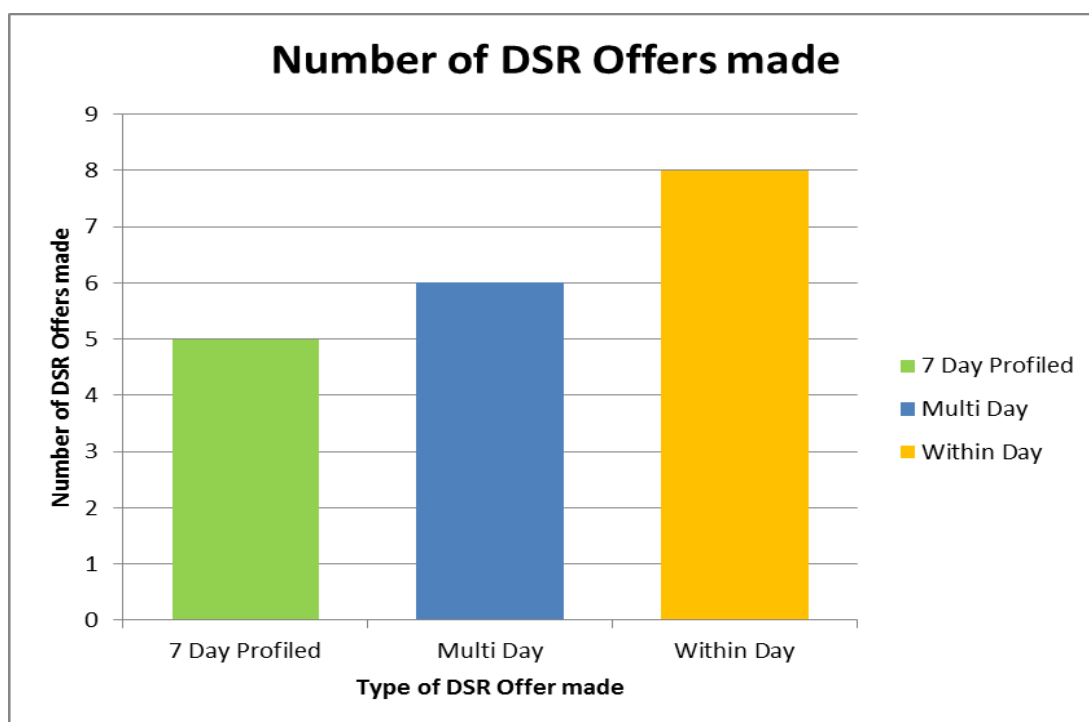
Of the eight participants who submitted offers, five were Shippers and three were End Consumers. The graph below shows the industries that the eight participants represented.



Within the chart above we can see that there was a fairly diverse split, with the eight participants representing five different types of industry. Where 'utility' was used as the participant industry type this generally referred to Shippers inputting offers on behalf of an End Consumer that was a gas fired power station. The variety of participant industries suggests that the draft DSR Framework and Methodology does not preclude or favour any particular industry.

4.3 First phase offers

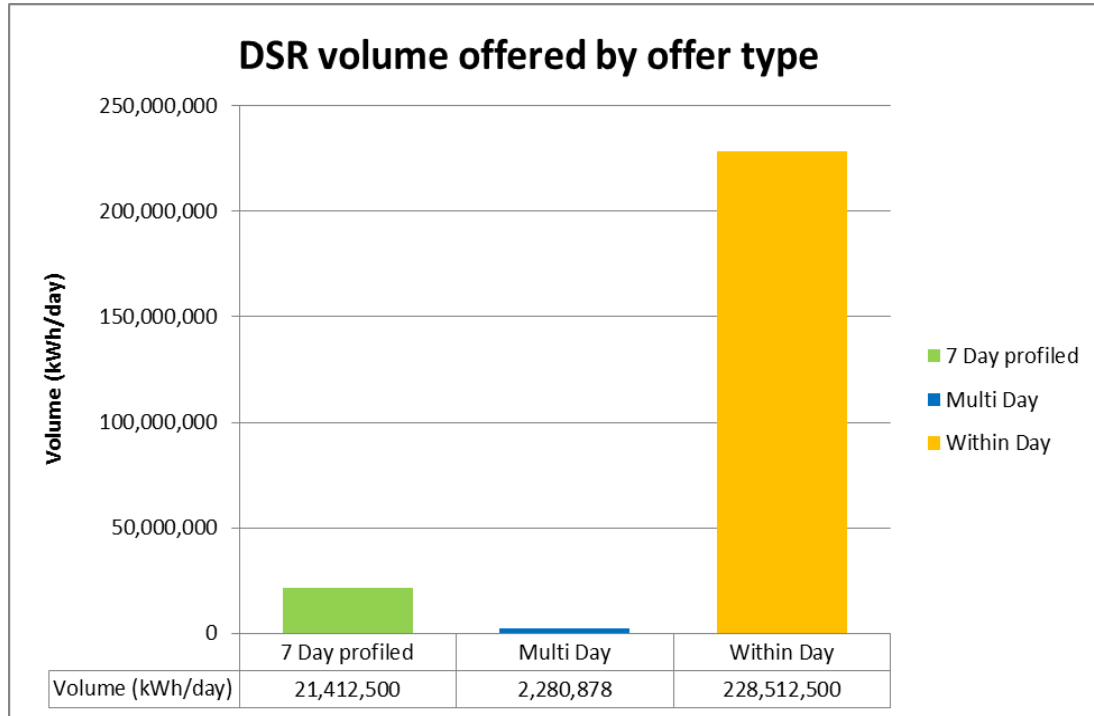
During the first phase there were nineteen offers submitted by the eight participants. Twelve of these offers were submitted by Shippers and seven were submitted by End Consumers. The participants had a choice of submitting their offers using three offer forms; seven day profiled, multi day or within day. The graph below shows that there was a relatively even split between which offer forms participants chose to submit, with five offers being submitted using the seven day profiled form, six as multi day and eight as within day offers.



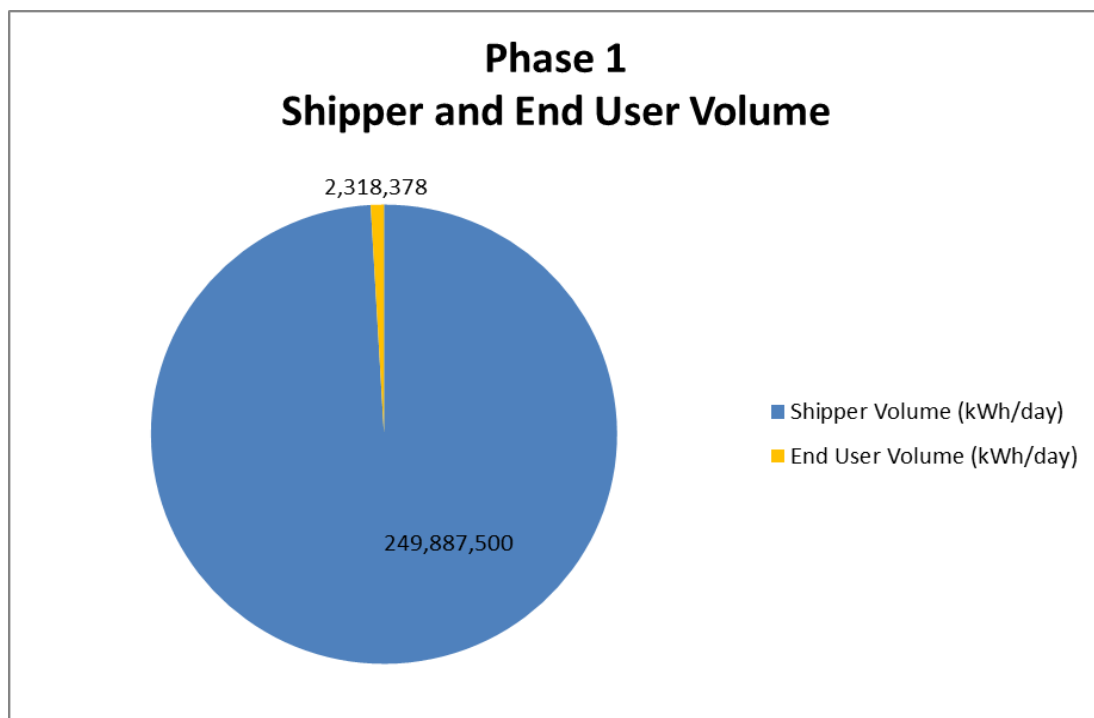
4.4 First phase volume received

The total volume received during this phase was 252,205,878 kWh/day (approx. 23mcm/day). Although, the type of offer forms used had been evenly split, the volume

submitted for each of these offer form types differed significantly. Over ninety percent of the DSR volume offered was done so using the within day form. By contrast, the multi day offer type accounted for just under one percent of the total volume offered during the first phase of the trial.



The majority of DSR volume offered was submitted by Shippers. The graph below shows the amount of DSR volume submitted by Shippers and the amount submitted by End Users.

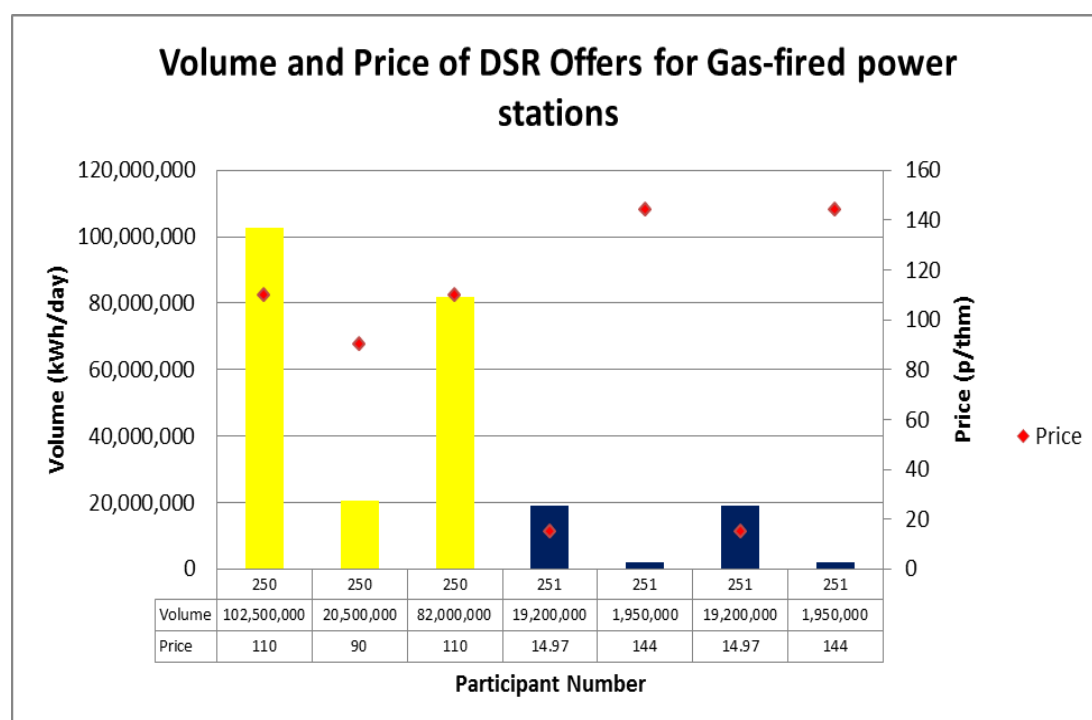


It is important to note that the volume submitted by Shippers was significantly higher because a number of offers that were submitted on behalf of gas-fired power stations. The gas-fired power stations could offer significantly higher volumes than large industrial consumers and so for the next set of graphs, these types of offers have been separated to better show the volumes and prices submitted by each group.

4.5 First phase volume and price (gas-fired power stations)

The highest price submitted during phase one was 325 pence per therm and the lowest price was 14.97 pence per therm. There was an average price of one hundred and 120 per therm.

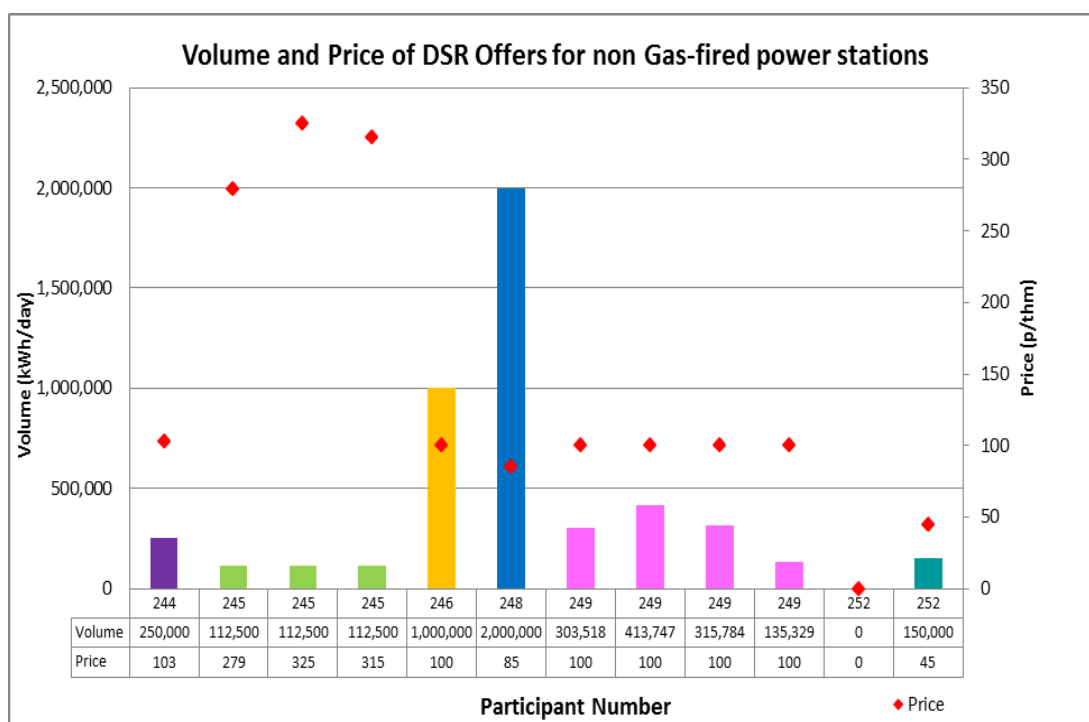
The below graph shows the volume and price offered on behalf of gas-fired power stations.



The highest volume offered throughout phase one was 102,500,000 kWh/day which was submitted on behalf of a gas-fired power station.

4.6 First phase volume and price (non gas-fired power stations)

In contrast, the below graph shows the volume and price of DSR offers that were made for non gas-fired power stations.



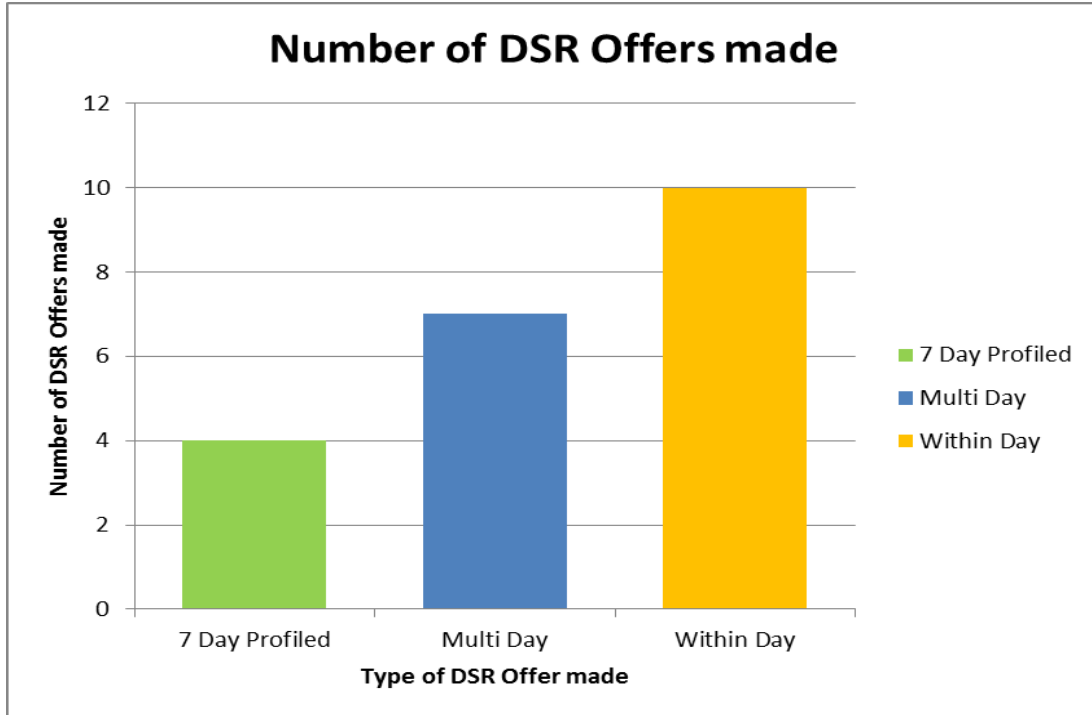
The prices received by non gas-fired power station ranged from 45 pence per therm to 325 pence per therm. There was a much larger difference in price amongst the non gas-fired power station group. This may have been due in part to the greater difference in industry type and the processes that these particular End Consumers ran. Where a zero figure is present this indicates that this was a seven day profiled offer where no volume was available on the first day.

4.7 Second phase trial results

The second phase of the trial took place between the 27th and 29th of July 2015. During this phase, four of the existing participants chose to submit new offers, or amend or withdraw existing offers. This resulted in there being twenty one 'live' offers upon completion of the second phase. The live offers were visible on the OCM style table that was available on the Gas DSR webpage.

4.8 Second phase offers

Upon trial closure, twelve of the offers on the OCM table were existing offers that remained unchanged from the first phase; there were five new offers, four amended offers and five withdrawn offers. The below graph shows the type of offer forms that were used within the second phase.



When compared to the first phase, both the within day and multi day offers saw increases in use whereas use of the seven day profiled offer form reduced from five offers to four offers in phase two. The within day offer type was the preferred option in both phases.

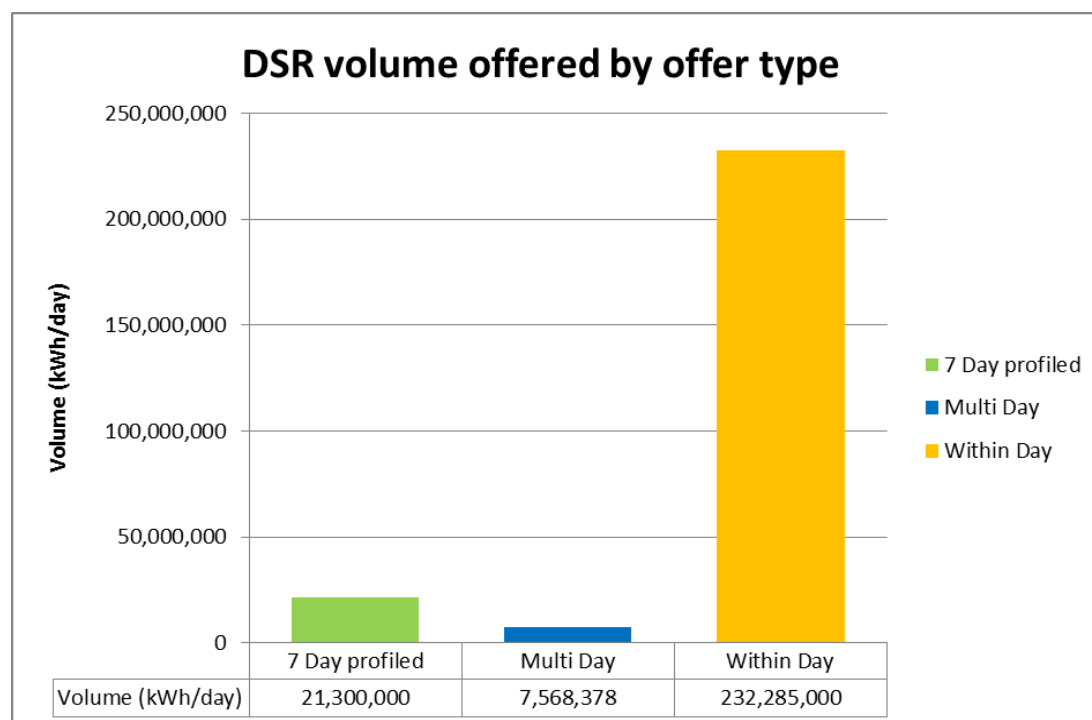
The four, seven day profiled offers that were present upon completion of the trial had been submitted by two participants. The price remained consistent for all of the days that offers were submitted but the volume for two of the offers altered over the seven day duration. Only one of the four seven day profiled offers could provide DSR volume over the weekend period. The below table shows the DSR volume that was offered for the seven day profiled offers.

Offer type	Mon Vol	Tues Vol	Weds Vol	Thurs Vol	Fri Vol	Sat vol	Sun Vol
7 day	1,950,000	1,950,000	1,950,000	1,950,000	1,950,000	0	0
7 day	0	0	0	200,000	0	0	0
7 day	150,000	150,000	200,000	150,000	150,000	150,000	150,000
7 day	19,200,000	19,200,000	19,200,000	19,200,000	0	0	0

4.9 Second phase volume and price received

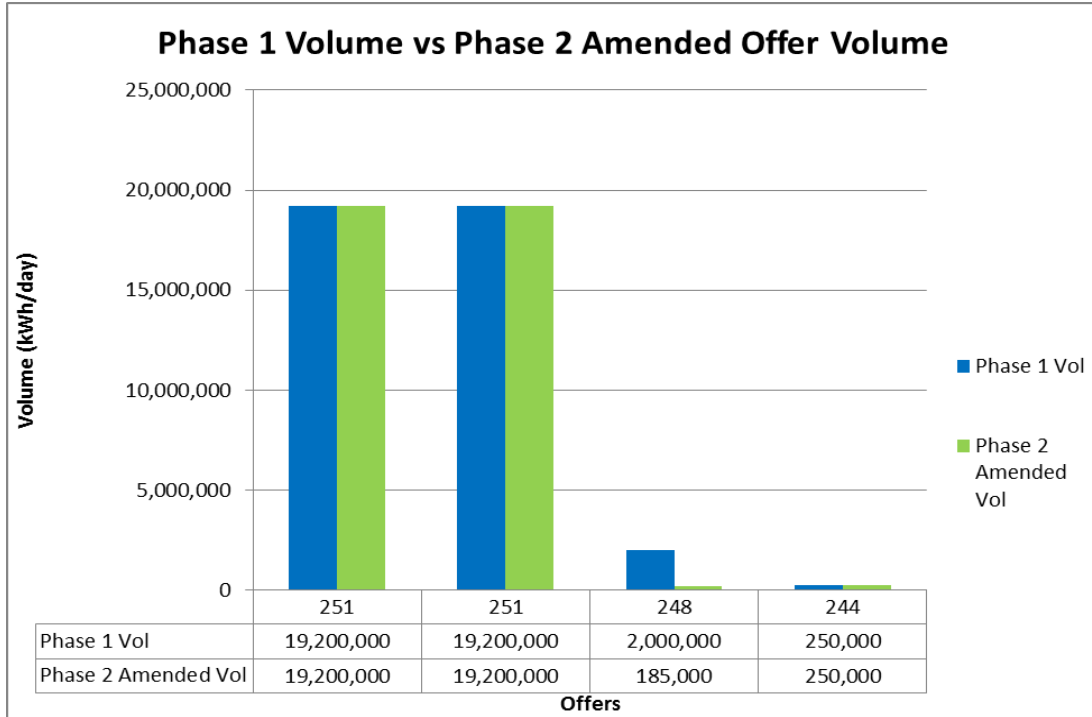
The total volume offered upon completion of the second phase of the trial was two 261,153,378 kWh/day (approx. 24mcm/day). This was an increase of 8,947,500 kWh/day from phase one.

Similar to the first phase, the volume in the second phase was offered predominantly using the within day offer form. The graph below shows the type of offer forms participants used to make DSR offers during the second phase of the trial.

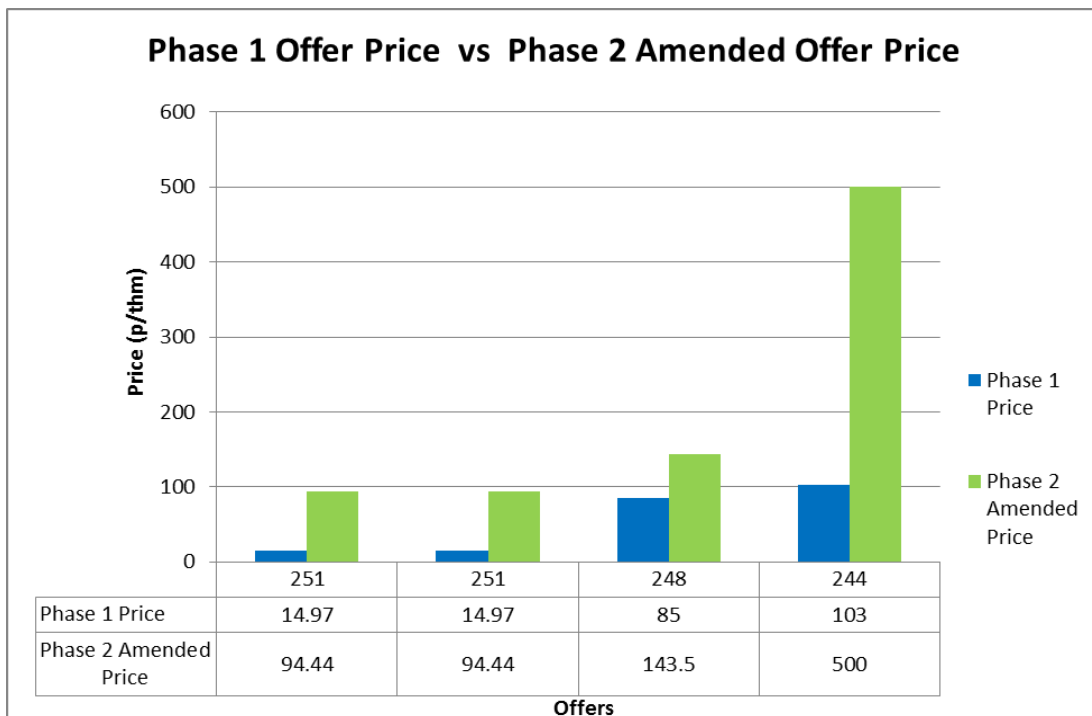


During the second phase there were five new offers. The new offers came from two separate participants and came to a total volume of 11,100,000 kWh/day. Prices for these new offers ranged from 99 pence per them to 315 pence per them.

Upon completion of the trial there were four offers that were amended in phase two. There was also one further amended offer that was withdrawn before the end of the trial. The four amended offers had a total volume of 38,835,000 kWh/day which was a decrease in volume of 1,815,000 kWh/day from the first phase. Only one of the four amended offers decreased in volume, the remaining three amended price only. The below graph shows the phase one volume against the amended phase two volume.



All of the participants who amended their DSR offers chose to alter their offer price. The highest price received during the trial was 500 pence per therm; this was for a phase two amended offer that rose 397 pence per therm from 103 pence per therm in phase one to 500 pence per therm in phase two. The graph below shows the phase one offer price for the amended offers against the phase two amended price.



Within the second phase of the trial there were five offers that were withdrawn. Two of these were withdrawals of offers made in phase one, and three of these were withdrawals of offers submitted in phase two. All of the withdrawn offers were submitted by one participants and had a total volume of 562,500 kWh/day.

Appendix 1

Glossary

In the context of the Gas DSR trial report the following definitions should be applied to the terms outlined below;

Demand Side Response (DSR) - The reduction in an Eligible DMC's rate of gas offtake in the period following declaration of a GDW

DSR Offer - Each individual trade/tranche offer that may be submitted on to the OCM Locational platform

Firm Load Shedding (FLS) - During Stage 2 of a GDE; upon direction from the Network Emergency Coordinator (NEC), National Grid and relevant Transporters may instruct the End Users to curtail gas offtake at specified offtakes

GDE - Gas Deficit Emergency ref: UNC TPD Section Q3.2

GDW - Gas Deficit Warning ref: UNC TPD Section V5.9

MIPI - Serves gas market participants with a wide-ranging view of data relevant to the operational behaviour of the gas network.

Multi-Day – A Offer to reduce demand offtake for a period greater than one gas Day up to a maximum of 7 gas Days ref: UNC TPD Section D4

OCM Locational Market - The market that DSR Offers may be submitted upon

Schedule

Special Condition 8I: Development and implementation of a Demand Side Response methodology for use after a Gas Deficit Warning

Introduction

8I.1 The Licensee must:

- (a) develop a methodology (the “Demand Side Response Methodology”) for assessing and accepting Demand Side Response Offers;
- (b) submit a draft version of the Demand Side Response Methodology to the Authority for approval no later than 1st March 2015;
- (c) where Directed by the Authority to do so, run a trial of the approved draft Demand Side Response Methodology;
- (d) following such a trial, submit to the Authority a report on the outcome of the trial and a final version of the Demand Side Response Methodology amended to address issues identified by the Licensee during the trial; and
- (e) where Directed by the Authority to do so, implement the Demand Side Response Methodology.

Part A: Development of a Demand Side Response Methodology

8I.2 The Licensee must develop the Demand Side Response Methodology in consultation with interested parties.

8I.3 The Licensee must use reasonable endeavours to ensure that it develops the Demand Side Response Methodology in accordance with the principles set out in paragraph 8I.4 (the “Demand Side Response Methodology Principles”).

8I.4 The Demand Side Response Methodology Principles are that the Demand Side Methodology must:

- (a) ensure that any party making a Demand Side Response Offer is a party to the Uniform Network Code;
- (b) set out the criteria for determining that particular “DMC” Supply Point Components are “DMC” Supply Point Components in respect of which a party may not make Demand Side Response Offers;
- (c) allow the Licensee to accept Demand Side Response Offers only where a Gas Deficit Warning is in place or within Stage 1 of a Gas Deficit Emergency;
- (d) demonstrate compatibility with existing market arrangements by setting out the manner in which any Demand Side Response Offers accepted by the Licensee are to be treated as Eligible Balancing Actions and included in the System Clearing Contract, System Marginal Buy Price and System Marginal Sell Price;
- (e) promote, and further facilitate, parties making Demand Side Response Offers to the Licensee through open and transparent market-based arrangements;
- (f) not unduly preclude the emergence of commercial interruption arrangements;
- (g) minimise distortions and unintended consequences on existing market arrangements and the principle of parties balancing their own positions in the wholesale gas market; and
- (h) ensure that Demand Side Response is procured in a manner consistent with the Licensee’s duties under the Act and, in particular, the Licensee’s obligation to operate the pipe-line system to which this licence relates in an efficient, economic and co-ordinated manner.

Part B: Submission, approval and publication of the Demand Side Response Methodology

8I.5 The draft Demand Side Response Methodology submitted by the Licensee must be accompanied by any written representations (including any proposals that have not been accepted by the Licensee) that were received from interested parties during the consultation process and have not been withdrawn.

8I.6 The Authority will make its decision on whether to approve the Demand Side Response Methodology within 90 days beginning on the date on which the Licensee submits the Demand Side Response Methodology. In considering whether to approve the draft Demand Side Response Methodology, the Authority may have regard to whether it is consistent with the Demand Side Response Methodology Principles.

8I.7 Where the Authority approves the draft Demand Side Response Methodology, it may direct the Licensee to:

- (a) conduct a trial of the draft Demand Side Response Methodology; and
- (b) publish the draft Demand Side Response Methodology, in accordance with Part C of this condition.

8I.8 If the Authority does not approve the draft Demand Side Response Methodology, it may Direct the Licensee to consult with interested parties and submit to the Authority for approval a revised draft Demand Side Response Methodology in accordance with any conditions and within such a timescale as may be set out in its Direction.

Part C: Trial and implementation

8I.9 Where the Authority directs the Licensee to conduct a trial pursuant to paragraph 8I.7 above, the Licensee must:

- (a) conduct a trial of the draft Demand Side Response Methodology in order to assess the effectiveness of the Demand Side Response Methodology proposed by the Licensee; and
- (b) within 28 days beginning on the last day of the trial, submit to the Authority a report on the outcome of the trial and any proposed changes to the draft Demand Side Response Methodology.

8I.10 Following completion of the trial and the making of submissions to the Authority pursuant to paragraph 8I.9 above, unless the Authority directs otherwise within 28 days, the Licensee must:

- (a) develop appropriate modifications to the Uniform Network Code and other processes and systems to enable it to implement the Demand Side Response Methodology;
- (b) once the modifications, processes and systems are complete, implement the Demand Side Response Methodology as soon as is reasonably practicable; and
- (c) publish the final Demand Side Response Methodology on its website and in such other manner as the Authority may direct.

Part D: Exception to compliance with condition

8I.11 The Licensee is not required to comply with this condition to such extent and subject to such conditions as the Authority may from time to time direct.

8I.12 The Authority may, following consultation with the Licensee and interested parties, direct that the Licensee must temporarily or permanently cease operation of the Demand Side Response Methodology.

Part E: Revising the Demand Side Response Methodology

8I.13 The Licensee must, if so directed by the Authority, and in any event at least once in each

Formula Year, review and if appropriate revise the Demand Side Response Methodology implemented in accordance with paragraph 8l.10 in consultation with interested parties.

8l.14 The consultation must allow a period of not less than 28 days in which interested parties can make representations or objections to the Licensee.

8l.15 Within seven days after completing the consultation, the Licensee must send to the Authority:

- (a) a report on the outcome of the review;
- (b) a statement of any proposed revisions to the Demand Side Response Methodology that the Licensee (having regard to the outcome of the review) reasonably considers would better achieve the Demand Side Response Methodology Principles; and
- (c) any written representations or objections (including proposals for revising the statement that have not been accepted by the Licensee) that were received from interested parties during the consultation process and have not been withdrawn.

8l.16 The Licensee may revise the Demand Side Response Methodology only in accordance with any revisions set out in the statement required by paragraph 8l.15(b) and only if the Authority has not directed otherwise within 28 days of receiving the documents referred to in paragraph 8l.15 above.

Appendix 3

DSR Guidance Document: Phase 1

The 'Gas DSR trial Registration and Offer Guidance: Phase 1' document was sent to everyone on the DSR mailing list along with the trial registration form. It was created to aid participants who wanted to take part in the Gas DSR trial but wanted more detail on how to take part.

You can view the whole presentation by right clicking on the image and selecting 'Presentation Object' and then 'Open'.

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Gas DSR Trial Registration and Offer Guidance – Phase 1



Appendix 4

DSR Guidance Document: Phase 2

The 'Gas DSR Trial Guidance: Phase 2' document was sent to everyone participated in the first phase of the trial. It was created to support participants who wanted to take part in the second phase of the trial and was discussed at the teleconference call held on the 23rd July 2015.

You can view the whole presentation by right clicking on the image and selecting 'Presentation Object' and then 'Open'.

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Gas DSR Trial Guidance – Phase 2



