Promoting choice and value
for all gas and electricity customers

Tackling gas theft: Draft impact assessment

Supporting document

Reference:	112A/11	**Contact:**	Andrew Wallace
Publication date:	31 August 2011	**Team:**	Smarter Markets
Response deadline:	26 October 2011	**Tel:**	020 7901 7067
		Email:	andrew.wallace@ofgem.gov.uk

Overview:

This document sets out our initial assessment of three industry proposals to increase detection of gas theft.

This assessment is being published in support of a wider consultation on measures to improve the arrangements to tackle gas theft. In addition to our consideration of these three specific proposals to increase theft detection, the consultation document sets out proposals to introduce new licence obligations on gas suppliers.

Context

This document reflects the commitment set out in Ofgem's Corporate Strategy and Plan 2010-15, to support industry initiatives to introduce revised theft arrangements and consider whether further action is required.

The focus of this document is on the gas market. We aim to bring forward proposals for reform in the electricity market, where necessary, in spring 2012.

Our proposals also support several key themes outlined in the Ofgem's Corporate Strategy and Plan 2011-16. These include; promoting value for customers and protecting the interests of vulnerable customers, helping to maintain security of supply and contributing to the achievement of a low carbon economy.

Associated documents

- UNC277 - Creation of Incentives for the Detection of Theft of Gas (Supplier Energy Theft Scheme), Final Modification Report, 21 January 2011. http://www.gasgovernance.co.uk/0277
- UNC346 - An Alternative to the Supplier Energy Theft Scheme Based on Throughput, Final Modification Report, 21 January 2011. http://www.gasgovernance.co.uk/0346
- The Creation of a Revenue Protection Activity Co-ordination Agent (RPACA) and a Central Revenue Protection Unit (CRPU), 8 April 2011. British Gas http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=67&refer=Markets/RetMkts/Compl/Theft
- NRPS Workgroup Report to Ofgem, 16 June 2011. Gas Forum http://www.gasforum.co.uk/admin/documents/GF%20NRPS%20Final%20Report%20v1.0.pdf

Contents

1. Introduction

1.1. This document supports our accompanying consultation on improving the arrangements for tackling gas theft[1]. It sets out our draft Impact Assessment (IA) on three industry proposals to increase theft detection in the gas market. The purpose of the IA is to inform our decision on which of the three industry proposals, if any, should be introduced.

Industry proposals to increase theft detection

1.2. The three industry proposals assessed in this IA are summarised below. More detail on these proposals is included in Chapter 3 of the accompanying consultation. We have also provided a high-level summary of the findings of our draft IA in Chapter 4 of the consultation document.

National Revenue Protection Scheme

1.3. The National Revenue Protection Scheme (NRPS) proposal was developed by the Gas Forum with the support of a significant number of suppliers[2]. This proposal would establish a central database to profile theft risk at each supply point. It would require the highest risk cases to be investigated by suppliers and audit supplier performance against established investigation standards in a code of practice. The NRPS proposal would also provide suppliers with access to support services needed to tackle theft (such as field investigators and debt collection). The NRPS would procure these services and suppliers would use them on an elective basis.

1.4. The proposal is non-specific on the absolute performance expected in detecting theft. However, the Gas Forum report refers to the potential performance that could be achieved if all suppliers performed to the standards of the highest performing suppliers currently in the market. Based on this expectation we have assumed that the NRPS would be expected to provide 17,000 leads for suppliers to investigate per year and for this to deliver approximately 6,000 cases of identified theft.

1.5. The set-up costs of the NRPS are estimated to be between £1.5m and £3m. The fixed costs of providing the NRPS core services, such as data analysis and lead generation, as well as the cost of investigating these leads and making any repairs to

[1] In this document, gas theft describes a number of offences under schedule 2B of the Gas Act 1986 where a customer prevents a meter from correctly registering the amount of gas supplied, has damaged equipment or reconnects the supply without the relevant permission.
[2] British Gas participated in the development of the NRPS workgroup report but was not supportive of the proposal. Any reference in this IA to the agreement of the NRPS workgroup does not therefore relate to the agreement of British Gas.

equipment, is estimated to be between £6.8m and £10.1m per year. We have also considered other cost scenarios. The workgroup estimated that the proposal would take 12 months to implement from a decision to proceed if work began during this consultation phase.

Supplier Energy Theft Scheme

1.6. The Supplier Energy Theft Scheme (SETS) was proposed by British Gas as a modification to the Uniform Network Code (UNC). It aims to encourage investment in theft detection through a "beat the average" incentive scheme funded by gas shippers[3]. The proposal applies to Non-Daily Metered[4] (NDM) sites and includes an audit and penalty mechanism to incentivise performance.

1.7. There are two proposals for how theft should be measured for the purpose of incentive payments. UNC277 focuses on the number of theft cases identified. UNC346 focuses the volume of gas illegally taken. The value of the scheme is around £10m for UNC277 and £12m for UNC346. The scheme would have central set-up costs of £200-380k and ongoing annual operational costs of £40-80k. The administration of the scheme could take up to one year to implement but this development could take place in parallel with the operation of the scheme. It is expected that the audit costs would be around £50k per year.

1.8. Based on historic data on the cost of identifying theft, the scheme aims to deliver at least 5,917 theft detections per year by incentivising the industry to invest in theft detection capabilities[5].It is anticipated by the proposer that this would result from at least 17,177 theft investigations per year over an initial period of operation. After the initial period the proposer expects theft detection to increase by 50% year on year.

Enhanced SETS

1.9. This further proposal from British Gas builds on SETS. In addition to the scheme outlined above, and a code of practice on theft investigations, Enhanced SETS proposes arrangements for suppliers to cooperate on theft detection and for the establishment of services that suppliers could use to help them tackle theft[6].

[3] The incentive would be placed on the gas shipper through the UNC. However, our expectation is these costs and benefits would be passed through to the supplier and would in effect drive supplier performance in detecting gas theft.
[4] Sites with an annual consumption of less than 58.6GWh are classified as NDM.
[5] In its response to the UNC277 proposal, British Gas's initial view was that the SETS scheme would deliver at least 3,800 detected thefts per year. However, based on improved information from the Ofgem questionnaire data (see Appendix 2 in the accompanying consultation document) it has revised this figure to at least 5,917.
[6] For clarity, this proposal does not mandate a single, central database to profile risk and generate leads for investigation as envisaged under the NRPS proposal.

1.10. There are two main options for the Enhanced SETS proposal. The first is the establishment of a Revenue Protection Activity Co-ordination Agent (RPACA). RPACA would provide services (such as management information on theft location and type and a telephone tip-off line) that may not be provided to the same extent in a competitive environment.

1.11. A second variation adds a Central Revenue Protection Unit (CRPU) to the RPACA proposal. The CRPU would provide theft management services for use on an elective basis (such as investigation agents).

1.12. As with SETS, the proposer estimates that Enhanced SETS would deliver at least 5,917 confirmed gas thefts and that this would result from at least 17,177 theft investigations per year over the initial period with this delivering a 50% increase in this period year on year once established. It is expected that the RPACA would take nine months to implement and the CRPU would take between 18 and 24 months to implement.

1.13. An estimate of the costs of the RPACA is not available but the proposer expected these to be low. The costs of the CRPU are expected to be higher than for the RPACA. However, the proposer considers that the total industry spend in responding to the Enhanced SETS scheme would not exceed the total value of the incentive (ie either £10m or £12m depending on the variation chosen).

Next steps

1.14. Responses to the questions raised in this IA and in the accompanying consultation are requested by 26 October 2011. Following consideration of responses we aim to set out our decision by the end of 2011. This will include an updated IA. In the IA will also set out our thoughts on the requirements for a post-implementation review.

Structure of the document

1.15. This document is structured as follows:

- Chapter 2 assesses the impacts of the proposals on customers
- Chapter 3 assesses the impacts on competition
- Chapter 4 assesses the impacts on sustainable development
- Chapter 5 assesses the impacts on health and safety
- Chapter 6 considers some risks and unintended consequences
- Chapter 7 reviews any remaining issues not previously covered.

1.16. In Appendix 1 we have summarised the questions raised in this draft IA together with the process for responding to this IA. For ease of reference, the questions are also set out in Appendix 1 on the of the accompanying consultation document.

1.17. Appendix 2 sets out our detailed modelling of the costs and benefits of theft detection in the market and the impact of the three industry proposals on these. We welcome comments on any issues raised by this IA.

2. Impacts on consumers

Chapter Summary

In this chapter we assess the consumer impacts of each of the industry proposals to improve gas theft detection. This includes the potential impacts on consumer bills, the customer experience during a theft investigation and when theft is detected, data protection and theft deterrence. We address in later chapters the impacts on consumer health and safety and specific issues relating to vulnerable customers and the fuel poor.

IA Question 1: What do you consider to be the scale of theft in the GB gas market? Do you consider that there is a material difference in the prevalence of gas theft between suppliers' customer portfolios? What factors drive any considered difference in theft distribution?

IA Question 2: Where theft has been detected, how long on average would you expect future revenues from a customer to fully reflect their consumption, ie what is the expected reoffending rate over time? Do you expect there to be a material difference under each of the three proposals?

IA Question 3: For each industry proposal, are the proposed compliance measures sufficient to ensure suppliers conduct investigations to satisfactory standards and thereby protect customer interests? Are there any further measures that should be introduced to help address any perceived weakness?

Impact on customer bills

2.1. Theft increases bills for paying customers, as suppliers seek to recover lost revenue. Estimates of the total value of gas theft vary considerably. Figures used for the current shrinkage calculation[7] value gas theft at around £64m per year (or £2.85 per gas customer). One gas supplier thinks the value is £220m per year (or £9.80 per gas customer). We would welcome further views on the likely scale of theft in the GB gas market, how this theft may be distributed between suppliers, and what factors may influence this distribution.

2.2. This section considers potential impacts on customer bills of each industry proposal. The impact on customer bills is likely to be influenced by:

- Theft detection and prevention rates
- Recovery rates for revenue lost through theft

[7] Gas transporters are responsible for replacing the gas which is lost on their network as a result of shrinkage. Shrinkage can, for example, result from gas leaks from the distribution network, stolen gas and gas sites not being correctly registered on the network.

- Costs of industry arrangements to detect theft
- Allocation of these costs between industry parties[8]
- The extent to which suppliers pass through costs and benefits to customers

2.3. In 2010, suppliers detected around 2,900 thefts, which we estimate had a retail value of approximately £5m[9]. As a result, suppliers incurred around £6.5m of costs (including the costs of investigations[10]). Suppliers reported that £2.2m was recovered from customers.

Analytical framework

2.4. Suppliers benefit from detecting theft in two ways. First, they may recover a proportion of lost revenue. Second, they may reduce the amount of unbilled consumption through reducing the volume of stolen units going forward[11].

2.5. Our static approach to this analysis estimates the impact of a year of operation of each proposal. We have considered whether and when each scheme would break even. To do this we have analysed the additional customer charges that would need to be received (both in terms of recovered charges associated with the theft and future revenue) to meet the costs of operating the scheme for a single year[12].

2.6. For example, an illustrative break-even period of 24 months describes the time taken for the recovery of outstanding charges and a reduction in future unbilled revenue for 6,000 thefts (our modelling assumption for the annual detection rate under each of the proposals) to be equivalent to the cost of operation of the theft detection proposal for a year.

2.7. We have also considered the potential for each proposal to deliver additional benefits once break even has been achieved ie where charges continue to be recovered from customers that would otherwise have taken an illegal supply. Our expectation is that these benefits could be passed through to customers in terms of lower bills. The extent to which this effect can be observed will depend on the expected duration of the additional revenue stream from customers that would

[8] We consider allocation issues further in Chapter 3.
[9] This includes the total value of the gas taken over the period of the theft. Based on responses to our industry questionnaire, the average period of gas theft was estimated to be between 2.3 and 2.7 years when discovered.
[10] Where we refer to the investigation in this document we are also including within this all associated costs such as meter replacement, disconnection and reconnection costs and debt recovery costs.
[11] There may also be an additional impact on revenues as customers seek to moderate consumption once theft has been detected. In Chapter 4 we request views on the materiality of this issue.
[12] In our analysis we assume that the performance of each scheme in terms of investigations and detections can be maintained over the period of our analysis.

otherwise have taken an illegal supply. We would welcome views on the anticipated reoffending rate over time. This will enable us to give further consideration to the dynamic, cumulative impact of theft detection in the final IA[13].

Base case

2.8. We compare the costs of each proposal and consider what additional revenues would be required to allow each scheme to cover its costs. Our base case assumes that 17,000 theft investigations per year would identify 6,000 thefts[14]. We also assume that the recovery rate of unbilled charges does not vary between schemes and remains at current levels[15]. Future revenue is not discounted in our analysis. Given the short payback periods within our static framework, this is unlikely to have a material impact on our results or conclusions. Further details on our assumptions are set out in Appendix 2.

2.9. For the purpose of our analysis we have assumed that the costs of SETS and Enhanced SETS are the same. This is based on the assumption that investment in theft detection will be made until there are no additional benefits that can be received. We do not consider that the benefits available (ie the value of the incentive pot and the additional revenues from customers) differ between SETS and Enhanced SETS.

2.10. We have not been provided with estimates of the set-up costs for Enhanced SETS although our initial view is that these may be similar to the NRPS. To simplify our analysis we have not included set-up costs for any of the proposals in our static break-even analysis. However, it is likely that the set-up costs will lengthen the break-even period, at least until the set-up costs have been recovered.

2.11. Our estimates of the fixed costs are higher for SETS and Enhanced SETS when compared to the NRPS[16]. To deliver a net benefit, SETS and Enhanced SETS would therefore need to have a greater impact on the overall level of theft.

[13] Our modelling approach also assumes that the schemes would not impact on the average duration of theft before detection. We welcome comments on our approach.
[14] To the extent that a proposal can deliver higher numbers of thefts, or improve on the conversion rate between investigations and identified theft, then this is likely to improve its relative merits. We have discussed the relative ability of each industry proposal to increase theft detection and asked for views on our assessment in Chapter 3.
[15] The recovery rate is assumed to be 25% in the Smaller Supply Point (SSP) market and 60% in the Larger Supply Point (LSP) market. To simplify our analysis we have assumed that full recovery occurs at the point of detection. We acknowledge that, in reality, recovery may take place over a significant time period.
[16] We have derived the fixed costs of SETS and Enhanced SETS by subtracting the estimated costs of conducting 17,000 investigations and finding 6,000 thefts from the total expected spend under these proposals. This is a crude measure, but reflects the assumptions of the proposer in terms of expected investment, investigation activity and results over the initial

2.12. We have summarised our results in Table 1 below. We have considered the break-even point for a single year of spending on each proposal and the break-even point for the industry's current performance.

Table 1: Base case cost implications for each industry proposal against the current position

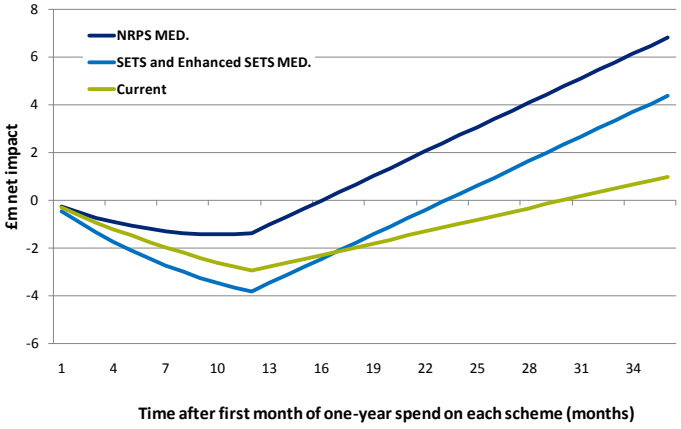
	Break-even point	Additional monthly benefits after break even
Current position	30 months	£165,000
SETS and Enhanced SETS	24 months	£341,000
NRPS	17 months	£341,000

Source: Ofgem analysis, 2011

2.13. Each scheme would achieve break even more quickly than current industry theft arrangements, as long as they deliver the proposed level of detections. NRPS and SETS or Enhanced SETS would achieve break-even if they generate respectively 17 and 24 months of future revenues for each case detected. The higher costs of operating SETS or Enhanced SETS leads to a longer break-even period. Figure 1 below illustrates the potential improvement in revenues required to break even, comparing a single year of spending on the NRPS, SETS and Enhanced SETS with the lower level of theft detections currently delivered.

period.

Figure 1: Static analysis of one year of theft-detection activity (comparing base case proposals with current performance)



Source: Ofgem analysis, 2011

2.14. Our break-even analysis is based on attributing future revenues to theft detection – where a theft has been detected customers are assumed to be requested to repay the full charges for the gas taken and to be billed prospectively for the full value of gas consumed. For simplicity we also assume that a customers consumption rate will not alter once theft is detected. As noted above, we seek views on the relevant duration of this benefit. In addition, our analysis does not capture changes in the effectiveness of theft detection in reducing theft, which might be expected if the schemes are operated in successive years. It seems reasonable to expect that some thefts are harder to detect than others and, moreover, that easy-to-detect thefts will be identified first. If so, the marginal benefit of spending might reduce over time after repeated years of scheme operation. This effect is likely to be more pronounced the greater the overall reduction in thefts.

2.15. Proposals are differentiated in our analysis only on the basis of cost. Therefore, the increase in net benefit arising from each additional month of attributed future revenue is constant between proposals[17]. The realised break-even period is a function of several factors including the number of thefts, recovery rate of lost revenue, gas price, Annual Quantity (AQ) adjustment, consumption and duration of theft. We will consider whether this consultation generates sufficient evidence to differentiate further between proposals in any of these areas. In particular, Chapter 3 considers the likelihood that each proposal will deliver or exceed the estimated level of investigations and theft detections. We differentiate quantitatively and qualitatively between the proposals below.

[17] The gradient in Figure **Error! Reference source not found.**1 for the 'current' scenario is different to the NRPS, SETS and Enhanced SETS. This reflects the lower level of thefts detected under the current arrangements.

Sensitivity testing

2.16. We think it important to illustrate the sensitivity of our results to the assumptions set out in our base case. Figures 2 and 3 below illustrate the range of break-even periods for each proposal based a number of sensitivities. We present these sensitivities in order of declining impact on the break-even point, given the ranges of assumptions we have tested. Alongside, we present an illustration of the relative impacts on the break-even point for each sensitivity.

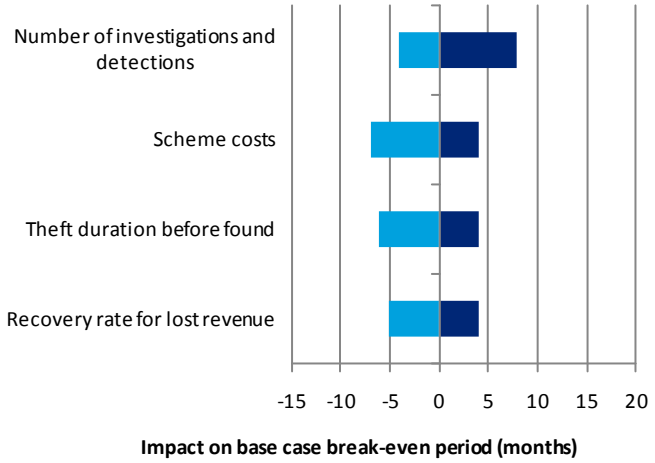
2.17. We note the following key comparisons between sensitivities tested, based on our assumed sensitivity ranges (described in Appendix 2).

- Break-even is most sensitive to the assumed number of investigations and detections. If SETS or Enhanced SETS fails to improve the rate of detection above current levels, it is unlikely to deliver greater benefits than the current arrangements. SETS and Enhanced SETS is more sensitive than the NRPS to the detection rate, given its assumed higher level of fixed cost[18].
- Our conclusion is robust to all other tested sensitivities, within which NRPS, SETS and Enhanced SETS would deliver an improvement over the current arrangements.
- NRPS, SETS and Enhanced SETS are also sensitive to scheme costs. This reflects considerable uncertainty around the costs of each scheme.
- Theft duration before being found has a lower impact, within the tested range of sensitivities. The sensitivity of theft duration would increase if we set a higher recovery rate and vice versa.
- Recovery rate has a relatively low impact on the break-even period for all proposals. This likely reflects the narrower range of sensitivities around the recovery rate that we have considered.

[18] See paragraph 2.11.

Figure 2: Base case break-even attributable future revenue for NRPS, including sensitivity analysis for key assumptions

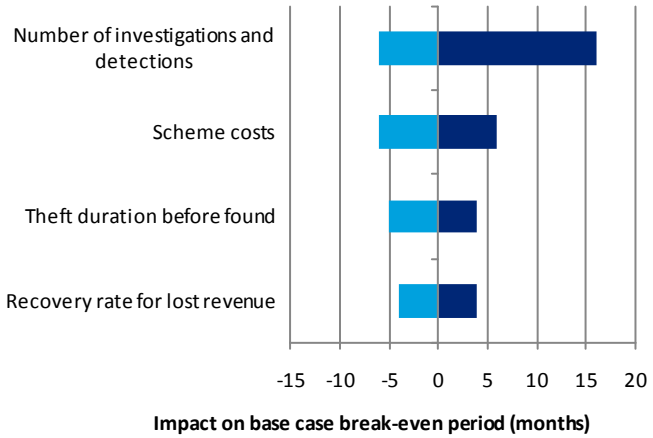
	NRPS		Sensitivity unit	Sensitivities		
	Min. break-even	Max break-even		At min value	Base case	At max value
Base case	17	17		-	-	-
Number of investigations and detections	13	25	(investigations, detections)	(20k, 8k)	(17k, 6k)	(8k, 3k)
Scheme costs	10	21	£m	0.99	2.86	4.30
Theft duration before found	11	21	months	42	30	18
Recovery rate for lost revenue	12	21	% (SSP,LSP)	35%, 70%	25%, 60%	15%, 50%



Source: Ofgem analysis, 2011

Figure 3: Base case break-even attributable future revenue for SETS and Enhanced SETS, including sensitivity analysis for key assumptions

	SETS and Enhanced SETS		Sensitivity unit	Sensitivities		
	Min	Max		At min value	Base case	At max value
Base case	24	24		-		-
Number of investigations and detections	18	40	(investigations, detections)	(20K, 8k)	(17k, 6k)	(8k, 3k)
Scheme costs	18	30	£m	3.27	5.31	7.35
Theft duration before found	19	28	months	42	30	18
Recovery rate for lost revenue	20	28	% (SSP,LSP)	35%, 70%	25%, 60%	15%, 50%



Source: Ofgem analysis, 2011

Customer experience of theft detection and investigation

2.18. In this section we consider the potential impacts of each industry proposal on the likelihood of a customer being investigated and the quality of that investigation. Chapter 4 considers specific effects of each proposal on vulnerable customers.

Likelihood of investigation

2.19. An expected outcome of the NRPS proposal is that a customer's risk of theft investigation would be the same, regardless of who supplies them with gas. Mandatory theft investigations will be generated centrally by the NRPS based on a commonly-agreed risk-based methodology rather than by the policy of a particular supplier. The likelihood of a customer being investigated will be determined by the methodology employed by the NRPS for risk profiling and the available data. In reality, this methodology may unintentionally bias investigations towards a particular customer group or groups.

2.20. The SETS and Enhanced SETS proposals aim to incentivise suppliers (via their shippers) to identify theft in the most efficient manner to maximise the value of their incentive payments. This may lead to a difference for customers in the likelihood of

theft being investigated depending on who supplies them with gas. For example, some suppliers may respond more strongly than others to the available incentives.

2.21. Under SETS and Enhanced SETS suppliers may also respond differently to the specific incentive measures proposed under UNC277 (number of sites identified where theft has occurred) when compared with UNC346 (volume of gas theft detected). This may influence which customers are targeted. For example, UNC346 may lead suppliers to focus investigations on commercial users with higher consumption levels.

2.22. The SETS proposal (and the related elements of the Enhanced SETS proposal) would not apply to the 1.3m customers on Independent Gas Transporter (IGT) networks. These proposals are not therefore expected to increase the extent to which these customers are targeted. However, if one of these proposals were to be chosen, this issue could potentially be addressed by a modification to extend the scope of the arrangements to the IGT networks or to introduce equivalent proposals to the IGT UNC. We therefore do not consider that this is a material differentiator with the NRPS.

2.23. Both the NRPS and Enhanced SETS proposals may offer additional benefits over SETS in tracking potential gas thefts when a consumer changes supplier. Of the two, our expectation is that the NRPS proposal would be able to offer greater benefits[19].

Quality of investigation

2.24. When theft is suspected or identified we consider that customers should be treated in a satisfactory manner, irrespective of who supplies them with gas. In this section we consider the ability of each proposal to deliver satisfactory standards of investigation. We have also considered whether the design of each of the three proposals will impact on a supplier's view on whether to declare that an incident should be declared as a theft[20].

2.25. Suppliers do not currently have industry-wide rules which detail how investigations should be undertaken. Both the NRPS and Enhanced SETS proposals make explicit the requirement for a code of practice to be in place to support common minimum standards for theft investigation. The proposer of SETS also intends that the scheme is supported by a code of practice and this is currently being

[19] This view is based on our assumption that Enhanced SETS would only pass on information relating to current investigations to the new supplier, ie where a theft was already suspected. In contrast, the NRPS would be able to assess risk for all supply points that have recently transferred (ie not just those where an investigation was underway).

[20] The implication of declaring a theft is significant for customers. Our expectation is that a supplier would seek to recover charges from that customer (such as repaying the value of the gas illegally taken and the costs of the investigation or any meter exchange). The customer may also be disconnected for example if they are not willing to pay associated charges.

considered under the Supply Point Administration Agreement (SPAA) change control arrangements. We therefore consider that each proposal is likely to be supported by common rules for theft investigations.

2.26. We consider that there are strong commercial drivers under SETS and Enhanced SETS to declare an incident as a theft. However, we are concerned that the commercial incentives may drive behaviour to the detriment of customers, for example, declaration of theft where this is not the case.

2.27. The SETS proposal seeks to ensure that, where a code of practice has been established, a supplier operates in accordance with it when determining whether a theft has occurred and calculating the amount of gas illegally taken. SETS would have in place an auditor to identify whether a supplier was meeting this standard. To the extent that a supplier was not able to demonstrate compliance with the required standards, then (via its shipper) it would be penalised by a reduction in its total incentive payments. These arrangements would also apply under Enhanced SETS. We would welcome views on whether these measures are likely to deliver investigations that met satisfactory standards and balance any commercial incentives that suppliers have to declare theft where this is not the case.

2.28. Under the NRPS, the commercial incentives on a supplier to find theft when conducting an investigation are weaker. We are concerned that suppliers may not make sufficient efforts to robustly investigate a suspected theft. In particular, suppliers' investigation costs (including meter replacement, disconnection and reconnection) are likely to be higher when a theft is found.

2.29. Under the NRPS arrangements, audit provisions are also envisaged to determine compliance with a proposed code of practice. Under the NRPS an independent audit would be conducted on suppliers as a matter of course during the first two years. After this initial period suppliers would be subject to compliance audits and assurance audits in response to specific issues or concerns, raised by the NRPS or other suppliers, on performance. Where a supplier is subject to an audit and problems are identified, it would be required to bear the cost of the audit. We would welcome views on whether these performance assurance measures are sufficient to ensure that suppliers make appropriate efforts to detect theft.

Data protection

2.30. Data analysis is an important method for detecting theft[21]. There are likely to be additional data sources that could be used to detect theft when there is smart

[21] Our questionnaire responses show that data analysis was reported as the source of 9% of all gas theft detections in the market. However, the data provided by some parties was limited and that the significant number of theft leads reported in the other category (49%) may, in some part, have resulted from data analysis.

metering[22]. For any of the proposals, industry participants would need to ensure they meet their obligations under the Data Protection Act (DPA) 1998.

2.31. Under the NRPS proposal, suppliers and gas transporters would be required to provide detailed information to the NRPS to allow it to profile the risk of theft at each meter point[23]. The DPA implications of this proposal therefore need to be clearly understood.

2.32. One party has challenged whether the NRPS proposal is consistent with the requirements of the DPA[24]. The Gas Forum workgroup report considers that the NRPS proposal would comply with the relevant data protection provisions. It has taken legal advice on this matter and has committed to commission an independent Privacy Impact Assessment[25]. Our initial view is that the NRPS proposal has the potential to be compliant with the DPA but that careful consideration would need to be given to data privacy considerations as part of its implementation.

2.33. The DPA would also need to be considered in relation to SETS or Enhanced SETS. In particular, we note that the CRPU element of Enhanced SETS includes proposals to allow suppliers to pool data on a voluntary basis for analysis so that it can be used to help target investigations[26]. On change of supplier, a supplier that was investigating a potential theft would be required to provide information to the RPACA who would then pass this information to the new supplier. The proposer of Enhanced SETS has also committed to commission an independent Privacy Impact Assessment.

Theft deterrence

2.34. There are a number of factors that may determine whether a customer decides to take an illegal gas supply. These include:

[22] These additional sources of data are expected to be anti-tamper flags sent by the smart meter and more detailed consumption data. DECC is currently working to develop rules for the access and use of smart metering data.
[23] The data items that have initially been considered under the NRPS proposal are set out in Section 12 of the NRPS Workgroup Report to Ofgem provided by the Gas Forum. These are preliminary thoughts and we consider that each data item would need to be considered under a Privacy Impact Assessment.
[24] In summary, British Gas has raised concerns that data protection considerations have not been adequately addressed. It believes that it is too simplistic to rely on an assumption that the industry parties will benefit from an exemption to enable sharing data with the NRPS and that important potential public policy concerns about a new national database holding sensitive personal information. British Gas' concerns are set out in an appendix to the Enhanced SETS proposal available on the Ofgem website.
[25] A Privacy Impact Assessment is an assessment to help organisations assess and identify any privacy concerns for any project that involves changes to data collection and use. It forms part of best practice guidance issued by the Information Commissioner's Office.
[26] See paragraph 46 of the Enhanced SETS proposal.

- The ease with which theft can take place.
- The customer's perceived risk of detection.
- The perceived consequences of detection.

2.35. We consider that each proposal would be likely to increase the rate of theft detection from current levels. This is likely to have a consequential deterrence effect by increasing the perceived risk of being detected. We have discussed the relative ability of each proposal to increase detection in Chapter 3. We consider that the NRPS and Enhanced SETS proposals may also offer some additional benefits over SETS in relation to deterrence by tracking customers that change supplier.

2.36. Both the Enhanced SETS and NRPS proposals would also introduce a national telephone service to receive tip-offs about gas theft. We consider that, to the extent that this and any other measures are publicised, then these may act as a deterrent to consumers.

Summary

2.37. In this section we set out a summary of our analysis on the impact of the three proposals on customer bills and the qualitative analysis presented in this chapter.

2.38. Our assessment is that all three proposals could achieve break even and deliver additional benefits that could be passed through to consumers through lower bills. This analysis relies on the assumptions that we have made and the differences between the three proposals which reflect the costs that we have attributed to each scheme. Our scenario testing shows that the potential benefits for consumers will be impacted by the success of each proposal in detecting theft. We have set out further analysis on this in the next Chapter.

2.39. Table 2 below sets out a summary of the qualitative analysis presented in this chapter.

Table 2: Summary of qualitative consumer impacts

	SETS	Enhanced SETS	NRPS
Likelihood of investigation	Driven by supplier response to commercial incentives.	Driven by supplier response to commercial incentives. Improved data to target investigations. Access to services to facilitate investigations.	Driven by NRPS risk based methodology. NRPS target on volume of investigations is unclear. Access to services to facilitate investigations.
Quality of investigation	Strong commercial incentive on suppliers to identify theft. Moderated by audit and threat of financial penalty.	Strong commercial incentive on suppliers to identify theft. Moderated by audit and threat of financial penalty.	Weak commercial incentive to detect theft. Performance audit. Pay cost of audit if not compliant.
Data protection	No impact identified.	Potential impact from exchange of data on change of supplier. Potential impact in relation to elective CRPU data analysis.	Potential impact in relation to NRPS data analysis.
Theft deterrence effect	Increased theft detection provides additional deterrence effect.	Increased theft detection provides additional deterrence effect. Track customer through change of supplier process. Telephone tip-off service.	Increased theft detection provides additional deterrence effect. Track customer through change of supplier process. Telephone tip-off service.

Source: Ofgem analysis, 2011

3. Impacts on competition

Chapter Summary

In this chapter we assess the potential impact of each industry proposal on competition in the gas supply market. We first consider the potential impacts that may arise from the allocation of gas and transportation costs between shippers. We then consider the broader costs and benefits. Finally, we assess the competition impacts on small suppliers and potential new entrants.

IA Question 4: Are there any material differences between suppliers' ability to compete for incentive payments between UNC277 and UNC346? Would Enhanced SETS address any potential concerns raised about suppliers' ability to compete?

IA Question 5: Do you consider that the current NRPS proposal is likely to establish and realise targets for theft detection that are proportionate to the potential customer benefits? If not, what additional measures do you think are needed to meet this aim?

IA Question 6: Would the NRPS prevent some suppliers from realising additional commercial benefits from theft detection that may be available to them, eg by going further that the NRPS mandated investigation requirements? Would the focus of the NRPS proposals on data analysis reduce the overall efficiency of the market in theft detection by excluding investment in other sources of detection?

IA Question 7: For each of the three industry proposals, is a scheme necessary to compensate a supplier when it is not able to recover its costs from theft?

IA Question 8: Do you consider that cost and availability of services to support theft detection and investigation is a material issue for small suppliers?

Allocation of gas and transportation costs

3.1. In this section we consider the impact of industry proposals on gas and transportation[27] costs. Where theft of gas has occurred, the existing industry arrangements provide for unallocated gas[28] and transportation costs to be recovered from shippers[29] through cost smearing mechanisms.

[27] A gas transporter may charge a shipper for the use of its network in conveying gas to customers.

[28] Shippers are responsible for purchasing the gas for the customers in their portfolio. Where the volumes allocated do not match the volumes purchased and provided onto the gas network then shippers will be liable for the costs of balancing these volumes. In this document any reference to gas costs is to the total costs for shippers in meeting their liabilities for gas

3.2. A reduction in theft is likely to lead to more accurate allocation of industry costs to individual shippers. Increased accuracy can help to promote competition in the supply of gas by improving the allocation of variable operating costs, ensuring they are linked to metered consumption on a shipper's portfolio. This should help to reduce distortions in the market. Impacts on cost allocation differ between the Smaller Supply Point[30] (SSP) and Larger Supply Point[31] (LSP) markets and between shippers in those markets[32]. These impacts are explained in more detail below.

Cost allocation in the SSP market

3.3. In the SSP market, a shipper's gas and transportation charges are linked to the AQ at a meter point. The AQ is an estimate of the expected annual consumption at the meter point based on historic meter read data. The AQ is reviewed yearly where meter read data has been provided by the shipper to xoserve. Where a theft has occurred, meter reads will be commensurately lower and, once submitted, these will lead to a decrease in the AQ over time.

3.4. Once a theft has been discovered, there will also be a lag[33] in the AQ increasing to reflect actual consumption at the site. For the period that the AQ does not reflect actual consumption, gas and transportation costs will be smeared to the rest of the SSP market. Once theft is detected, the customer's supplier will be able to charge the customer for the gas illegally taken (where their identity is known) and for future consumption at that site. However, the supplier's shipper will not be liable for the full industry costs associated with that gas until after the AQ has been fully readjusted.

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allocated to customers in their portfolios. This includes the costs of purchasing gas and any subsequent balancing requirements.

[29] Our assumption is that shippers will pass through costs to the supplier. We therefore consider that the focus of our assessment should be on competition in the gas supply market. Where necessary, we have referred to the specific role of the shipper but our view is that they would be acting on behalf of a supplier in the context of gas theft.

[30] An SSP is a supply point with an annual consumption of less than 73,200kWh (2,500 therms).

[31] A meter point with an annual consumption greater than 73,200kWh (2,500 therms).

[32] Our analysis focuses on sites on the large gas transporters' networks. IGT sites have a different charging structure, which will impact on the allocation of costs. The main difference relates to transportation charges. These are split between the charges for the use of the IGT network, which typically remain fixed regardless of consumption, and charges for transportation across the large gas transporter's network to the edge of the IGT network, which will be impacted by the AQ. The level of smeared costs relating to theft on an IGT network may therefore be lower than on a large gas transporter's network. Correspondingly, the effect on the offender's supplier will be greater on an IGT network.

[33] This lag may be anywhere between a few months to several years, depending on the timing of meter read submissions and their proximity to the annual AQ review.

3.5. We estimate that an average theft[34] in the SSP market would lead to £604 of costs being smeared across SSP shippers. For clarity, this figure relates to the allocation of costs between shippers rather than any change in overall charges.

3.6. Our analysis has also considered the impact of theft on shippers with different market shares. Our analysis suggests that the cost of an individual theft is higher for a larger SSP shipper as they will pick up a higher proportion of the smeared industry costs for that site. For example, a shipper with a market share of 45% would incur a net cost of £707 from an average case of theft in its portfolio[35]. The same case of theft would accrue a net cost of £494 for a shipper with a 15% market share and £394 for a shipper with a 1% market share.

3.7. If a theft is detected, our analysis indicates that a supplier will have a net benefit from detecting a theft when compared to not detecting the theft (assuming pass through of charges from the supplier's shipper). The benefit is observed across all market shares that we have considered.

3.8. Where a theft is detected, all SSP shippers would benefit by the same amount (regardless of market size) as this simply measures the impact of recovered revenues from the customer (which we assume to be the same across all suppliers). Our analysis also indicates that larger SSP shippers will benefit most by theft detection by another shipper as a result of the larger reduction in exposure to smeared costs (although this benefit will be spread over a larger cost base).

Cost allocation in the LSP market

3.9. In the LSP market, gas and transportation costs other than the capacity element of transportation charges, are reconciled to meter reads provided by shippers to xoserve. Capacity charges for the LSP NDM market will reflect the AQ. Where gas is not recorded on the meter this will lead to smeared charges for the rest of the market[36]. There is expected to be a time lag for capacity charges to decrease. As described above for the SSP market, this will reflect the annual AQ review process.

[34] This is based on theft occurring over a period of 2.5 years and an average annual consumption of 16.3MWh, of which 70% is illegal abstracted.
[35] Assuming our base case, where 25% of the supply charges from theft are recovered. See Appendix 2 for further details.
[36] Until April 2010, the costs of unallocated gas were met by the SSP market (unless covered by the gas transporters shrinkage requirements). From this date LSP shippers have been required to make a contribution of £2.75m towards smeared gas charges. From April 2012 LSP shippers will be required to pay a share of smeared gas charges based on the assessment of an independent expert (the AUGE). Our expectation is that error in gas charges associated with sites in the LSP market would be broadly smeared across shippers in that market sector. However, we note that the current rules mean that any difference in the apportionment of smeared gas charges to LSP shippers and the actual error attributable to that market would be picked up by SSP shippers.

3.10. If theft from LSP sites decreases then it is expected that this will improve cost allocation by reducing the smearing of gas and transportation charges.

3.11. Once a theft is discovered, it is expected that an LSP shipper would be liable for all gas and transportation charges on a prospective basis (other that the transportation capacity charge which may take time to readjust). In addition, suppliers are required to provide information to the gas transporter on the amount of gas illegally taken and this is used to reallocate charges for the period of the theft. Because of meter point reconciliation and the reallocation of charges for the period of the theft, our analysis indicates that LSP shippers do not have a commercial incentive to detect theft.

3.12. Because our analysis of different market shares has attributed a constant SSP market shares to LSP shippers, we have not observed a market share effect between LSP shippers. In reality, differences in the SSP portfolios held by shippers that operate in the LSP market, as well as changes to the allocation rules from 2012, may have an impact on allocation.

3.13. We estimate that an average theft[37] in the LSP market would lead to a cash flow effect of £2,678 in relation to gas and transportation commodity charges which is smeared during theft, but reconciled once theft is found. We also estimate that the capacity charges, which reflect the AQ, would result in £985 of smeared costs to the rest of the industry (and in our model this is attributed to SSP shippers).

Impact of increased theft detection under industry proposals

3.14. All three industry proposals aim to increase the amount of theft detected and prevented and would therefore improve the allocation of gas costs. Based on our modelling assumption of an increase in theft detection levels from 2,900 to 6,000 cases per year, we estimate that this would reduce smeared costs by £0.67m and £0.13m per year in the SSP and LSP markets respectively. In the LSP case there would also be a cash flow effect of £0.34m in relation to gas and transportation commodity charges which is smeared during theft, but reconciled once theft is found. This reduction would occur for every year that the 3,100 detected customers no longer took an illegal supply. Additional benefits could be achieved if theft detection in subsequent years similarly reduces future unallocated gas.

3.15. Benefits arising from a reduction in smearing would be accrued by all shippers in the SSP market. All of the industry proposals could therefore result in increased positive externalities, creating 'free rider' effects. Our view is that this could reduce distortion in the market and is likely to benefit competition. The impact on shippers in the SSP market will also be influenced by their volume market share. The larger the shipper's portfolio in terms of volume, the greater the reduction in smeared costs

[37] This is based on theft occurring over a period of 2.5 years and an average annual consumption of 100MWh, of which 70% is illegal abstracted.

incurred as a result of any given theft. These differences are driven by the current allocation mechanisms, which apportion error in line with market share. We note that, were the allocation mechanisms to be amended, as is currently envisaged, then these effects are likely to alter[38].

3.16. Both the NRPS and Enhanced SETS proposals would use the British Thermal Unit (BTU) process under the UNC to correct the AQ from the point that a theft is discovered. This would replace the AQ at the point of theft detection with a value that more closely reflects the annual consumption at the site. This is likely to improve allocation in both the SSP and LSP markets as it would remove the time lag for the AQ to be amended. Our analysis in Appendix 2 indicates that this effect would decrease the commercial benefits of theft detection for an SSP shipper. In our base case analysis the reduction in benefit to the SSP shipper would be £363. The reduction in the benefit to the LSP shipper would be £591. This reduction in benefit would lead to an equivalent improvement in allocation to other shippers in the market.

Distribution of additional costs and benefits

3.17. In this section we examine the costs and benefits of each proposal and, where possible, link these to the gas and transportation impacts described above.

SETS

3.18. The cost of the SETS incentive would be met by shippers in accordance with their market share. UNC277 proposes this would be determined on the basis of the number of supply points. Under UNC346, market shares would be determined by the volume of gas allocated to each shipper's portfolio. Both proposals include conditions exempting very small shippers[39] and Daily Metered[40] (DM) sites and would not relate to sites on IGT networks.

3.19. We would expect suppliers to respond to the SETS incentive regime according to the benefit they can derive from detecting theft, given the variable costs they would incur from doing so. This excludes the costs of funding the scheme, which for an individual supplier are not linked to their theft-detection efforts. We therefore

[38] For example, more frequent updates to the AQ would reduce the time lag in the AQ reflecting the reduction in recorded consumption associated with a theft and any subsequent increase once a theft had been discovered.
[39] Under UNC277 and UNC346, shippers with a market share (in terms of supply points and volume respectively) of zero (when calculated to four decimal places) would be excluded from the requirement to participate in the scheme. This equates to shippers with less than approximately 110 supply points and an expected throughput of gas of less than 2.6GWh per year for UNC277 and UNC346 respectively. Our analysis indicates that there are several shippers that currently fall into these categories.
[40] Sites with an annual consumption of greater than 58.6GWh.

assume that suppliers, via their shipper, would treat the requirement to pay into the scheme as a sunk cost and we have not included this in our analysis.

3.20. As noted above, we have not included the costs paid by suppliers to fund the incentive pot in this part of our analysis, because we are considering marginal impacts. Nonetheless, it is important to note that shippers will incur a cost in funding the scheme. In aggregate, payments to fund the scheme are assumed to match incentive payments, but the impact on individual suppliers will depend on their performance under the scheme (payments) and their market share (funding costs). For a scheme value of £10m, the funding requirement for a shipper with 15% of the market would by £1.5m regardless of its theft detection performance.

3.21. Therefore, in our analysis the marginal costs and benefits of detecting theft under SETS for SSP shippers comprise revenue recovered from the customer (repaid charges), the SETS incentive payment and investigation costs[41]. For LSP shippers, in addition we include the net impact of the smeared energy commodity and transportation commodity charges[42]. Our analysis excludes future payments, given the difficulty in estimating their duration. To the extent that suppliers attribute future revenue to detection, our analysis is likely to underestimate detection incentives. In Chapter 2 we examined how large these payments would need to be in order for each scheme to break even. Our expectation is that these are likely to increase a supplier's incentive to detect theft.

3.22. Our initial assessment is that, for each detected theft, UNC277 would provide an incentive payment of £1,677 if 6,000 thefts were detected. Under UNC346 we estimate that, based on the current split of theft detections between SSP and LSP shippers, the value of the average incentive payment would be £1,320 in the SSP market and £7,997 in the LSP market. Under all of the market share scenarios we have considered, including where there is no revenue recovery from the customer, a supplier would achieve a net benefit from detecting a theft when compared to not detecting the theft.

3.23. An SSP shipper's market share would also impact the overall benefits that it would receive under the SETS scheme. As a shipper's liability for smeared costs is proportionate to its market share, the larger the shipper the more it would benefit from an overall reduction in theft detection.

3.24. SETS is designed to provide additional incentives for suppliers to detect theft. The magnitude of this incentive is linked directly to the value of the pot. An assessment of the SETS proposal should therefore consider the appropriate size of the incentive 'pot' to be distributed. However, the larger the pot, the greater the

[41] We have separately considered the additional impact of the existing supplier compensation arrangements later in this chapter.
[42] Our analysis assumes that suppliers report the units illegally abstracted on an LSP site to the gas transporter. On detecting theft, the supplier will be invoiced the gas and transportation commodity charges associated with these units.

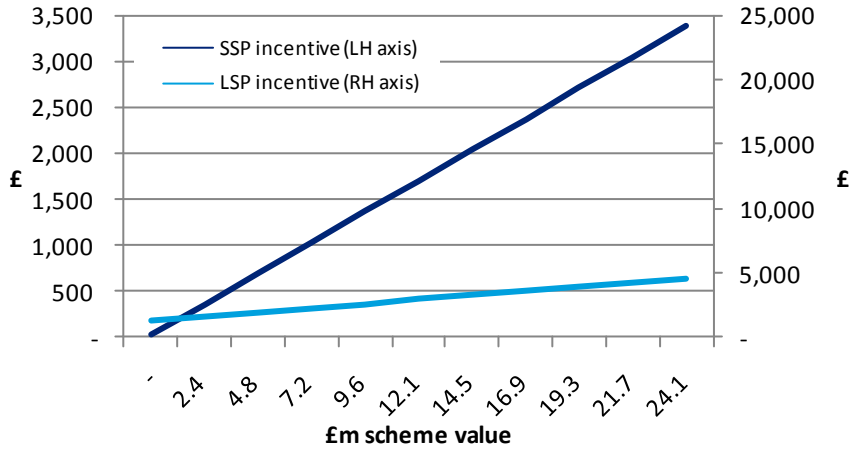
distributional impacts of the proposal. To the extent that these distributional impacts may favour one supplier over another, they may distort competition between suppliers. To minimise such potential distortions (which are hard to predict), the SETS incentive scheme should be no larger than the value required to incentivise an appropriate target rate of theft detection.

3.25. Figure 4 and Figure 5 below present the marginal detection incentive (as specified) for LSP and SSP shippers arising from UNC277 and UNC346 respectively, under our base case assumptions. LSP shippers have considerably larger incentives than SSP shippers under both SETS and Enhanced SETS. Furthermore, this effect is larger for UNC346 compared with UNC277. While incentive payments under UNC277 are fixed per detection, under UNC346 payments vary according to volume, giving LSP shippers greater incentive payments. The appropriate size of the incentive pot may therefore differ considerably between the two proposals.

3.26. UNC277 proposes a total incentive value of £10m while UNC346 proposes a total incentive value of £12m. We seek views on whether the resulting net detection incentives are sufficient or excessive, given the modelled rate of 6,000 detections per year. Of course, a larger net incentive may encourage a higher aggregate detection rate.

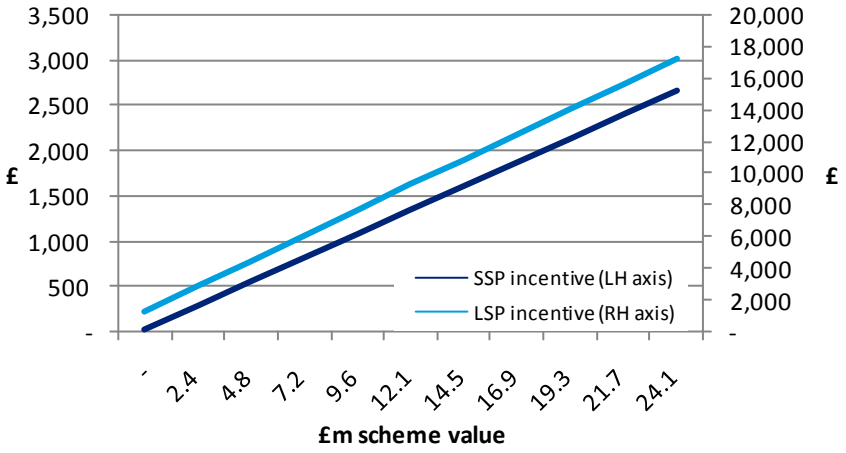
3.27. The proposer expects that the number of detections incentivised will increase over time even as the incentive pot size remains constant. We have not captured the dynamic effects of this incentive. We seek your views on the scale of any such dynamic effects.

Figure 4: Net detection incentive for a supplier – UNC277 (base case)



Source: Ofgem analysis, 2011

Figure 5: Net detection incentive for a supplier – UNC346 (base case)



Source: Ofgem analysis, 2011

3.28. Throughout this document, our results are based on the current gas settlement arrangements. These arrangements are currently under review[43]. Were the arrangements to alter then this would almost certainly impact on the returns that a supplier could receive for detecting a theft. This would also apply to the Enhanced SETS and NRPS proposals, which are discussed below.

3.29. Our modelling assumes that each supplier has a similar cost base and is equally efficient in detecting theft. However, some parties, including respondents to the UNC277 and UNC346 consultations, expressed concerns that factors outside of a supplier's control could have a material distortive impact on competition. These effects are set out in Table 3.

[43] For example, UNC229 is introducing a new mechanism to attribute unallocated gas more accurately to the LSP and SSP markets. UNC380 has proposed changes to introduce a rolling AQ. Project Nexus is considering changes to introduce meter point reconciliation to the SSP market.

Table 3: Factors potentially distorting competition

Factor	Description	Potential impact
Economies of scale in analysing data	More customer data can help target investigations more effectively	Larger suppliers may be at an advantage
Economies of scale in investigations	Potential for lower unit costs of investigations with higher volumes	Larger suppliers may be at an advantage with increased buyer power and geographic density of customers Costs of access to services may be prohibitive for small suppliers
Prevalence of theft	Variation in theft prevalence between supplier portfolios will impact on their ability to detect theft	Theft in the portfolios of smaller suppliers is more likely to vary from the average. New entrants may have less theft in their portfolios
Gaming	Potential for misreporting of theft occurrence (UNC277) or theft volumes (UNC346) to achieve incentive payments	Incorrect allocation of incentive payments and reduced incentive to detect theft (as marginal value of incentive payments decreases)

Source: Ofgem analysis, 2011

3.30. The proposer recognises that some suppliers may require additional time to respond to the SETS incentive scheme when compared to those suppliers that have already made significant investment in proactive theft detection. Accordingly, British Gas, the supplier that has been most active in theft detection, would not participate in the scheme (ie it would not pay in or receive payments) for the first two years of its operation. This is known as the "Windfall Avoidance" measure.

3.31. The Windfall Avoidance measure and audit controls should help to mitigate competition concerns relating to the effect of SETS[44]. Nonetheless, we are requesting views on the extent to which there are any material differences between a supplier's ability to compete under the SETS proposal, both under UNC277 and UNC346.

Enhanced SETS

3.32. We consider that Enhanced SETS may offer additional benefits over the SETS proposal by seeking to address concerns about suppliers' relative ability to compete for incentive payments. In particular, Enhanced SETS could address some of the

[44] In addition, suppliers must ensure that they are compliant with Chapter I and/or Chapter II prohibitions of the Competition Act 1998 and/or the prohibitions contained in Articles 101 and/or 102 of the Treaty on the Functioning of the European Union (the "TFEU").

concerns noted above in Table 3 on economies of scale in data analysis and investigations.

3.33. The RPACA may help to improve the management data available to all suppliers to help them understand the types of theft in the market and their geographical location and provide additional sources of leads, for example through the telephone tip-off line. The CRPU would seek to ensure that suppliers had access to services in the market such as theft investigators. Signing up with the CRPU provider of theft investigation services may reduce transactional costs and ensure geographical coverage, in particular for small suppliers. In addition, the CRPU would be able to provide data analysis services to suppliers that do not have in-house expertise or do not wish to invest in such capability. However, the costs of such services may still be higher than, for example, large suppliers, due to economies of scale or in-house provision.

3.34. We welcome views on whether the Enhanced SETS proposal addresses the concerns about suppliers' ability to compete under the SETS proposal and, if not, how material remaining concerns are.

NRPS

3.35. The central costs of the NRPS[45], would be funded by all suppliers based on their supply point market share. The costs of other activities where suppliers have a choice of service provision from the NRPS or an alternative provider would be met by the supplier that required that service. The costs of meeting its requirements may therefore vary between suppliers based on their characteristics (eg the extent to which economies of scale can be realised), the characteristics of their portfolio (eg the prevalence of theft) and the number of leads that they would be required to investigate.

3.36. Our analysis of the distribution of benefits in Appendix 2 shows that suppliers operating in the SSP market would benefit from improved allocation once a theft has been discovered by another supplier. The NRPS proposal could therefore lead to some "free rider" effects if, for example, one supplier was required to investigate higher numbers of cases and identified a greater proportion of theft.

3.37. Suppliers may have different views on the appropriate level of theft investigations to undertake in the market, what standards should be set for suppliers and their agents and what targets should be set for the NRPS. This view may be driven by the relative benefits that suppliers can achieve from theft detection. The NRPS working group report was non-specific about the absolute performance expected under the NRPS proposal, although it noted what could be achieved based on an extrapolation of the highest performing suppliers in the market. We are not

[45] Ie the costs of establishing and running the data services to determine which sites should be investigated

confident at this stage that there are clear measures in place to establish a volume target for theft detections and investigations. We are therefore concerned that this may be driven by suppliers' competitive positions, and would be set at the lowest acceptable figure to the industry, rather than what is proportionate in terms of customer benefits. We welcome views on what measures could be introduced to address these concerns.

3.38. As noted in Chapter 2, a supplier may attempt to reduce its costs by not investing in investigations that meet satisfactory standards. Our analysis indicates that the costs of an investigation are lower where theft is not found (for example there will be no costs for meter replacement). The NRPS proposal includes provision for audits to understand whether suppliers (or their agents) are meeting the required standards and financial consequences when they fail to do so. We are requesting views in Chapter 2 on whether these performance assurance arrangements would be sufficient to allay concerns over the quality of investigations and whether any other measures would be required to ensure that appropriate efforts are made to detect theft.

3.39. Data analysis is only one of a number of sources of leads for theft detection[46]. One of the concerns raised in relation to the NRPS is that it does not facilitate improvements and innovation in the detection of theft from sources other than data analysis. We are requesting views on whether the NRPS would prevent some suppliers from realising any additional commercial benefits from theft detection that may be available to them. We are also requesting views on whether the focus of the NRPS on data analysis would reduce the overall efficiency of the market in theft detection by excluding investment in other sources of detection.

Existing industry compensation arrangements

3.40. A scheme is currently available to compensate a supplier that has failed to recover money from a customer that has taken an illegal supply despite having used its reasonable endeavours. The industry considers that this scheme is not fit for purpose and a proposal (UNC231V) has been made to improve governance and the amounts payable to suppliers[47].

3.41. The aim of the current compensation scheme is to address potential disincentives that a suppler may have from seeking to detect theft. We acknowledge that the current compensation arrangements are not considered to meet this goal.

[46] Data provided by suppliers, summarised in Appendix 2 of the accompanying consultation, indicates the sources of theft detection are: data analysis (9%), meter readers (19%), metering service providers (3%), tip-offs provided via the Gas Transporter (GT) and xoserve (20%) and other (49%).

[47] Ofgem consulted in December 2010 on whether UNC231V should be implemented. We intend to publish our decision on this modification in conjunction with our decision on which, if any, of the three industry proposals considered in this document should be implemented.

We are therefore requesting views on the requirement for a scheme (be it UNC231V or an alternative) were either of the three industry proposals to be introduced.

3.42. Our analysis, presented in Appendix 2, considers the impact of UNC231V for investigation and meter works costs only. Based on an average theft case in the SSP market, this would increase the amount received by a supplier by up to £1,256. In the LSP market the additional return would be up to £670. These costs would be funded by all shippers based on volume market share.

3.43. Therefore, a compensation scheme operated in conjunction with the NRPS, would be likely to make theft detection a profitable exercise (ie not just an overall net benefit) for suppliers. Were this to operate in conjunction with SETS or Enhanced SETS then it could lead to a significant increase in the profitability of theft detection and potentially stimulate further investment.

New entrant and smaller supplier issues

3.44. While the impact on cost allocation of finding a theft may be lower for smaller suppliers in absolute terms, the impact of theft detection and investigation activity may be greater for these parties. Smaller suppliers may have fewer resources and be less able to benefit from economies of scale. Smaller portfolio sizes may also mean that they are more likely to have a distribution of theft that differs from the average[48].

Impacts on new entrants and smaller suppliers from specific industry proposals

3.45. Under SETS, very small shippers would be excluded from the scheme. For smaller shippers not excluded, the scale of liability would be in proportion to their market share. However, these suppliers could be disadvantaged by a lack of data for use in profiling the risk of theft. Variation in theft characteristics between regions and limited access to physical theft-investigation services are likely to reduce economies of scale in theft detection. We welcome views on whether access to services to support theft detection and investigation is a particular issue for smaller suppliers.

3.46. The Enhanced SETS proposal seeks to address concerns about access to services for parties (including smaller suppliers) in the market and issues relating to economies of scale. In particular, the CRPU service would provide data-analysis services and theft-investigation services, although it would not set prices. The RPACA would provide management information on types of theft and location as well as leads for investigation through the telephone tip-off service.

[48] Some parties have argued that new entrant suppliers would have lower than average numbers of customers that take an illegal supply as customers that are taking an illegal supply have lower incentives to switch supplier on price grounds.

3.47. The NRPS proposal does not distinguish between smaller suppliers, new entrants and other suppliers. All suppliers would be treated in a consistent manner in terms of their requirement to investigate leads generated by the NRPS against defined standards. A key difference between NRPS and SETS (and to some extent Enhanced SETS), is that data analysis would be done centrally using data from all suppliers. We consider that this is likely to increase smaller suppliers' efficiency in detecting theft. However, one potential outcome is that smaller suppliers could be asked to investigate a disproportionately high number of cases depending on the methodology used by the NRPS.

3.48. To enable all suppliers (including smaller suppliers and new entrants) to meet their obligations to investigate under the NRPS, services (such as field investigation services) would be offered by the NRPS. The cost of these services may be higher than could be achieved by large suppliers (eg through greater ability to use in-house arrangements). However, we consider that there are benefits of guaranteed access to services and that suppliers would still be able to procure services from alternative providers if they better met their needs.

Summary

3.49. Our analysis suggests that theft detection would improve allocation of gas and transportation charges. The application of the BTU process under the NRPS and Enhanced SETS would further improve allocation but would decrease the incentives on SSP shippers to detect theft. Our analysis also suggests that large SSP shippers would benefit most from theft detection.

3.50. Our initial view on the relative merits of the three proposals is that SETS offers considerable commercial incentives to detect theft. It is not clear that the appropriate size of this incentive has been well established, given the potential for distortive re-distributive effects of an incentive scheme. We have identified a risk that suppliers would not be able to compete on a relatively equal basis for these benefits and this may distort completion. Enhanced SETS seeks to address a number of these concerns. We think in this respect it is an improvement over SETS.

3.51. The NRPS is likely to offer advantages in the ability to pool industry data and target resources at the sites with the highest potential of risk. This would be of particular benefit to small and medium suppliers who could benefit from these economies of scale. The net benefits of increased detection across the market are likely to be felt most strongly by large suppliers in the SSP market, but others will also benefit. We have concerns about whether there are sufficient measures in place to establish appropriate targets under the NRPS proposal in terms of investigations and theft detections that link to customer benefits. We are also concerned that suppliers may have commercial incentives not to investigate suspected theft to satisfactory standards.

3.52. We seek input from stakeholders to further clarify the uncertainties discussed. We aim to undertake further analysis to establish a more objective view of the appropriate level of target theft detection, based on the aggregate net impact on the market. We would expect this type of analysis to form part of any proposal going

forward to ensure benefits for customers. We will assess the extent to which each proposal sets (or the validity of its approach to setting) an evidence-based target level of theft. Moreover, in the case of SETS and Enhanced SETS, this will be a factor in determining whether the proposed size of incentive pot is insufficient, adequate or excessive. The optimal pot size will reflect the trade-off between detection incentives and potential distortive impacts on suppliers.

4. Impacts on sustainable development

Chapter Summary

This chapter assesses the potential impact of the industry proposals on four key sustainable development themes[49]. These themes are: promoting energy savings, managing the transition to a low carbon economy, eradicating fuel poverty and protecting vulnerable customers and ensuring a secure and reliable gas supply.

IA Question 9: What percentage reduction in consumption would you expect customers to make when an illegal gas supply is detected? To what extent do you consider that this would result from a response to increased costs and/or an increased propensity to invest in energy efficiency measures?

Promoting energy savings

4.1. Where gas is taken illegally, customers are less likely to be price sensitive and motivated to moderate consumption[50]. While not all customers that take an illegal supply will necessarily increase their consumption, reducing theft is likely to have a positive impact on reducing consumption and will therefore promote energy savings.

4.2. In addition, customers that are taking an illegal supply are likely to be less inclined to invest in energy saving measures as the return on that investment would be moderated by the reduced consumption recorded.

4.3. We welcome views on the extent to which customers would be expected to moderate their consumption if it was charged for rather than stolen, including any increased incentives that customers may have to invest in energy efficiency measures.

4.4. In terms of the distribution of benefits between the three industry proposals, (as noted earlier) it is not clear what approach will yield the greatest number of theft detections, and therefore has the greatest impact on promoting energy savings, although Enhanced SETS is expected to lead to more theft detection than SETS. We have considered this further in Chapter 3.

[49] Our December 2009 Guidance on Impact Assessments notes that we will consider five broad themes. In addition to the themes set out in this chapter we have also considered the potential ability of the proposals to support improved environmental performance. In respect of this theme we do not consider that there are likely to be any additional benefits to those noted in this chapter.

[50] Anecdotal evidence supports this view. For example, some customers that are taking an illegal supply might regulate heating temperature by opening windows and doors rather than turning down the thermostat.

4.5. Our initial view is that here may be a difference in outcomes under SETS depending on whether UNC277 or UNC345 are chosen. Our assessment is that a greater focus on the volume of theft taken under UNC346 may have additional energy saving benefits over UNC277, which focuses on the number of theft incidents.

Managing the transition to a low-carbon economy

4.6. In earlier chapters we outline the potential for each of the three industry proposals to increase the level of theft detection from the current 2,900 per year to at least 6,000 per year. Based on the responses to Question 9 above, we intend to assess the potential carbon savings that could be made if a decrease in gas consumption associated with theft detection is realised. We will present this analysis in an updated IA at the end of the year.

Eradicating fuel poverty and protecting vulnerable consumers

4.7. Improved detection of theft is likely to benefit the broader interests of fuel poor and vulnerable customers by reducing customer bills and improving safety[51].

4.8. In relation to those already in fuel poverty, the proposed increase in theft detection is likely to feed through into a reduction in customer bills, albeit marginally. Customers caught taking an illegal supply are likely to be requested to pay back charges. This may have a greater impact for vulnerable customers and those in fuel poverty that have taken an illegal gas supply. It may also move some customers into fuel poverty.

4.9. SETS, Enhanced SETS and the NRPS proposals are all intended to be supported by a new code of practice that will set out standards for the treatment of customers. Our expectation is that these codes should contain specific provisions for the treatment of vulnerable customers and those that would have difficulty paying charges.

Ensuring a secure and reliable gas supply

4.10. We consider that increased theft detection could improve network reliability. This effect may result from a reduction in gas leaks or explosions that require an emergency partial shutdown of the distribution network. This is expected to have a positive impact on customers' ability to use gas for cooking and heating their homes.

[51] Our initial assessment of the impact of each proposal on customer bills and on safety is set out in Chapters 2 and 5 respectively.

4.11. Anecdotal evidence from gas transporters suggests that incidents of theft that result in emergency partial shutdown of the network are relatively rare. We discuss the health and safety implications of increased network reliability in Chapter 5.

4.12. Reducing theft (and therefore better understanding patterns of gas consumption) has the potential to assist gas transporters with network planning to ensure that gas demand can be met. However, gas transporters have generally indicated that this issue is not sufficiently material to have an impact on their planning decisions.

5. Impacts on health and safety

Chapter Summary

In this chapter we assess the direct and indirect impacts of gas theft on health and safety and examine the potential benefits that could result from each of the three industry proposals.

IA Question 10: Do you have any further information on safety incidents where harm has directly resulted from theft of gas.

IA Question 11: Do you consider that any of the proposals are likely to reduce the health and safety of any particular individuals?

IA Question 12: Which proposal do you consider will have the greatest overall benefit on health and safety?

Direct impacts on health and safety

5.1. Physical interference with metering and associated equipment for the supply of gas to premises carries safety risks for those that undertake this activity and for those that live in, or close to, premises where this has occurred. Those parties that work legitimately with this equipment, such as meter installers, installers of consumer appliances, meter readers and the emergency services that attend incidents may also be placed in danger.

5.2. Information provided by the Health and Safety Executive (HSE) on reported dangerous occurrences or dangerous gas fittings[52] suggests that actual harm reported to it resulting from gas theft is relatively rare. We note that these figures may not represent all occurrences as it is not likely that all incidents are identified or reported to the HSE. In some circumstances customers who have been injured as a result of theft may actively seek to avoid this becoming known by the relevant authorities.

5.3. Evidence provided by one supplier suggests that the instances of actual harm are significantly higher. It reported that it was aware of two deaths and at least 36 injuries, two of which were serious, which occurred during 2010 and were caused as a direct result of gas theft by customers.

[52] The HSE provided information on 68 incidents reported to it under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) requirements with possible links to gas theft. The information related to reported dangerous occurrences and notifications of dangerous gas fittings. Of the 68 cases, none provided clear evidence of physical harm resulting from the theft of gas.

5.4. We welcome further evidence, in particular from suppliers and transporters, on the number of dangerous, or potentially dangerous, incidents associated with gas theft and, in particular, where these have led directly to customer harm.

5.5. We consider that increased detection rates are likely to reduce the overall direct impact of gas theft on health and safety. As noted above, we have discussed the relative merits of each industry proposal for detecting theft in Chapter 3. We would also welcome views on whether any of the proposals could reduce the overall safety of certain individuals when compared to the current position. In particular, we are asking for views on whether the commercial incentives to target certain groups under UNC277 and UNC346 could lead to a reduction in safety for some customers through a reduced likelihood of detection.

5.6. We would also welcome views on whether any of the proposals are likely to reduce the health and safety of any particular individuals. In addition, we would welcome views on which proposal is likely to have the greatest overall benefit on health and safety.

Indirect impacts on health and safety

5.7. As noted in Chapter 4, increased theft detection is likely to improve network reliability by reducing gas leaks or explosions which require an emergency partial shutdown of the distribution network. This will positively impact on customers' ability to use gas for cooking and heating their homes. In such instances, there may be beneficial impacts on the health of customers, in particular those that are vulnerable.

5.8. Gas transporter standards of performance[53] require that where there is an interruption to the supply to the premises of a priority domestic customer[54], the gas transporter must provide alternative cooking and heating facilities at the customer's premises. Therefore we consider, in respect of those customers that are likely to be most impacted by supply interruption, increased theft detection is likely to lead to an improvement, but that these impacts are to some extent already mitigated.

[53] Guaranteed standard of performance 3 (Regulation 9) – Priority domestic customers. See The Gas (Standards of Performance) Regulations 2005 (http://www.opsi.gov.uk/si/si2005/uksi_20051135_en.pdf), and The Gas (Standards of Performance) (Amendment) Regulations 2008 (http://www.opsi.gov.uk/si/si2008/uksi_20080696_en_1)

[54] A domestic customer that is of pensionable age, disabled or chronically sick whose details are on the Priority Service Register maintained by gas suppliers in accordance with SLC 26 of the gas suppliers licence and which have been provided to the relevant gas transporter.

6. Risks and unintended consequences

Chapter Summary

In this section we consider the potential risks and unintended consequences associated with each of the three industry proposals not covered elsewhere in this IA. These include the potential impact on customer complaint levels and the effect of increased public awareness of theft.

Increase in complaints

6.1. Increased theft investigations and detected theft could lead to additional enquires to suppliers and customer support agencies. Customers may complain if they consider that they have been treated poorly, regardless of whether they have taken an illegal supply.

6.2. The three industry proposals refer to codes of practice on the conduct of the investigation. This is an important measure that would set out standards for engagement with customers. We are further proposing to support these minimum standards through our proposed changes to gas supply licence conditions to establish minimum standards for investigations.

6.3. We recognise that additional enquiries and complaints from customers may arise as a consequence of increased theft detection activity. In some cases these contacts may be made in an attempt to further avoid paying for charges. However, we consider that this will be an important issue to monitor to understand whether this has resulted from poor performance on the part of an individual supplier or the whether the practices adopted by suppliers, for example in codes of practice, should be amended.

Increased awareness of the potential for theft

6.4. Both the Enhanced SETS and the NRPS proposals aim to introduce and publicise a national customer tip-off telephone service. Other developments, including increased detection rates and better information on the scale of theft may also increase publicity. One of the potential unintended consequences of the industry proposals is that they bring this activity to the attention of customers, including electricity customers, who may not have previously considered it.

6.5. Our initial view is that any potential negative impact could be mitigated by a strong public message from the industry that clearly set out the dangers of taking an illegal supply and the consequences and likelihood of being caught. This message should be matched with effective arrangements to detect theft.

6.6. Given the strong links between the gas and electricity markets, we consider that publicising new arrangements to tackle gas theft should be coordinated with operators in the electricity market. In particular, arrangements should be in place for passing tip-offs from customers and other parties between the electricity and gas markets so that they can be investigated by the relevant party.

7. Other impacts

Chapter Summary

In this chapter we assess the other impacts of the three industry proposals not previously considered. These include implementation timescales, some additional features of the proposals and the impact of the proposals on gas transporters.

IA Question 13: Do you consider that the proposed implementation timescales for each proposal are realistic and achievable. If not, what do you consider to be a realistic timeframe? What additional measures, if any, do you consider should be undertaken to secure implementation within a reasonable timeframe?

IA Question 14: Do you consider that gas transporters should be required to adhere to a code of practice on the conduct of theft investigations?

IA Question 15: What impact will either of the three industry proposals have on the annual number of investigations of theft in conveyance that gas transporters undertake and the total cost of undertaking these?

IA Question 16: What, if any, changes to the regulatory arrangements need to be made to enable gas transporters to adhere fully to their requirements to conduct theft investigations?

Implementation and future development

7.1. In this section we have considered the implementation timescales for each of the industry proposals to understand when the impacts considered in this assessment would be likely to have effect. Our view is that the arrangements chosen should be enduring and therefore, for so long as the implementation dates for each of the proposals are within a reasonable tolerance, we would not expect this to be the material difference between the proposals. Were there to be significant differences in timescales then we would need to consider the balance between the speed of implementation and the benefits that could be achieved.

7.2. In Chapter 1 we have highlighted the implementation timescales identified by the proposers for each of the options considered. In summary,

- NRPS: The NRPS could be implemented 12 months after decision to proceed with that option. This timescale would only be achievable if work commenced during this consultation exercise.
- SETS: SETS could be implemented shortly after an Ofgem decision. xoserve would require between 35 and 51 weeks to make the required system changes to deliver the System Administrator role and an auditor would also have to be appointed. However, this work could take place in parallel with the first year of operation of the scheme.

- Enhanced SETS: If the RPACA was delivered by xoserve it was estimated that it could implemented within nine months. If the RPACA service provider was appointed through competitive tender, it would take approximately 15 months. British Gas estimates that the CRPU service could be live within approximately 18 to 24 months of an Ofgem decision. Note that the proposer envisages that SETS, RPACA and CRPU could be introduced in phases as they became ready rather than necessarily having to be implemented at the same time.

7.3. SETS could therefore be implemented within the shortest timescale. The proposers of NRPS expect this solution to be deliverable within a shorter timeframe than the CRPU element of Enhanced SETS. The NRPS would be delivered after the RPACA. We would welcome comments on the accuracy and feasibility of these estimated implementation dates. We would also welcome views on whether additional measures should be undertaken to secure implementation within a reasonable timeframe.

7.4. In the accompanying consultation document we have set out proposals to require suppliers to work together to implement the Enhanced SETS or NRPS proposals if they are chosen[55] and to require suppliers to introduce this by a defined date (unless otherwise directed by Ofgem). We intend to use the responses to the above question to help inform our views on the timescales for implementation that should be placed in any licence requirement.

7.5. As noted above, it may take time for the chosen method of increasing theft detection to be developed. However, we would expect to introduce the new licence requirements on suppliers to detect, prevent and investigate theft in advance, and potentially in early 2012. Suppliers would be required to act in accordance with these licence obligations, if introduced, and therefore make efforts to detect theft from this point in time.

Additional features of each industry proposal not previously considered

7.6. All three proposals are likely to increase the detection of other sources of unaccounted for gas in the market, such as unregistered and shipperless sites as well as damaged or faulty meters. The NRPS proposal has explicitly recognised this as an aim of the arrangements. As an example, where an unregistered site was identified, the NRPS proposal would provide information to customers alerting them to of the consequences of not signing up to a supplier.

7.7. Both the Enhanced SETS and NRPS proposals would introduce a database of stolen meters. The aim would be to help an investigator identify when a stolen meter

[55] Our initial view is that this requirement may not be required for SETS and we are requesting our whether a licence obligation would be required here if the SETS proposal was approved.

was being used to assist with the illegal taking of gas. We consider that this would be an advantage over the SETS proposal in helping to detect theft.

Role of gas transporters

7.8. Each of the three industry proposals are likely to generate increased number of theft investigations. Our working assumption is that investigations will increase from the current 8,100 per year to 17,000 per year. In some cases, the investigation may identify a potential theft in conveyance or an unregistered site which is the gas transporters responsibility to investigate[56].

7.9. We are requesting views, in particular from gas transporters, on whether gas transporters should be required to adhere to a code of practice on the conduct of their investigations. Some gas transporters have expressed concern over their ability to recover costs associated with theft detection and investigating unregistered sites, particularly where an investigation concludes that there has been no theft. We would like to understand the anticipated impact that the three proposals to increase theft detection would have on the number of investigations (and the associated costs) gas transporters undertake on annual basis. Further, we welcome views whether this impact is sufficient to require changes to the current regulatory arrangements for gas transporters.

[56] Under SLC 7 of the gas transporters licence a gas transporter is required to investigate the suspected taking of gas in conveyance. Theft that occurs upstream of the emergency control valve (ECV) is presumed under the licence to be theft in conveyance. We consider that where a supply is taken without a supplier being responsible (eg an unregistered site) then this is also considered to be gas taken in the course of conveyance. See http://epr.ofgem.gov.uk/document_fetch.php?documentid=14307

Appendices

Index

Appendix 1 - Consultation response and questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 26 October 2011 and should be sent to:

Margaret Coaster
Smarter Markets
9 Millbank
London
SW1P 3GE
020 7901 7042
margaret.coaster@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Having considered the responses to this consultation, Ofgem intends to set out its decision on whether to propose new licence obligations for gas suppliers and on which, if any of the three proposals to increase theft detection should be implemented. Any questions on this document should, in the first instance, be directed to:

Andrew Wallace
Smarter Markets
9 Millbank
London
SW1P 3GE
0207 901 7067
andrew.wallace@ofgem.gov.uk

CHAPTER: Two

IA Question 1: What do you consider to be the scale of theft in the GB gas market? Do you consider that there is a material difference in the prevalence of gas theft between suppliers' customer portfolios? What factors drive any considered difference in theft distribution?

IA Question 2: Where theft has been detected, how long on average would you expect future revenues from a customer to fully reflect their consumption, ie what is the expected reoffending rate over time. Do you expect there to be a material difference under each of the three proposals?

IA Question 3: For each industry proposal, are the proposed compliance measures sufficient to ensure suppliers conduct investigations to satisfactory standards and thereby protect customer interests? Are there any further measures that should be introduced to help address any perceived weakness?

CHAPTER: Three

IA Question 4: Are there any material differences between suppliers' ability to compete for incentive payments between UNC277 and UNC346? Would Enhanced SETS address any potential concerns raised about suppliers' ability to compete?

IA Question 5: Do you consider that the current NRPS proposal is likely to establish and realise targets for theft detection that are proportionate to the potential customer benefits? If not, what additional measures do you think are needed to meet this aim?

IA Question 6: Would the NRPS prevent some suppliers from realising additional commercial benefits from theft detection that may be available to them, eg by going further that the NRPS mandated investigation requirements? Would the focus of the NRPS proposals on data analysis reduce the overall efficiency of the market in theft detection by excluding investment in other sources of detection?

IA Question 7: For each of the three industry proposals, is a scheme necessary to compensate a supplier when it is not able to recover its costs from theft?

IA Question 8: Do you consider that cost and availability of services to support theft detection and investigation is a material issue for small suppliers?

CHAPTER: Four

IA Question 9: What percentage reduction in consumption would you expect customers to make when an illegal gas supply is detected? To what extent do you consider that this would result from a response to increased costs and/or an increased propensity to invest in energy efficiency measures?

CHAPTER: Five

IA Question 10: Do you have any further information on safety incidents where harm has directly resulted from theft of gas.

IA Question 11: Do you consider that any of the proposals are likely to reduce the health and safety of any particular individuals?

IA Question 12: Which proposal do you consider will have the greatest overall benefit on health and safety?

CHAPTER: Seven

IA Question 13: Do you consider that the proposed implementation timescales for each proposal are realistic and achievable. If not, what do you consider to be a realistic timeframe? What additional measures, if any, do you consider should be undertaken to secure implementation within a reasonable timeframe?

IA Question 14: Do you consider that gas transporters should be required to adhere to a code of practice on the conduct of theft investigations?

IA Question 15: What impact will either of the three industry proposals have on the annual number of investigations of theft in conveyance that gas transporters undertake and the total cost of undertaking these?

IA Question 16: What, if any, changes to the regulatory arrangements need to be made to enable gas transporters to adhere fully to their requirements to conduct theft investigations?

Appendix 2 – Theft modelling

1.1. This appendix provides further details of the analysis summarised in Chapter 2 and Chapter 3 of this document. We describe our analytical framework and approach for both the break-even analysis and the distributional impacts of theft.

1.2. Our modelling and assumptions are based on the best information available to us. Moreover, our estimates are based on current industry arrangements. Were market arrangements to change materially, our results could not be relied upon without first verifying the impact of any such changes.

1.3. The structure of this appendix is as follows:

- Key modelling assumptions. These assumptions are consistent throughout both strands of our analysis (net industry impacts and distributional analysis).
- Aggregate market impacts of theft and proposed detection measures. This section includes a description of sensitivity scenarios used in our analysis above.
- A description of the distributional impacts of thefts occurring in both the SSP and LSP market.
- Analysis of the impacts of industry proposals on the distributional impacts of theft in the SSP and LSP markets, including sensitivity analysis.

Key modelling assumptions

1.4. Several modelling assumptions are consistent throughout our approach. These are outlined in Table 4 below.

1.5. For clarity, unless specifically stated, when we refer to a shipper in this appendix we are referring to the shipper with a contractual relationship with the supplier whose customer has taken an illegal gas supply. We assume that there is an exclusive contractual relationship between the shipper and the supplier and that their share of the relevant market considered would be the same.

Table 4: Summary of assumptions for base case

Description	Assumption
Duration of theft before discovery	2.5 years[57]
SSP average customer consumption	16,500 kWh per year[58]
LSP average customer consumption	100,000 kWh per year
Percentage of annual consumption illegally consumed	70% (11,550 kWh for SSP and 70,000kWh for LSP)
Average retail value of a case of illegal abstraction of gas in the SSP market	£448 per year
Average retail value of a case of illegal abstraction of gas in the LSP market	£2,717 per year
Investigation costs (including meter replacement, disconnection and reconnection charges)	£600 where theft is found and £200 where it is not
Average cost of an investigation (including meter replacement, disconnection and reconnection charges) (including assumed weighting between successful and unsuccessful investigations)	£343
Recovery rate in the SSP market[59] (including charges for gas taken, the investigation and meter replacement, disconnection and reconnection charges)	25%
Recovery rate in the LSP market (including charges for gas taken, the investigation and meter replacement, disconnection and reconnection charges)	60%
NRPS, SETS and Enhanced SETS assumed number of investigations	17,000 per year
NRPS, SETS and Enhanced SETS assumed number of theft detections	6,000 per year

1.6. We have not included the potential impact of the current arrangements for supplier compensation (known as the Reasonable Endeavours Scheme) or any

[57] Ofgem issued a questionnaire to assess how the industry was performing in tackling illegal abstraction. Based on the responses we received, the average length of illegal abstraction varies between 2.3 to 2.7 years.
[58] The consumption figure is based on historic average domestic demand. For further information see the factsheet published by Ofgem on 18 Jan 2011, Typical domestic energy consumption figures.
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=domestic%20energy%20consump%20fig%20FS.pdf&refer=Media/FactSheets
[59] There are some cases where it is the gas transporters responsibility to investigate theft. In these instances we assume that the gas transporter will recover 100% of the amount charged to the customer for the units illegally abstracted.

proposed variations to this in our base case. We have separately considered these impacts later in this appendix.

Aggregated market costs and benefits of tackling theft

1.7. Chapter 2 considers the aggregate impacts of each industry proposal for tackling theft. This analysis assumes that an 'average' theft can be aggregated to estimate overall market impact. By doing so we assume that theft cases are homogenous and do not therefore take into account variations between the characteristics of theft arising in individual suppliers' portfolios. We therefore do not seek to assess distributional impacts between suppliers.

1.8. Chapter 2 also includes a summary of our sensitivity testing. We conclude that our assessed benefits of introducing each scheme are relatively robust to variations in some key input assumptions. This section outlines further details of the specifications for this sensitivity testing.

Framework for aggregate analysis

1.9. Our analytical framework takes a static approach, whereby we assess an individual year of theft spending. While this can be translated into an equivalent annual amount of theft reduction, based on repeated years of spending (if a scheme is enduring), our analysis does not capture dynamic impacts or interactions between our assumptions over time.

1.10. For simplicity, we assume in this aggregate analysis that all costs and benefits associated with detection (such as recovery of foregone revenue) are attributed to the month in which the associated detection took place, with the exception of future revenue (see below). We also assume that detections resulting from one year's spend on detection activity is distributed evenly across the year in which theft detection activity takes place.

1.11. A further benefit is the additional revenue that suppliers will now be able to collect from these customers who are paying for, rather than taking an illegal gas supply. Future revenue can be attributed to theft detection only if theft detection itself triggered the revenue collection. This future revenue stream cannot go into perpetuity, as all individual thefts would have a limited duration, even without detection. One key output from our analysis therefore determines the length of future revenue-stream which would need to be recovered in order to deliver net benefits for the industry.

1.12. We define the counterfactual as the current scenario, which we estimate based on the current level of theft-detection activities. We then compare performance of the proposed schemes against this counterfactual. Our base case assumes that each proposal is sufficiently effective to detect 6,000 thefts. Our analysis of aggregate impacts initially compares the base case against the counterfactual to establish whether the industry proposals would be an improvement on the current situation.

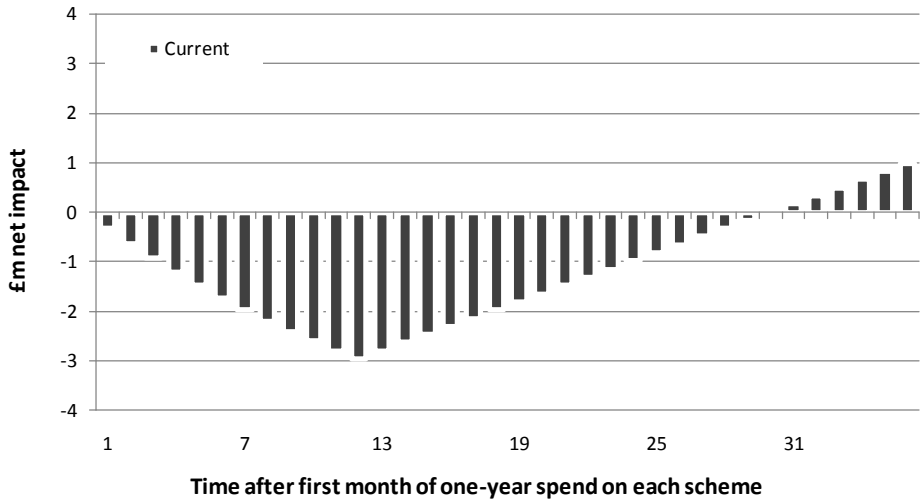
Aggregated market modelling assumptions

1.13. In addition to the modelling assumptions described above, we have made one further key assumption – that 90% of cases and investigations are attributed to the SSP market and 10% to the LSP market. We have based this assumption on responses to an industry questionnaire[60]. Data from this questionnaire indicates that 8,100 investigations were conducted in 2010, resulting in approximately 2,600 cases of illegal abstraction from SSP sites and 300 from LSP sites. We use this data to inform our 'current' scenario.

Current performance level

1.14. Our aggregate analysis examines the net aggregate impacts on the industry resulting from one year of spending on theft detection, assuming this generates 2,900 theft detections (resulting from 8,100 investigations). Under these assumptions theft detection delivers a positive net industry impact if each theft detected continues generating future revenue (at the detected consumption level) for a further 28 months beyond the first month of spending on detection. Figure 6 illustrates the overall net industry impact of one year of spending. The impact of that year's spending is persistent to the extent that future revenue can be attributed to detection, which would not otherwise have been captured.

Figure 6: Break-even analysis of current detection activity



Source: Ofgem analysis, 2011

[60] We have assumed that the 6,000 detected thefts would comprise of 5,379 cases occurring on SSP sites and 621 cases occurring on LSP sites. According to the industry questionnaire data, GTs are responsible for finding approximately 7% of the annual cases of illegal abstraction. To keep our analysis simple, we have not considered the impacts of cases found by GTs.

1.15. Current performance delivers a net benefit if each theft detected within the year continues to give rise to future revenue otherwise foregone until 30 months after the beginning of that year's spending. Therefore, on average, thefts detected in that year would need to give rise to 24 months of future revenue.

1.16. In each subsequent month beyond the point of break even, in which revenues can be attributed to each theft, current activity would deliver a further £165,000 of additional benefit.

Sensitivity testing

1.17. We conducted sensitivity testing on a range of input assumptions to our analysis. We concluded that each proposal delivers significant improvements over the current situation. Sensitivity testing suggests that this conclusion is robust to a range of sensitivity tests on key input assumptions. We summarised the impacts of our sensitivity testing in Chapter 2. In this section we give further detail of the specification of the parameters used for this testing.

1.18. Subject to comments received to our consultation, we will consider whether further sensitivity testing should be conducted on additional variables for our updated IA.

1.19. Of four key variables included in our sensitivity testing, three were applied consistently across our analysis of NRPS, SETS and Enhanced SETS (number of investigations and cases, theft duration before detection and the recovery rate for lost revenue). The other variable relates to the cost of the particular proposal and varies between each scheme.

1.20. First, we consider scenarios for the number of investigations and theft detections. In addition to the current number of investigations and cases (Scenario A), we constructed a 'base case' scenario, (Scenario B) reflecting expectations of each proposal and three further plausible scenarios. Table 5 below outlines these scenarios and a rationale for each. Fewer detections would increase the break-even period (by reducing revenue recovered), while more investigations increase the break-even period by increasing costs. In our sensitivity analysis, results shown in Chapter 2, we have presented the results for Scenario A and E, which showed the greatest variation from the base case.

Table 5: Scenarios for number of cases and investigations

Scenario	Investigations	Detections	Detection Rate	Rationale
Scenario A	8,100	2,900	36%	'Current scenario' based on industry data
Scenario B	17,000	6,000	35%	Proposed level of investigations and detections – 'base case'
Scenario C	24,000	6,000	25%	Proposed level of detection achieved, but only at a lower detection rate
Scenario D	17,000	7,650	45%	Proposed level of investigation achieved, but with a higher rate of detection
Scenario E	20,000	8,000	40%	Both proposed investigation and proposed detection rate are exceeded

Source: Ofgem analysis, 2011

1.21. Second, we implement a test of sensitivity to the duration of theft before detection. The range of tested sensitivities and a description of rationale are summarised in Table 6 below.

Table 6: Scenarios for duration of theft activities

Scenario	Average duration of theft (months)	Rationale
'Low' duration	18	We consider +/- one year to be a reasonable range for the average duration of theft. We have no information with which to estimate the distribution of theft duration. We have assumed a symmetric distribution around the mean duration.
'Moderate' duration (base case)	30	Our base case takes an approximate mid-point between the maximum and minimum industry estimates of the duration of theft before found (2.3-2.7 years).
'High' duration	42	As above, mean plus one year.

Source: Ofgem analysis, 2011

1.22. Third, for NRPS, SETS and Enhanced SETS we test sensitivity to the recovery rate applied to lost revenue (the proportion of unbilled revenue which a supplier can recover from the customer). The range of sensitivities and a description of rationale are summarised in Table 7 below. A lower recovery rate leads to a longer break-even period.

Table 7: Scenarios for recovery rate

Scenario	Recovery rate	Rationale
'Low' recovery rate	SSP:15% LSP:50%	We have applied variation of + / - 10% to the base case duration, for both LSP and SSP recovery rates.
'Moderate' recovery rate (base case)	SSP:25% LSP:60%	These values have been developed in consultation with the Gas Forum NRPS working group
'High' recovery rate	SSP:35% LSP:70%	As above, base case + / - 10%.

Source: Ofgem analysis, 2011

Cost sensitivities – NRPS

1.23. Each industry proposal includes estimates of the costs of implementing the proposals. The costs considered below are ongoing costs only. Our static analysis does not consider up-front costs of setting up each scheme, given the static nature of our analysis, which assesses an individual year of spending. We may update our analysis to include up-front costs in our updated IA.

1.24. The Gas Forum workgroup estimated that the annual operating costs of running the data solution range between £0.5m and £1.5m. It indicates that the administration and management costs of running the other NRPS services such as field investigations and debt recovery may range between £0.2m and £0.8m, and that the ongoing annual audit cost would be around £60,000.

1.25. Based on the NRPS report and our further analysis we have set out three different cost scenarios for the NRPS. Our low-cost scenario uses the lower estimate provided by the NRPS workgroup, while our moderate-cost scenario uses their higher estimate. We also created a high cost scenario to assess the impact of costs surpassing the workgroup's higher-cost estimate. We have also included an estimate of the costs for suppliers and other parties (eg xoserve) providing data to the NRPS to allow it to conduct its risk assessment. These costs are summarised in Table 8 below.

Table 8: NRPS annual costs (excluding investigations costs), £

	Scenario		
	Low	**Moderate**	**High**
Data Analysis solution	500,000	1,500,00	2,500,000
Administrative / Management	200,000	800,000	1,000,000
Audit	40,000	60,000	80,000
Other costs (xoserve, suppliers own costs)	250,000	500,000	750,000
Total annual costs	990,000	2,860,000	4,330,000
Investigation costs		5,800,000	
Annual cost of a fully comprehensive NRPS solution	6,790,000	8,660,000	10,130,000

Source: Ofgem analysis, 2011

Cost sensitivities – SETS and Enhanced SETS

1.26. For the purpose of our analysis we assume that, in aggregate, suppliers will invest an amount in theft detection which is equal to the total value of incentives available. In practice, it is difficult to predict the likely level of investment, given differences between suppliers' theft detection cost curves (including economies of scale), customer portfolios and perceived efficiencies in theft detection[61]. For the purpose of our analysis we have assumed a mid-point between the incentive pots of UNC277 and UNC346 as our moderate cost case.

1.27. However, under Enhanced SETS, the establishment of a service for use by market participants may lead to reduced costs and uncertainty. We applied a similar approach here as when analysing the costs of the NRPS, and defined three cost scenarios for SETS and Enhanced SETS, presented in Table 9 below.

[61] There may be important scale effects in setting up and running a revenue protection unit. For example, smaller parties may have less buyer power or may not achieve minimum scale required to make this activity cost effective. Other larger suppliers may benefit from economies of scale. Other factors may also affect a supplier's efficiency in theft detection such as its portfolio characteristics on theft prevalence and geographical distribution.

Table 9: NRPS annual costs (excluding investigation costs), £

	Scenario		
	Low	Moderate	High
Suppliers revenue protection units	9,000,000	11,000,000	13,000,000
Audit	30,000	50,000	70,000
Other costs (xoserve)	40,000	60,000	80,000
Total annual costs of revenue protection units under SETS / Enhanced SETS (including investigation costs)	9,070,000	11,110,000	13,150,000
Investigation costs		5,800,000	
Estimated annual cost of revenue protection units (excluding investigation costs)	3,270,000	5,310,000	7,350,000

Source: Ofgem analysis, 2011

Standalone analysis – the impact of theft

1.28. In Chapter 3 of this document we present the results of our 'standalone' analysis, which examines the distributional impacts of a single theft. We conducted this analysis based on an average volume of theft. Detecting a theft will increase suppliers' revenue in the short term. Nonetheless, the net impacts of reducing theft detection should reduce suppliers' costs in the long run. These cost reductions should be passed on to consumers, to the extent that competition is effective.

1.29. In addition to the assumptions stated at the start of this appendix, in this section we assume a market share of 15% for the supplier (and its shipper) supplying the offending customer[62]. Market share determines the proportion of smeared costs of stolen gas (value of the gas and transportation costs) charged to the shipper or smeared across other shippers.

1.30. We separately consider the distributional impacts of theft in the SSP market and the LSP market. Each is summarised below.

Standalone analysis of the SSP market

1.31. In this section we consider how different parties are affected by a representative 'average' case of gas theft in the SSP market. For our SSP market analysis, we assume that, on detecting a theft, suppliers recover an average of 25% of lost revenue and investigation costs incurred.

[62] Our assumption is that a supplier's LSP market share will not impact on the SSP standalone case.

1.32. A key element influencing distributional impacts in the SSP market is the smearing of gas and transportation charges. These costs are allocated to SSP shippers based on portfolio size by volume. For example, an SSP shipper with a 15% market share would pay 15% of all smeared costs, while the remaining 85% will be allocated to the other SSP shippers based on their market share.

1.33. Table 10 outlines the impacts on each participant of a single case of theft with year 1 being the first year of theft. In our model, the theft is found part way through the third year.

Table 10: Impact of a single (average) gas theft in the SSP market, £

	Year 1	Year 2	Year 3	Year 4	Total
Offender					
Avoided Supply Charges	448	448	224	-	1,121
Charges recovered by the supplier	-	-	-366	-	-366
Total Impact on offender	**448**	**448**	**-142**	**-**	**755**
Supplier/Shipper where illegal abstraction occurred					
Lost/recovered revenue from offender:	-448	-448	142	-	-755
Avoided energy and transportation costs with units illegal abstracted	-	142	284	284	711
Investigation costs	-	-	-343	-	-343
Supplier's share of SSP industry smeared costs – Energy, Transportation (15% of RbD)	-	-21	-43	-43	-107
Total Impact on supplier	**-448**	**-327**	**40**	**242**	**-494**
Cost to SSP industry (excluding the offender's Supplier/Shipper)					
Energy and transportation costs with units illegal abstracted (85% of RbD)	-	-121	-242	-242	-604
Total Impact on SSP, excluding offender's supplier	**-**	**-121**	**-242**	**-242**	**-604**

Source: Ofgem analysis, 2011

1.34. In our base case the consumer avoids a total of £755 of charges. On detecting the theft, the supplier charges the customer for this value, plus any additional costs incurred investigating the theft. The supplier recovers £366 on detecting the theft.

1.35. Gas and transportation costs incurred by the shipper are derived from the site AQ, even while theft is occurring. Theft over a 2.5 year period is expected to lead to a reduction in the AQ[63]. In this case, any charges not allocated to the shipper of the offender's supplier will be paid by the SSP market. In our model, we assume that it would take 18 months for the AQ to fully reflect the drop in metered consumption due the units illegally abstracted and similarly to subsequently increase once the theft is discovered and remedied[64].

[63] Gas costs and transportation charges are allocated to suppliers based on an estimate of the annual consumption for each site in its portfolio, known as the AQ. Under the current gas arrangements for the SSP market the AQ is updated once a year, based on the metered consumption obtained by suppliers.

[64] For the purpose of our modelling, we assume that during the first year the offender's supplier will continue paying for the wholesale gas costs and transportation charges as if no

1.36. The relevant shipper pays for a proportion of the gas and transportation costs smeared through Reconciliation by Difference (RbD), equal to its market share. Other SSP shippers pay for the remaining 85% of these costs. Any supplier active in the SSP market is therefore materially affected by illegal abstraction occurring in the portfolio of another SSP supplier.

1.37. In summary, under our modelling of an average theft in the SSP market, the offender's supplier will have a net cost of £494, resulting from lost revenue with units illegal abstracted, the cost of investigation, and the avoided gas and transportation costs. The avoided industry costs from the offender's supplier will be borne by the SSP industry, which will face a net cost of £604. The difference between the sum of the net costs and the net benefits to the customer (£755) is £343, which represents the average costs of an investigation[65].

Impact of market share on SSP standalone case

1.38. In this section we summarise the impact of market share and the recovery rate of charges on the distributional impacts of theft[66].

1.39. We have modelled the impact of theft for shippers with SSP market share volumes of 1%, 15% and 45%.

1.40. We also test sensitivities on four cases varying according to the recovery rate of charges linked to illegal abstraction. These are, no recovery, 5% recovery, 25% (which is the assumed industry average in the SSP market), and full recovery of

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illegal consumption were taking place. During the second year, the supplier would pay these charges for half a year (six months). From this point forward, the AQ is updated to reflect the unmetered units of gas illegally abstracted, and the supplier will avoid payment of charges related to the stolen gas. The time taken for an AQ to adjust to match changes in consumption will also have impacts in the final two years of the model once theft has been detected. For the purpose of our model we have assumed that, once illegal abstraction is found (after 2.5 years), the SSP market will continue paying the wholesale gas and transportation charges for the units illegal abstracted for another 18 months – up to the start of year five, the moment where the AQ is updated to meet the level of actual consumption.

[65] The average cost of an investigation is an additional cost on top of the costs of the units illegally abstracted, which is why the distribution of costs and benefits from theft does not add up to zero.

[66] Other variables will also affect the distribution of impacts between parties. For example, the extent to which the AQ is adjusted to reflect metered consumption will impact on the allocation of costs between the offender's supplier and the SSP market. However, for the purpose of this appendix we have presented analysis on two variables to demonstrate the potential impact and uncertainties that suppliers face.

charges. We have also considered the impact of undetected theft over both a 2.5 and 4 year period[67].

1.41. Table 11 below summarises the key costs and benefits, as well as their distributional impact on parties.

Table 11 Market share and recovery rate sensitivity analysis for the SSP standalone case, (base case is 25% recovery and 15% market share), £

	1%	15%	45%
4 Years theft, no investigation			
Offender	1,793	1,793	1,793
Supplier/Shipper (where illegal abstraction occurred)	-667	-826	-1,167
RbD industry (excluding the offender's Supplier/Shipper)	-1,126	-967	-626
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
2.5 Years theft, no investigation			
Offender	1,121	1,121	1,121
Supplier/Shipper (where illegal abstraction occurred)	-417	-516	-730
RbD industry (excluding the offender's Supplier/Shipper)	-704	-604	-391
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
No recovery			
Offender	1,121	1,121	1,121
Supplier/Shipper (where illegal abstraction occurred)	-760	-860	-1,073
RbD industry (excluding the offender's Supplier/Shipper)	-704	-604	-391
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
5% average recovery			
Offender	1,047	1,047	1,047
Supplier/Shipper (where illegal abstraction occurred)	-687	-786	-1,000
RbD industry (excluding the offender's Supplier/Shipper)	-704	-604	-391
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
25% average recovery			
Offender	755	755	755
Supplier/Shipper (where illegal abstraction occurred)	-394	-494	-707
RbD industry (excluding the offender's Supplier/Shipper)	-704	-604	-391
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
100% average recovery			
Offender	-343	-343	-343
Supplier/Shipper (where illegal abstraction occurred)	704	604	391
RbD industry (excluding the offender's Supplier/Shipper)	-704	-604	-391
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-

Source: Ofgem analysis, 2011

[67] We have considered a theft that stops after 2.5 years to allow comparison with a detected theft where no charges are recovered. We have also considered a 4 year period to show the impact on a supplier if theft is ongoing past the average duration period for detected theft.

1.42. Our analysis demonstrates that the higher the market share of the offender's supplier, the higher the proportion of the smeared industry costs that they will bear from one case of illegal abstraction. Consequently, the remainder of the SSP market will bear a smaller share of these costs.

1.43. While this indicates that the marginal impact of a case of illegal abstraction is higher for a supplier with a higher market share, there may also be an important scale effect when considering the aggregated impacts of illegal abstraction. For example, a supplier with a larger portfolio would have more scope to spread these costs across the units of gas it supplies.

1.44. Comparing our base case with not seeking to find a theft, we can see that this would deliver a net benefit for suppliers for all market shares tested. With a 25% recovery rate, the net cost from illegal abstraction to the Supplier ranges from £394 to £707. This represents a net benefit when compared to not tackling illegal abstraction even if assuming that theft stops after 2.5 years. In relation to the scenarios that we have tested, all suppliers would be expected to achieve a net benefit where the recovery rate from the customer is greater than 25% when compared to not finding the theft. However, comparing no activity to find theft with a zero recovery of charges, we can see that this would represent a significant cost for all shipper market shares analysed.

1.45. Additional revenue recovered from customers is not smeared. Therefore there are no market share impacts when the recovery rate varies. The marginal impact of the recovery rate is therefore constant across cases 1 to 5 in Table 11 above.

Standalone analysis of the LSP market

1.46. In this section we consider how different parties are affected by a representative 'average' case of gas theft in the LSP market. Table 12 below summarises the key impacts on individual parties resulting from one customer illegally abstracting gas in the LSP sector[68].

1.47. For our LSP market analysis, we assume that, on detecting a theft, suppliers recover an average of 60% of lost revenue and investigation costs incurred.

[68] We have modelled the effects in the LSP NDM market. We have not considered the implications of our model for the LSP DM market. Our expectation is that the number of thefts in the LSP DM market are small (although they may be high value).

Table 12 Impact of a single (average) gas theft in the LSP market, base case, £

	Year 1	Year 2	Year 3	Year 4	Total
Offender					
Avoided Supply Charges	2,717	2,717	1,358	-	6,792
Charges recovered by the supplier	-	-	-4,281	-	-4,281
Total Impact on offender	**2,717**	**2,717**	**-2,923**	**-**	**2,511**
Supplier/Shipper where illegal abstraction occurred					
Lost/recovered revenue from offender:	-2,717	-2,717	2,923	-	-2,511
Avoided energy and transportation costs with units illegal abstracted	1,260	1,492	-1,584	463	1,631
Investigation costs	-	-	-343	-	-343
Supplier's share of SSP industry smeared costs – Energy, Transportation (15% of RbD)	-189	-224	-164	-70	-646
Total Impact on supplier	**-1,646**	**-1,449**	**831**	**394**	**-1,869**
Cost to SSP industry (excluding the offender's Supplier/Shipper)					
Energy and transportation costs with units illegal abstracted (85% of RbD)	-1,071	-1,268	1,748	-394	-985
Total Impact on SSP, excluding offender's supplier	**-1,071**	**-1,268**	**1,748**	**-394**	**-985**

Source: Ofgem analysis, 2011

1.48. In our base case the consumer avoids a total of £6,792 of charges. On detecting the theft, the supplier charges the customer for this value, plus any additional costs incurred investigating the theft. When the customer's supplier identifies the theft after 2.5 years it will be able to charge the customer for the units stolen. The supplier recovers £4,281 on detecting the theft. During the period of illegal abstraction the supplier will also avoid paying transportation[69] and gas charges, which are estimated at £4,309 (excluding charges returned to the market)[70].

1.49. Our analysis assumes that suppliers report the units illegally abstracted on an LSP site to the gas transporter[71]. The supplier will therefore be invoiced the wholesale and transportation costs associated with these units other than transportation capacity charges. The SSP market will no longer bear these costs[72].

1.50. In summary, under our modelling of an average theft in the LSP market, the offender's supplier will have a net cost of £1,869, resulting from lost revenue with

[69] We assume that, when theft occurs, the supplier retains the liability for the capacity element of transportation charges.
[70] These costs have historically been smeared through the RbD mechanism to the SSP market but going forward they are also expected to be allocated to the LSP market. As noted previously, recent changes to the market mean that the LSP sector will now contribute to the cost of unaccounted for gas. From April 2012 it is expected that LSP shippers will bear costs on the basis of an assessment made by the AUGE. Therefore, we expect that in future, that the value of the avoided charges is likely to be allocated to LSP shippers.
[71] Where a theft has occurred and the GT has requested information on the volume of gas illegally taken, the supplier is required under SLC 17.3 to provide this information where it is reasonable to do so.
[72] Our analysis suggests that, if an LSP supplier does not declare the volume of gas taken to the gas transporter, such that they do not become liable for transportation and gas charges, this would significantly decrease the impact of an average theft on the LSP supplier and increase its impact on the wider market.

units illegal abstracted, the cost of investigation, and the avoided gas and transportation costs. These avoided costs from the offender's supplier will be borne by the SSP industry, which will face a net cost of £985 (with these costs being expected to move to the LSP market once the AUGE arrangements are in place in April 2012). The difference between the overall industry costs and the customer's benefits is £343. This is the assumed cost of an average the investigation.

Impact of market share on LSP standalone case

1.51. As with the SSP market, we assess the impact of market share of the offender's supplier and of recovery rate on distributional impacts of theft. Again we consider three market share scenarios; 1%, 15% and 45%. To isolate the effect on the LSP market, we hold SSP market share constant at 15%. Again we consider the same recovery rates as with the SSP market. Table 13 below summarises the key costs and benefits, as well as their distributional impact on parties.

1.52. As with the SSP case, we include a scenario in which theft goes undetected for a period of 4 years.

1.53. Unlike the SSP market, costs to the customer's supplier are independent of the supplier's market share in the LSP market, because its exposure to RbD costs is a function of its SSP market share only. Supplier costs of each undetected theft are estimated at £5,007 if the theft would have lasted for 4 years (at 15% market share). For a theft lasting 2.5 years, the cost to the same supplier would be significantly less at £3,129, due to the shorter duration. Finding a theft but failing to recover charges increases the supplier impact to £5,988 of costs (by the average cost of an investigation).

1.54. At a 60% recovery rate, the offender's supplier still incurs a higher cost than if it had not identified the theft. In our base case, the offender's supplier has a net benefit from theft detection only if the recovery rate is 87% or greater.

Table 13 Sensitivity analysis on key assumptions of the LSP standalone case, £

	1%	15%	45%
4 Years theft, no investigation			
Offender	10,867	10,867	10,867
Supplier/Shipper (where illegal abstraction occurred)	-5,007	-5,007	-5,007
RbD industry (excluding the offender's Supplier/Shipper)	-5,860	-5,860	-5,860
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
2.5 Years theft, no investigation			
Offender	6,792	6,792	6,792
Supplier/Shipper (where illegal abstraction occurred)	-3,129	-3,129	-3,129
RbD industry (excluding the offender's Supplier/Shipper)	-3,663	-3,663	-3,663
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
No recovery			
Offender	6,792	6,792	6,792
Supplier/Shipper (where illegal abstraction occurred)	-6,150	-6,150	-6,150
RbD industry (excluding the offender's Supplier/Shipper)	-985	-985	-985
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
5% average recovery			
Offender	6,435	6,435	6,435
Supplier/Shipper (where illegal abstraction occurred)	-5,793	-5,793	-5,793
RbD industry (excluding the offender's Supplier/Shipper)	-985	-985	-985
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
60% average recovery			
Offender	2,511	5,008	5,008
Supplier/Shipper (where illegal abstraction occurred)	-4,366	-4,366	-4,366
RbD industry (excluding the offender's Supplier/Shipper)	-985	-985	-985
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-
100% average recovery			
Offender	-343	-343	-343
Supplier/Shipper (where illegal abstraction occurred)	985	985	985
RbD industry (excluding the offender's Supplier/Shipper)	-985	-985	-985
LSP industry (excluding the offender's Supplier/Shipper)	-	-	-

Source: Ofgem analysis, 2011

Application of Stand Alone Case to the NRPS, SETS, Enhanced SETS and existing compensation arrangements

1.55. This section summarises potential impacts of the industry proposals on the distributional impacts of a single theft.

NRPS

1.56. The NRPS proposal includes measures to increase the accuracy of cost allocation once theft has been discovered. This mechanism would take effect through the British Thermal Unit (BTU) process. It would require the AQ to be adjusted to reflect the actual consumption at the site (rather than consumption recorded on the meter) once the theft is discovered. This will correct the allocation of charges between SSP shippers on a prospective basis once theft has been found.

1.57. In the SSP market the offender's supplier (via its shipper) would then, on a prospective basis, be liable for gas and transportation costs that had previously been smeared over the SSP market. This would remove the current time lag for AQs to be adjusted following the discovery of a theft and would reduce the smeared costs borne by the SSP market, from £604 to £242. These costs would be borne by the customer's supplier and would therefore reduce the potential benefits of detecting a theft. We have modelled this effect below in Table 14 below.

Table 14 Effect of the BTU process in the SSP standalone case (SAC)

	SAC	SAC with BTU	Difference
Offender	755	755	-
Supplier	-492	-855	-363
SSP market (excluding offender's supplier)	-604	-242	363
LSP market (excluding offender's supplier)	-	-	-

Source: Ofgem analysis, 2011

1.58. Suppliers are required to inform the gas transporter of the volumes of gas illegally taken in the LSP market. The gas transporter will adjust the shipper's charges to cover the period of the theft other than for transportation capacity charges. On a prospective basis, meter point reconciliation is expected to lead to the accurate allocation of charges other than for capacity which will take time to adjust in line with the AQ. Adding the BTU process would therefore increase the accuracy of the allocation of transportation capacity charges on a prospective basis and would reduce incentives on a supplier to detect theft. Our analysis is set out in Table 15 below.

Table 15 Effect of the BTU process in the LSP standalone case (SAC)

	SAC	SAC with BTU	Difference
Offender	2,512	2,512	-
Supplier	-1,868	-2,459	-591
SSP market (excluding offender's supplier)	-985	-394	591
LSP market (excluding offender's supplier)	-	-	-

Source: Ofgem analysis, 2011

SETS

1.59. In this section we examine the potential impact of the incentive payments available under SETS. We assume investigation costs are constant at the current

amount. We assume market share is 15%, consistent with our base case assumption. Therefore a supplier (via its shipper) would be liable for 15% of the total costs of the incentive scheme. However, we have not included supplier's costs in funding SETS as these are assumed to be fixed costs and will not impact on a marginal effect of detecting a theft.

1.60. There are two proposals under SETS. UNC277 rewards suppliers for the number of thefts discovered. For this proposal we have assumed that 6,000 thefts are discovered across the market. Our analysis in Table 16 and Table 17 below shows that, for our average theft case in the SSP market, the introduction of SETS would provide suppliers with an additional benefit of £1,677 (under UNC277) or £1,320 (under UNC346) for each theft found. In the LSP market the effect is the same under UNC277 (suppliers have an additional benefit of £1,677 with the introduction of SETS). With UNC346 the additional benefit introduced by SETS is estimated at £7,997.

Table 16: Impact of the SETS on the SSP standalone case (SAC)

	SAC		SETS (UNC277)	Difference		SETS (UNC346)	Difference
Offender	755		755	-		755	-
Supplier	-492		1,185	1,677		827	1,320
SSP market (excluding offender's supplier)	-604		-604	-		-604	-
LSP market (excluding offender's supplier)	-		-	-		-	-

Source: Ofgem analysis, 2011

Table 17: Impact of the SETS on the LSP standalone case (SAC)

	SAC		SETS (UNC277)	Difference		SETS (UNC346)	Difference
Offender	2,512		2,512	-		2,512	-
Supplier	-1,868		-191	1,677		6,129	7,997
SSP market (excluding offender's supplier)	-985		-985	-		-985	-
LSP market (excluding offender's supplier)	-		-	-		-	-

Source: Ofgem analysis, 2011

Enhanced SETS

1.61. We have extended our analysis on SETS above to Enhanced SETS. In doing so we have modelled the impact of the BTU process which we consider to be the main difference in the allocation of costs. As shown in Table 18 and Table 19, the impact is universally to slightly reduce the overall benefit to suppliers, when compared to SETS, and transfer that benefit to the SSP market.

Table 18: Impact of Enhanced SETS on the SSP standalone case (SAC)

	SAC	SETS (UNC277)	Difference	SETS (UNC346)	Difference
Offender	755	755	-	755	-
Supplier	-492	822	1,314	465	957
SSP market (excluding offender's supplier)	-604	-242	363	-242	363
LSP market (excluding offender's supplier)	-	-	-	-	-

Source: Ofgem analysis, 2011

Table 19: Impact of Enhanced SETS on the LSP standalone case

	SAC	SETS (UNC277)	Difference	SETS (UNC346)	Difference
Offender	2,512	2,512	-	2,512	-
Supplier	-1,868	-2,459	-591	5,538	7,406
SSP market (excluding offender's supplier)	-985	-394	591	-394	591
LSP market (excluding offender's supplier)	-	-	-	-	-

Source: Ofgem analysis, 2011

Supplier compensation arrangements

Compensation arrangements (known as the Reasonable Endeavours Scheme) currently exist for gas suppliers to recover certain costs where a theft has been discovered and the supplier had not been able to recover these costs, despite making reasonable, defined, efforts to do so[73]. The costs that a supplier is eligible to recover relate to any shipper charges that the gas transporter would have levied for the amount of gas illegally taken and investigation (including meter works). The current scheme is not considered to be fit for purpose and a proposal has been raised (UNC231) to amend the scheme.

1.62. For the purposes of this section we have modelled the potential impact on cost allocation of compensation arrangements that allowed a supplier to fully recover its investigation and metering costs when these have not been recovered from the customer. That is, where we had previously assumed a 25% recovery rate for these charges in the average case, we have assumed 100% recovery with these costs being smeared back to the rest of the shipping community. These results are shown in Table 20 and Table 21 below.

[73] Based on the data provided by xoserve, only one supplier made claims for these compensation payments during 2010. A total of 409 claims were made during the first 11 months of 2010, leading to the payment £121,125.

Table 20 Impact of the RES and the schemes to tackle theft on the SSP standalone case (SAC)

	SAC Without RES	SAC With RES	SAC RES impact	SETS (UNC277)	SETS (UNC346)	NRPS	Enhanced SETS (UNC277)	Enhanced SETS (UNC346)
Offender	755	755	-	755	755	755	755	755
Supplier	-492	764	1,256	2,441	2,083	401	2,078	1,721
SSP market (excluding offender's supplier)	-604	-1,446	-841	-1,446	-1,446	-1,083	-1,083	-1,083
LSP market (excluding offender's supplier)	-	-414	-414	-414	-414	-414	-414	-414

Source: Ofgem analysis, 2011

Table 21 Impact of the RES and the schemes to tackle theft on the LSP standalone case (SAC)

	SAC Without RES	SAC With RES	SAC RES impact	SETS (UNC277)	SETS (UNC346)	NRPS	Enhanced SETS (UNC277)	Enhanced SETS (UNC346)
Offender	2,512	2,512	-	2,512	2,512	2,512	2,512	2,512
Supplier	-1,868	-1,199	670	478	6,799	-1,789	-112	6,208
SSP market (excluding offender's supplier)	-985	-1,434	-449	-1,434	-1,434	-843	-843	-843
LSP market (excluding offender's supplier)	-	-221	-221	-221	-221	-221	-221	-221

Source: Ofgem analysis, 2011

Appendix 3 - Glossary

A

Annual Quantity (AQ)

The sum (measured in kWh or therms) of the annual consumption of all meters on a site. AQs are based on historical usage from previous years.

Allocation of Unidentified Gas Expert (AUGE)

An independent expert to determine a methodology for the allocation of unallocated gas, to be appointed under the terms of UNC Modification Proposal 229.

AQ Review

A review of the User's determination of the AQ in respect of a Supply Meter Point.

C

Central Revenue Protection Unit (CRPU)

The CRPU is part of the Enhanced SETS proposal. The role of the CRPU would be to enter the market to offer services to suppliers to help them respond to the incentive scheme set up under SETS.

Customers

Parties who have a contract with a supplier to take gas at a Supply Point.

D

Daily Metered (DM) Supply Points

Supply points that have annual gas consumption greater than 58.6GWh. DM Supply Points are equipped with mandatory telemeter equipment, such as a datalogger. Any supply point which is directly connected to the NTS will also be daily metered.

Distribution Connection and Use of System Agreement (DCUSA)

A multi-party contract between the licensed electricity distributors, suppliers and generators of Great Britain. It is concerned with the use of the electricity distribution systems to transport electricity to or from connections to them.

E

Emergency Control Valve (ECV)

A valve which limits the supply of gas to an individual Supply Point.

Enhanced SETS

Enhanced SETS builds on the SETS proposal to increase theft detection. In addition to a code of practice on theft investigations it would add the RPACA and may also add the CRPU.

G

Gas Distribution Network (GDN)

A network through which gas is taken from the high pressure transmission system and distributed through low pressure networks of pipes to industrial complexes, offices and homes. There are eight GDNs in Britain, each covering a separate geographical region.

Gas Transporters (GTs)

Holders of a licence to operate a system to convey gas granted under section 7, paragraph 4 of the Gas Act 1986 as amended.

I

Independent Gas Transporter (IGT)

An operator of a small local gas network, most of which are being built to serve new housing. IGTs may levy transportation charges on shippers.

L

Larger Supply Point (LSP)

A meter point with an annual consumption greater than 73,200kWh (2,500 therms).

N

National Revenue Protection Service (NRPS)

A proposal to increase theft detection by establishing a central database to profile theft risk at each supply point. It would require the highest risk cases to be investigated by suppliers.

R

Reconciliation by Difference (RbD)

A methodology for reconciling the difference between allocated and actual energy consumed by small supply points which have an AQ of up to 73,200kWh.

Revenue Protection Activity Co-ordination Agent (RPACA)

The RPACA is part of the Enhanced SETS proposal. It would provide services (such as management information and a telephone tip-off line) that may not be provided to the same extent in a competitive environment.

S

Supplier Energy Theft Scheme (SETS)

A proposal to increase theft detection by introducing incentives on shippers. It would be implemented through either UNC277 or UNC346.

Supply Point Administration Agreement (SPAA)

A multi-party agreement to which all domestic gas suppliers and all gas transporters are required by their licences to accede. It sets out the inter-operational arrangements between gas suppliers and transporters in the GB retail market.

Shipper

An agent who arranges for the conveyance of gas over the distribution network to final consumers. Shippers pay transportation charges to the relevant gas transporter and are holders of a licence given under Section 7A (2) of the Gas Act 1986 as amended.

Smaller Supply Point (SSP)

An SSP is a supply point with an annual consumption of less than 73,200kWh (2,500 therms).

Supplier

Holders of a licence to supply gas given under Section 7A (1) of the Gas Act 1986 as amended or a person excepted from the requirement to hold a licence by virtue of paragraph 5 of schedule 2A of the Act.

Supply Meter Point (SP)

A point at which consumers take gas off the gas transporter's network.

T

Theft of gas

Describes a number of offences under schedule 2B of the Gas Act 1986 where a customer prevents a meter from correctly registering the amount of gas supplied, has damaged equipment or reconnects the supply without the relevant permission.

U

Unallocated Gas

Gas which is offtaken at a gas transporter's without being charged to any one shipper.

Uniform Network Code (UNC)

The contractual framework for the NTS, GDNs and shipper.

X

xoserve

A joint venture delivering transportation transactional services, owned by the large gas transporters and the transmission operator.