Title: Modification of gas and electricity licences for the purpose of implementing a cost recovery mechanism for energy supply company administration	Impact Assessment (IA)
	Date: 14/05/2013
	Stage: Final
IA No: DECC 101	**Source of intervention:** Domestic
	Type of measure: Other
Lead department or agency: DECC **Other departments or agencies:**	**Contact for enquiries: Dawn Armstrong and Rob Dixon**

Summary: Intervention and Options

RPC: Green

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCBin 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
£0-51m	N/A	N/A	No	NA

What is the problem under consideration? Why is government intervention necessary?

In the Energy Act 2011 the Government legislated for Energy Supply Company Administration (esc administration) to ensure the continued operation of large energy suppliers in the event of financial failure. There is a significant risk that existing mechanisms would not be viable if a large supplier failed, which would put considerable strain on the system, risking the spread of financial failure across the market. The Act empowers the Secretary of State (SoS) to provide funding to companies in esc administration to ensure their continued operation. There are also powers to allow the SoS to modify gas and electricity licences to set up a mechanism by which any shortfall in repayment by the company is socialised across energy companies. We propose to amend National Grid's system operator's licences, electricity supply and gas shipper licences to set up such a mechanism.

What are the policy objectives and the intended effects?

To implement provisions in the Energy Act 2011 to allow the Government to recover from energy companies any funding provided to a company in esc administration, if the company is not in a position to repay it. It is likely that energy companies would pass through these costs to consumers. As gas and electricity consumers would benefit, they will meet the cost, instead of the tax payer footing the bill. It should be noted that esc administration is a contingency measure to deal with a low risk, but high impact event, and may never be called upon. Any liabilities that arise would arise whether or not esc administration is in place.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

In the Energy Act 2011 the Government legislated for esc administration. Should a company become insolvent, no buyer can be found and it is not possible to appoint a Supplier of Last Resort, esc administration allows the company to continue to operate, while offering the least disruption to the market and limiting any risk of contagion. The Act includes provision for the SoS to modify electricity and gas licences in order to set up a cost recovery mechanism to recover from energy companies any shortfall in the repayment of funding provided by the Government to a company in esc administration. In this IA we consider two options:

1) do nothing
2) introduce licence amendments to enable the SoS to recover any unmet expenses of esc administration.

Will the policy be reviewed? It will not be reviewed (unless used). **If applicable, set review date:** Month / Year

Does implementation go beyond minimum EU requirements?			**N/A**		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**MicroNo**	**< 20 No**	**Small No**	**Medium No**	**Large Yes**
What is the CO2 equivalent change in greenhouse gas emissions? (Million tonnes CO2 equivalent)			**Traded: N/A**	**Non-traded: N/A**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister: Michael Fullan Date: 14/05/2013

Summary: Analysis & Evidence

Policy Option 1

Description: The proposed cost recovery mechanism for esc administration would enable any shortfall in the expenses of esc administration to be recovered through charges levied by National Grid on electricity suppliers and gas shippers. Therefore the relative costs and benefits of the cost recovery mechanism are assessed against a baseline option whereby no cost recovery mechanism is introduced and in the event of esc administration, a shortfall in costs is recovered through taxpayers.

FULL ECONOMIC ASSESSMENT

Price Base Year 2012	PV Base Year 2012	Time Period 2012-2025	Net Benefit (Present Value (PV)) (£m)		
			Low: Negligible	High: 51	Best Estimate: Small +'ve

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	-	-	Negligible	**Negligible**
High	-		£0.5m	**£2.4m**
Best Estimate	-		Negligible	**Negligible**

Description and scale of key monetised costs by 'main affected groups'

The cost recovery mechanism will impose direct costs on electricity supply companies and gas shippers – equal in value to the shortfall to be recovered. It is expected that these costs would be passed onto consumers, resulting in an increase in energy bills. However, without the cost recovery mechanism these direct costs would be met by taxpayers. Therefore, relative to the baseline these direct costs are transfers between taxpayers and energy consumers. The costs of the cost recovery mechanism are therefore determined by the additional costs it generates. There will be a marginal administrative cost to the Government, electricity suppliers and gas shippers and National Grid as a result of the cost recovery mechanism. This cost is expected to be marginal as an existing charge will be utilised and therefore the resources and infrastructure are already in place. Moreover the Government intends to give suppliers and shippers sufficient notice of any increased charges to allow them to incorporate increased costs into their price change notifications.

Other key non-monetised costs by 'main affected groups'

Recovering a shortfall via energy bills may generate welfare impacts as consumers respond to higher energy bills by changing their behaviour. For example, higher energy prices may cause consumers to reduce their consumption.

In addition, there may be distributional impacts on electricity suppliers and gas shippers depending on which charges are used to recover any shortfall. There will also be a distributional impact on domestic consumers, the nature of which will be determined by how a shortfall would be recovered in the do nothing scenario.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	-	-	Negligible	**Negligible**
High	-		£13m	**£53m**
Best Estimate	-		Negligible	**Negligible**

Description and scale of key monetised benefits by 'main affected groups'

The cost recovery mechanism will avoid the administrative costs associated with recovering any shortfall through taxation, debt or reduced spending on other Government programmes. The administrative costs of recovering a shortfall through taxation are estimated using average HMRC costs of collection.

Other key non-monetised benefits by 'main affected groups'

Recovering a shortfall via taxpayers will have distributional impacts. These will depend on how a shortfall would be recovered from taxpayers, for example, costs could be incurred by current taxpayers, consumers of public services, or future generations. The cost recovery mechanism will avoid these distributional costs.

In addition there is an equity benefit from the cost recovery mechanism in that the beneficiaries of esc administration (energy consumers) meet its costs.

Key assumptions/sensitivities/risks	3.5

Estimates of total cost to be recovered are sensitive to average operating costs; average revenue generated during esc administration; value of saleable assets, including customer accounts; length of esc administration; size (in terms of customers and customer profile) of the insolvent supplier and year in which esc administration takes place.

The net benefit outcome is sensitive to assumptions made over how a shortfall would be recovered in the baseline scenario, the relative administrative costs under the cost recovery and baseline option and finally the potential scale of any distributional impacts.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			**In scope of OIOO?**	**Measure qualifies as**
Costs: N/A	**Benefits: N/A**	**Net: N/A**	No	NA

Evidence Base (for summary sheets)

1. This IA assesses two options under which the Government may seek to recover a shortfall in the expenses of esc administration. The Energy Act 2011 includes provisions for the SoS to modify gas and electricity licences for the purpose of setting up a mechanism to recover any unmet expenses of esc administration. We are proposing to modify National Grid's system operator licences, gas shipper licences and electricity supply licences to set up a cost recovery mechanism. As Energy Supply Company (esc) administration can be put in place whether or not a cost recovery mechanism is introduced, the cost recovery mechanism's relative costs and benefits are assessed against a baseline option whereby no cost recovery mechanism is introduced and in the event of esc administration a shortfall is recovered through general taxation.

Summary of Results

2. Our analysis shows the benefits of the cost recovery mechanism exceed the costs when assessed against the baseline option. The identified benefits and costs are summarised in the table below.

Quantified Costs	**Quantified Benefits**
Marginal administrative cost of collecting increased charges	Avoids administrative costs associated with recovery via taxpayers
Unquantified Costs	**Unquantified Benefits**
Welfare impacts of changing consumer behaviour in response to higher energy bills	No indirect costs arising from taxpayer recovery
Possible distributional impacts on electricity suppliers and gas shippers as well as energy consumers.	Equity impact of those benefiting from esc administration meeting its costs

3. The cost recovery mechanism will impose direct costs on electricity supply companies and gas shippers – equal in value to the shortfall to be recovered. It is expected that these costs would be passed onto consumers, resulting in an increase in energy bills. In the majority of shortfall scenarios tested these direct bill impacts are marginal, although in a worst case scenario energy bills are found to rise by up to 3 per cent. However, in the baseline these direct costs would be met by taxpayers. Therefore, relative to the baseline these direct costs are transfers between taxpayers and energy consumers. Under the cost recovery mechanism energy consumers' loss is tax payers' gain (and vice versa in the baseline option). Direct costs are not included when assessing the costs and benefits of the cost recovery mechanism, but the likely scale of these impacts is presented in Appendix A.

4. The quantified costs and benefits relate to the administrative costs of the two options. Under the baseline option it is assumed there will be some administrative cost associated with collecting the shortfall via general taxation. Under the cost recovery mechanism those costs are avoided, but there will be an additional administrative cost associated with collecting the shortfall through increased charges. The additional administrative costs from increasing charges are expected to be marginal, as the charges are already a feature of the market, and therefore the infrastructure, processes and resources are already in place. In addition it is the Government's intention to give supplier and shippers sufficient notice of increased charges so that they are able to incorporate them into their usual price change notifications. The cost recovery mechanism therefore is expected to generate a small net benefit through lower administrative costs.

5. While some impacts of the cost recovery mechanism can be quantified, there will be others that cannot. First, there may be wider economic impacts associated with the proposed recovery mechanism. Taxpayer recovery may have indirect impacts as individuals' or businesses' change their behaviour in response to shortfall recovery. In contrast a cost recovery mechanism may generate wider welfare impacts as consumers respond to higher energy bills by changing their behaviour. Secondly, there may be distributional implications. For consumers, the distributional impacts will change depending on whether the shortfall is recovered from energy consumers or taxpayers. For gas shippers and electricity suppliers there may be distributional impacts from the choice of charge used to recover a shortfall. Although, as the IA accompanying the primary

legislation showed, energy customers are the primary beneficiaries of esc administration, therefore on equity grounds it would be appropriate for those benefiting from the policy to meet its costs.

Problem under consideration

6. In the Energy Act 2011 the Government legislated for a special administration regime for energy supply companies – esc administration. The primary legislation sets out the broad framework for energy supply company (esc) administration, which allows the Government to fund a failing energy supply company's activities until it is either rescued, sold as a going concern or its customers transferred to other companies (esc administration applies only to holders of gas and electricity supply licences).
7. Esc administration will ensure continuity of supply to customers at a more reasonable cost by allowing the failing company to continue to contract to supply gas and/or electricity to customers through its usual purchasing contracts, as opposed to supplying customers through balancing and settlement arrangements. It reduces the risk of financial failure spreading, while maintaining market stability and consumer confidence. An explanation of the industry balancing and settlement arrangements can be found in Appendix D.
8. Esc administration is intended to supplement the existing arrangements for dealing with the financial failure of a supplier. If a supplier were to become insolvent, the most likely and desirable outcome, would be a trade sale. If this were not possible, Ofgem would consider whether it would be practicable to appoint a Supplier of Last Resort. Only if these two options were not viable would the Government seek an esc administration order. It is likely that in most cases Ofgem would be able to appoint a Supplier of Last Resort and that esc administration would be appropriate only in the event of a large supplier becoming insolvent with no immediate prospect of a trade sale.
9. The RPC found that the IA accompanying the primary legislation clearly set out the costs and benefits of introducing a special administration regime. However, the RPC also suggested it would have benefited from more consideration of the implications for consumers of higher charges resulting from any rise in network charges in order to implement a cost recovery mechanism and the impact on suppliers' cost of capital.[1]
10. Should esc administration take place, the intention is that the funding would be recovered from the company if it were rescued, or its successor(s) if it were sold. If the company is not in a position to repay some or all of the funding provided by the Government, there is provision in the primary legislation to allow the Secretary of State (SoS) to modify electricity and gas licences, subject to consultation with the industry, to recover any shortfall.
11. A cost recovery mechanism already exists for the special administration regime for network and distribution companies. Under this mechanism the SoS may issue a direction to National Grid to recover any shortfall in the expenses of energy administration by raising the charges it levies on electricity suppliers and gas shippers. As suppliers do not pay charges to National Grid for the conveyance of gas, National Grid would raise the charge on shippers who would then pass the costs onto suppliers. Most suppliers also hold a shippers licence.
12. We are proposing to mirror the cost recovery mechanism already in place for energy administration – the special administration regime for network and distribution companies. We propose to modify National Grid's Electricity Transmission and Gas Transporter (national system operator) licences, electricity supply licences and gas shipper licences so that the Government may recover any shortfall in the repayment of the expenses of esc administration.
13. The key principle is that the cost should be recovered from electricity suppliers and gas shippers, who can pass the costs through to consumers, as would be the case if esc administration did not exist. Under the market trading arrangements if a failing company defaults on imbalance payments and network and distribution charges, the charges are spread across other market participants.

[1] The cost of capital issue is not pertinent to the cost recovery mechanism. However, this issue has been more fully explored in the in esc administration draft rules IA.

Summary of consultation responses

14. The original IA accompanied a consultation on the cost recovery mechanism. We received 14 responses to the consultation. Respondents broadly welcomed the proposals to modify gas and electricity licences in order to set up a cost recovery mechanism. Consultees agreed that suppliers and shippers should be given sufficient notice of increased charges in order to minimise the impact on cash flows. Consultees agreed with the Government's assessment that, given the current structure of charges, the most appropriate charges used to recover any shortfall would be the System Operator Commodity Charge for gas and the Assistance for Areas with High Distribution Costs Charge for electricity.

15. The consultation was intended to give interested parties an opportunity to comment on the draft licence changes rather than the overall policy design of energy supply company administration. The broad legal framework for Energy Supply Company Administration is already in place under the Energy Act 2011. However, some respondents did comment on aspects of the broader policy design and argued that the Government should apply for an esc administration order for any energy supply company in financial distress, rather than as a backstop to the Supplier of Last Resort arrangements. The Government believes that the restrictions placed on creditors' and shareholders' rights under special administration regimes can only be justified in order to ensure the continued operation of essential services. It therefore remains the Government's intention to apply for an esc administration order only if it is not possible to appoint a Supplier of Last Resort.

16. Some respondents suggested that small suppliers should be exempt from the cost recovery mechanism on the grounds that they do not have the potential to benefit from energy supply administration in the same way as a large supplier. Some also argued that large suppliers could load the recovery of increased charges onto "sticky" customers' (customers which have never switched supplier or have given up switching) bills, which would distort competition. Other stakeholders argued that it is important that any shortfall is recovered from all suppliers and shippers equitably, otherwise competition would be distorted.

17. The Government believes that energy supply company administration protects all suppliers and consumers as it will prevent financial contagion spreading across the market and maintain market stability. The cost of recovering any short fall in meeting the expenses of energy supply company administration should be borne by all suppliers and shippers in proportion to their market share. To exempt a particular class of supplier or shipper would risk distorting the market. No evidence was provided that any class of supplier or shipper would be disproportionately impacted by the proposals. Although it is possible that some suppliers may seek to recover the charges through raising the tariffs of particular customers, this is a function of the general operation of the market, rather than a function of the cost recovery mechanism. Ofgem is addressing this through its proposals to reform both the domestic and non-domestic market. Ofgem's final Retail Market Review proposals are designed to encourage greater customer engagement, particularly among "sticky customers".

18. Some respondents suggested that it would be fairer and more transparent if the costs of any shortfall were recovered through taxation rather than raising the charges levied by National Grid on shippers and suppliers. The Government believes that as it is consumers that will benefit from esc administration it is fairer that they should bear the cost. However, some respondents highlighted the potential for the recovery of a shortfall through energy bills to impact low income households more so than recovery through taxation. The IA acknowledges that there will be distributional impacts associated with the two recovery options, although due to the uncertainty over how exactly a shortfall might be recovered from taxpayers quantifying this impact is challenging. In addition, the IA suggests that there will be a net benefit from recovering a shortfall via energy bills as a result of the lower administrative costs incurred under this option.

Rationale for intervention

19. In the unlikely event of the failure of a large energy supplier, it may not be viable to appoint a Supplier or Suppliers of Last Resort.[2] However, the company's customers would still continue to be supplied even if the supplier's contracts with generators and wholesale gas suppliers had been cancelled, as National Grid would continue to balance the system. Under market arrangements the costs of supplying these customers would be spread across other industry participants and passed through to consumers. This would create additional costs in the short term and large unpredictable transfers from the insolvent company to other industry participants in the medium to long run. This would put a considerable strain on the system, risking contagion and reducing consumer and market confidence.

20. Esc administration allows the Government to fund the company, so it can continue to supply customers through its usual contracting arrangements with generators and wholesale gas suppliers. It should therefore diminish the overall uncertainty and risk, and reduce the risk of contagion. Esc administration is essentially an insurance policy in case of a low probability, high impact event that could potentially destabilise the GB energy market.

21. The cost recovery mechanism is designed to ensure that in the event that a supplier in esc administration is not in a position to repay all, or part, of the funding provided to it by Government to ensure its continued operation, the cost is socialised.

22. The principle of socialising costs if a supplier defaults on charges incurred in supplying customers is already well established in energy market regulation. Indeed if a company were to enter ordinary administration and default on balancing and settlement charges and transmission and distribution charges these charges would be spread across other market participants and ultimately consumers. The benefit of esc administration is that costs can be managed in an orderly fashion, which reduces the risk of financial failure spreading across the market.

The policy objective

23. The policy objective is to put in place a cost recovery mechanism to allow for the socialisation of the costs of esc administration should the company in esc administration not be in a position to repay some or all of the funds provided by Government to ensure its continued operation until it is either rescued, sold or its customers transferred to other suppliers. This means that any costs that may arise will be borne by energy companies and ultimately gas and electricity consumers, rather than the taxpayer. It is important to note these costs would arise whether or not a cost recovery mechanism is put in place.

24. As electricity suppliers are already required to pay National Grid for its transmission of electricity and shippers for the conveyance of gas to suppliers' customers, the systems are already in place for the collection of these charges. The proposed licence modifications allow National Grid to raise a specified sum to cover any unmet expenses of esc administration, through the charges it levies on gas shippers and electricity suppliers. It does this in its role as the national system operator for the gas and electricity transmission systems in Great Britain.

Options considered

25. We considered 3 options in the IA that accompanied the primary legislation:
    - Do nothing
    - Industry system and code changes
    - Legislate for a special administration regime

26. Since then provisions for esc administration have been included in the Energy Act 2011. In this IA we consider two options:

[2] The IA accompanying the Energy Act 2011 estimated that the probability of a large energy supplier becoming insolvent ranged from 0.01% and 0.08% per year. Over a 20 year period, the probability of a large supplier failing in any year is between 0.2% and 1.6%. http://www.decc.gov.uk/assets/decc/legislation/energybill/996-energy-bill-2011-ia-sar.pdf

1) Do nothing: as esc administration can be put in place whether or not a cost recovery mechanism is introduced, the cost recovery mechanism's relative costs and benefits are assessed against a baseline option whereby no cost recovery mechanism is introduced. In this case, in the event of esc administration a shortfall is recovered through taxpayers.

2) Amend National Grid's Electricity Transmission and Gas Transporter (national system operator) licences, electricity supply licences and gas shipper licences. This would allow any shortfall in the repayment of the costs of esc administration to be recovered by National Grid through its charges to electricity and gas suppliers, which would then be repaid to the Government.

Alternatives

27. When first considering the proposal to introduce a special administration regime we considered whether changes to industry codes or systems could deliver adequate protection to the market and consumers in the event of a large supplier insolvency.

28. We considered whether it would be feasible to increase the credit cover that industry participants are already required to post as signatories to the Balancing and Settlement Code (the code governing the balancing and settlement arrangements for electricity) and the Uniform Network Code (the code governing the balancing and settlement arrangements for gas), or whether some sort of insurance pool could be introduced. We did not explore these options in detail as it was clear from the outset that they would be more costly by tying up working capital of suppliers, and could not be relied upon to provide sufficient funding in all circumstances.

29. Given this earlier analysis we do not consider code changes or voluntary agreements as a viable alternative to the cost recovery mechanism. They would not provide the necessary certainty that any shortfall in meeting the costs of esc administration would be fully recovered and could prove more costly.

Do nothing

30. If we did nothing, the Government would be liable for any unmet costs of esc administration.

Amending licences to introduce a cost recovery mechanism

31. Our preferred option is to amend National Grid's Electricity Transmission and Gas Transporter (national system operator) licences, electricity supply licences and gas shipper licences to introduce a cost recovery mechanism.

How the cost recovery mechanism would work

32. In the event that a shortfall occurs at the end of esc administration, the SoS can choose to trigger the cost recovery mechanism. The SoS, after consultation with Ofgem and National Grid, would issue a direction to National Grid, in its role as the national system operator for the gas and electricity transmission systems in Great Britain. National Grid would be instructed to raise a specified sum, to cover any unmet expenses of energy supply company administration, through the charges it levies on gas shippers and electricity suppliers. More details on the process for the cost recovery mechanism can be found in the consultation document.[3]

33. The SoS will decide which charge(s) to increase, after consultation with Ofgem and National Grid, when the SoS issues the shortfall direction.

34. The Government recognises that there may be cash flow implications for shippers and electricity suppliers. It will consider the timescale for recovering costs when issuing a shortfall direction and ensure that it gives adequate notice of payments to allow the charges to be incorporated into companies usual price change notifications.

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69734/7323-a-shortfall-cost-recovery-mechanism-for-energy-sup.pdf

35. National Grid will be able to recover its administrative costs for operating the cost recovery mechanism and the SoS will specify a permitted administration fee in the shortfall direction. National Grid will be able to recover this administration fee in the same way as it recovers the rest of the money required to be raised by the shortfall direction.

One-in, One out – net cost to business

36. The measure is out of scope of OIOO because the fees and charges relate to cost recovery and not an increase in regulatory activity.

Economic Impact Assessment of Cost Recovery option

Cost Recovery Scenarios: Impact on consumers

37. The assessment that follows assumes in all cases that esc administration has taken place and some shortfall in government funding requires recovery. However, we need to bear in mind that esc administration is a contingency measure and the probability that a large energy supply company would ever fail is extremely low. According to a recent S&P default study, the historical annual default rates of investment grade companies range from 0% to 2.6% over 1988 to 2010, with a weighted average of 0.56%. However, the risk of needing to apply for an esc administration order would be even smaller as the most likely outcome of a supplier in financial distress would be a trade sale. If this were not achieved, it may be possible in certain circumstances for Ofgem to appoint a Supplier of Last Resort.

38. With that in mind, to assess the potential impact on consumers of esc administration we developed a number of scenarios to forecast potential shortfalls to be recovered by varying a number of assumptions. Examples include when esc administration might take place, the length of time a company might be in esc administration and the amount of support it would need. Appendix A explains in detail how these scenarios were derived and shortfalls estimated. These scenarios determine the size of the shortfall to be recovered though the cost recovery mechanism.[4]

39. Table 1 presents the impact of eight 'worst case' scenarios on consumer bills.[5] The assumptions for each scenario are presented in Table 2. Bill impacts for other scenarios (other than the eight worst case scenarios) are not presented as the bill impacts in all these cases were marginal. Indeed, in the majority of cases bill impacts are marginal. Under the worst case scenario the largest observed impact on bills is a 3% increase for high energy using businesses and a 2% increase for domestic consumers.

40. In the analysis that follows it is assumed that all of the additional charges are passed onto consumers. This may not be the case. Electricity suppliers and gas shippers may seek to absorb some of the cost in order to gain a competitive advantage, or chose to distribute the costs differently across different consumer groups e.g. if energy intensive customers are more sensitive to price changes than domestic customers. In the modelling results presented below we assume that the costs are met equally by all energy consumers.

41. Scenarios 1,4 and 6 are representative of a mid-point estimate where financial support lasts 6 months, 50 per cent of revenues are recovered and customer accounts have an asset value.[6] In this mid-point scenario the bill impact is no larger than a 1 per cent increase in bills. Therefore the bill impact of all scenarios that produce lower costs than this mid-point estimate will have marginal bill impacts (for example those scenarios with 65 per cent of revenue recovered or

[4] This IA uses the same methodology as used in the previous consultation IA, although inputs have been updated to reflect new data where it is available. For example this IA makes use of 2011 account data.

[5] Worst case scenarios are defined as those that imply the largest consumer bill impacts. The consumer bill impact modelling has been updated to reflect updated shortfall amounts (based on updated data since the last IA). In addition, the shortfall amounts have been assessed using DECCs updated prices and bills model. This has resulted in changes to total energy sales, consumer consumption values, and baseline energy bills since the last IA. All of these values influence how the overall impact on prices and bills has changed since the last IA. In addition, the updated analysis assumes that VAT is charged on the shortfall to be recovered, whereas previously it was not.

[6] Scenarios testing 3 and 6 months or support were tested in order to be consistent with the IA accompanying the primary legislation.

support lasting only 3 months). The remaining scenarios attempt to assess bill impacts under worst case scenarios. Across each of the 3 years, scenarios 2,3,5,7 and 8 present the bill impact assuming esc administration lasts 6 months, no revenue is recovered, customer accounts have no saleable asset value and the shortfall is recovered over a 5 year period.

42. Under the worst case, and least likely, scenarios tested, cost recovery would increase household energy bills by between 0 and 2 per cent (£5 and £27per annum), on average, over the duration of the payback period. The policy would add between 0 and 3 per cent (circ. £9k and £53k) to medium sized non-domestic consumers energy bills and between 1 and 3 per cent (circ. £72k and 500k) to large Energy Intensive Industries average bills (all bill estimates are in 2012 prices).

Table 1: Energy Bill Impact (average across payback period)[7]

	% Increase in Domestic Bill	% Increase in Medium-sized non-domestic Bill	% Increase in Large EII Bill[8]
Scenario 1	0	0	1
Scenario 2	1	2	2
Scenario 3	2	2	3
Scenario 4	0	1	1
Scenario 5	2	3	3
Scenario 6	0	1	1
Scenario 7	2	2	3
Scenario 8	2	3	3

Table 2: Scenario assumptions

	Start year costs recovered	Payback Years	Revenue Collected (%)	Cost Type	Length of Support	Cust. Asset value
Scenario 1	2013	5	50	Weighted average	6 months	Yes
Scenario 2	2013	5	0	Simple average	6 months	No
Scenario 3	2013	5	0	High cost	6 months	No
Scenario 4	2016	5	50	Weighted average	6 months	Yes
Scenario 5	2016	5	0	High cost	6 months	No
Scenario 6	2021	5	50	Weighted average	6 months	Yes
Scenario 7	2021	5	0	Simple average	6 months	No
Scenario 8	2021	5	0	High cost	6 months	No

43. To put these impacts into context Table 3 and Table 4 present the electricity and gas bill impacts separately. The worst case scenario in the 2013-2017 period implies a 2 per cent increase in domestic electricity bills, or a £11 increase. In terms of gas, the worst case scenario will increase domestic bills by around 1 per cent or £11 in the 2013-2017 period. In terms of prices, under the worst case scenario in 2013-2017 domestic gas prices would increase by £1/MWh and domestic electricity prices would increase by £3/MWh (all 2012 prices).

44. For non-domestic consumers, under the worst case scenario in (2021-2025) average gas bills would rise by around £12,000 for medium sized non-domestic users and around £90,000 for EII

[7] This table represents the impact on average annual energy bills (Electricity and Gas) over the entire payback period (in all cases 5 years). A further table presenting the energy bill impact in the year in which costs begin to be recovered is presented in Appendix C.

[8] EII impacts shown representative of a 50/50 electricity/gas user with no on site generation

consumers. For electricity, the worst case scenario would increase (2021-2025) average bills by around £40,000 for medium sized business users and around £370,000 for EII businesses (all 2012 prices).

Table 3: Electricity Bill Impact (average over payback period)			
	% Increase in Domestic Bill	% Increase in Non-Domestic Bill	% Increase in EII Bill
Scenario 1	0	0	1
Scenario 2	1	2	2
Scenario 3	2	2	3
Scenario 4	0	1	1
Scenario 5	2	3	3
Scenario 6	0	1	1
Scenario 7	2	2	2
Scenario 8	2	3	3

Table 4: Gas Bill Impact (average over payback period)			
	% Increase in Domestic Bill	% Increase in Non-Domestic Bill	% Increase in EII Bill
Scenario 1	0	0	1
Scenario 2	1	2	2
Scenario 3	1	2	2
Scenario 4	0	1	1
Scenario 5	2	2	3
Scenario 6	0	1	1
Scenario 7	2	2	3
Scenario 8	2	2	3

Assessing Cost Recovery Mechanism against Do-Nothing option

45. Our assessment of the impact of the cost recovery mechanism on consumer bills, under a range of scenarios, suggests that in the majority of cases it would result in a marginal increase in bills. In the unlikely worst case scenarios the increase in energy bills is between 0 and 3 per cent. However, in the absence of the cost recovery mechanism these costs would still be incurred, although in this case they would be met by taxpayers. Therefore, relative to the baseline these direct costs are transfers between taxpayers and energy consumers. Under the cost recovery mechanism energy consumers' loss is tax payers' gain (and vice versa in the baseline option). We therefore compare the relative merit of the cost recovery mechanism against the do-nothing option (where any shortfall is met by the Government and is recovered through general taxation) by assessing the wider costs and benefits of the cost recovery mechanism, beyond the direct shortfall costs.

Defining the Do-Nothing Option

46. The baseline, or Do-Nothing option, is defined as a world in which the cost recovery mechanism is not implemented. In this case, in the event of a company entering esc administration, the Government would recover any unmet expenses of esc administration through some combination of taxation, expenditure reductions or debt. However, there is a significant degree of uncertainty attached to this baseline. The assumption about how any unmet esc expenses would be funded: tax; expenditure reductions; or debt, could influence the assessment of the relative merit of the cost recovery mechanism.

47. In particular, the method of recovery could have indirect impacts elsewhere in the economy and will also have distributional considerations e.g. recovery of a shortfall via taxation, expenditure reductions or debt will have different indirect cost and distributional impacts associated with it.

Identified Costs & Benefits

48. There is no net welfare impact of the transfer between taxpayers and energy consumers of the direct shortfall costs. Therefore the net welfare impact of the cost recovery mechanism is dependent on the additional costs it generates (over and above the shortfall costs) and the additional benefits it generates (from avoiding the shortfall costs being recovered from taxpayers).

49. The identified costs and benefits of a cost recovery mechanism, relative to the baseline, include:

Benefits:

- **Avoided administrative costs:** Avoiding the administrative costs associated with recovering any shortfall through general taxation.
- **Avoided indirect costs:** Recovering a shortfall via taxpayers may have indirect economic and distributional impacts. These will depend on how a shortfall would be recovered from taxpayers.

Costs:

- **Administrative costs:** There will be a marginal administrative charge associated with the cost recovery mechanism. As the infrastructure to recover costs through charges already exists (and takes place), this administrative charge is expected to be small.
- **Distributional impact on businesses:** There may be distributional impacts on electricity suppliers and gas shippers depending on which charge is used to recover any shortfall.
- **Wider welfare costs:** A cost recovery mechanism may generate wider welfare impacts as consumers respond to higher energy bills by changing their behaviour, for example, consuming less energy.

Evaluating Costs and Benefits

Quantified Costs & Benefits

50. To provide an indicative estimate of the net welfare impact of the cost recovery mechanism relative to the baseline, administrative costs are assessed over the lifetime of the period over which a shortfall is recovered.

51. In the baseline scenario the total administrative cost of recovering any unmet esc administration expenses is estimated using HMRC average costs of collection figures.[9]The 2011/12 average across all taxes is multiplied by the shortfall to be recovered in a given year to estimate the total cost of collection under each scenario.[10]

52. Under the cost recovery mechanism option a marginal administrative cost is assumed.[11] This cost is a proxy for the expected administrative costs to industry and regulatory bodies. Administrative costs are expected to be broadly unchanged as the infrastructure to recover costs is already in place. Suppliers generally change their prices around twice a year. Companies will be given sufficient notice of the increase of any charges to recover a shortfall to allow them to incorporate increased costs into their usual billing cycle. In comparison to the previous consultation IA, more conservative administrative cost assumptions under the cost recovery mechanism are assumed in this analysis.

[9]http://www.hmrc.gov.uk/menus/pocket-guide-2012.pdf

[10] Average costs of collection may not be reflective of the marginal costs of collecting a shortfall, for example, it is likely that there would be lower set-up costs associated with recovering an amount associated for the cost recovery mechanism.

[11] The administrative cost is estimated based on an assumed labour resource of 10 individuals, and an assumed average salary of around £26,000. This assumption attempts to reflect potential labour costs across the public and private sectors e.g. Ofgem, National Grid and Energy Suppliers and Government. The assumed labour costs are multiplied by a factor of five to account for upfront costs in the initial year.

53. The benefits of the proposed cost recovery mechanism are defined as the avoided administrative costs to Government under the baseline scenario. The administrative costs of the cost recovery mechanism are treated as the only cost of the option. Costs and benefits are assessed on an annual basis over the period a shortfall is recovered (dependent on scenario) and discounted following Green Book guidance. The sum of the discounted costs and benefits over the recovery period are compared to generate a Net Present Value estimate of the cost recovery mechanism.[12] Table 5 presents the quantified costs and benefits under each worst-case scenario alongside the NPV results. In addition to the 8 worst case scenarios presented below, a number of other scenarios, with smaller shortfalls to recover were also tested.

54. In all central cases the cost recovery mechanism provides net benefits, but the NPVs are relatively small. The result is driven by the assumption that administrative costs will be lower under the cost recovery mechanism, in comparison to the baseline scenario. The net benefit is determined by the difference between these costs.

Table 5: NPV estimates of cost recovery mechanism by scenario, 2012 Prices

	Discounted Costs, £m	Discounted Benefits, £m	Net Present Value, £m
Scenario 1	2.4	9.6	7.2
Scenario 2	2.4	35.6	33.1
Scenario 3	2.4	46.3	43.9
Scenario 4	2.2	11.8	9.6
Scenario 5	2.2	52.6	50.5
Scenario 6	1.8	10.9	9.0
Scenario 7	1.8	36.5	34.7
Scenario 8	1.8	48.0	46.2

Sensitivity tests

55. Given the NPV estimates are determined by the administrative cost assumptions, the impact of varying the administrative cost assumptions are presented as sensitivities. Reflecting concerns that the marginal administrative cost of recovering a shortfall via taxpayers may be lower than the average cost of collection used in the central scenario, for the first sensitivity test a lower cost of collection is used. In the first sensitivity test, rather than the 'Overall Cost (pence per £ collected)' (equal to 0.83), a lower cost of collection of 0.31 is used (this is equal 'Environmental Taxes' cost of collection value). Assumptions for the cost of collecting under the cost recovery mechanism remain the same.

Table 6: NPV estimates of cost recovery mechanism by scenario, 2012 Prices

	Discounted Costs, £m	Discounted Benefits, £m	Net Present Value, £m
Scenario 1	2.4	3.6	1.2
Scenario 2	2.4	13.3	10.9
Scenario 3	2.4	17.3	14.9
Scenario 4	2.2	4.4	2.2
Scenario 5	2.2	19.7	17.5
Scenario 6	1.8	4.1	2.2
Scenario 7	1.8	13.6	11.8
Scenario 8	1.8	17.9	16.1

56. In a further sensitivity test, both the administrative costs of collecting via cost recovery mechanism and taxpayers are varied. For taxpayers the lowest cost of collection estimate reported in the HMRC Cost of Collection table is used. This relates to the 'Air Passenger Duty' and is equivalent to 0.04 pence per £ collected. This may reflect a marginal cost of collection more appropriately than the average cost. Under the cost recovery mechanism, the same assumed labour resource and labour cost is assumed, however, rather than initial set up costs being five times the on-going annual costs, as assumed in the central scenario, in this sensitivity

[12] The presented costs and benefits to do include the transfer of shortfall costs between taxpayers to energy customers.

the costs in the initial year are assumed to be double the on-going annual costs. The results are presented below.

Table 7: NPV estimates of cost recovery mechanism by scenario, 2012 Prices			
	Discounted Costs, £m	Discounted Benefits, £m	Net Present Value, £m
Scenario 1	1.4	0.5	-1.0
Scenario 2	1.4	1.7	0.3
Scenario 3	1.4	2.2	0.8
Scenario 4	1.3	0.6	-0.7
Scenario 5	1.3	2.5	1.3
Scenario 6	1.1	0.5	-0.6
Scenario 7	1.1	1.8	0.7
Scenario 8	1.1	2.3	1.2

57. Under this sensitivity, under the lower cost scenarios (such as 1, 4 and 6), the cost recovery mechanism produces a net cost relative to the baseline scenario. Under these scenarios the smaller cost of collection estimate, and the relatively small total amount to be collected, results in administrative costs under the cost recovery mechanism that are higher in comparison to the baseline scenario. In the larger cost scenarios, the cost recovery mechanism produces net benefits from lower net administrative costs, but the NPVs are smaller.

58. In a final sensitivity we assume that the administrative costs of recovery via taxpayers are zero. This may be an appropriate assumption if there are relatively small administrative costs associated with Government recovering any shortfall. If the administrative costs to Government are marginal, it may also be reasonable to assume that the administrative costs of the cost recovery mechanism are also marginal, given the infrastructure, processes and resources are already in place. In such a sensitivity there would be no quantified costs and benefits and the NPV would be zero.

59. These results highlight the sensitivity of the results to the administrative cost assumptions. Under the baseline scenario administrative costs are proportional to the cost to be collected, however, under the cost recovery mechanism the same (undiscounted) cost is assumed in all scenarios. In reality we might expect the administrative costs under the cost recovery mechanism to be smaller when a smaller total amount is being collected. This is a consequence of the wider information we have about costs of tax collection, relative to the administrative costs associated with charges. Despite this assumption, in the majority of scenarios tested above, the cost recovery mechanism results in net benefits as a result of lower administrative costs.

60. In reality, the additional administrative costs from increasing charges are expected to be marginal, as the charges are already a feature of the market, and therefore the infrastructure, processes and resources are already in place. In addition it is the Government's intention to give suppliers and shippers sufficient notice of increased charges so that they are able to incorporate them into their usual price change notifications. The cost recovery mechanism therefore is expected to generate a small net benefit through lower administrative costs.

Qualitative costs and benefits

61. While some of the impacts of the cost recovery mechanism can be quantified, others cannot.

62. First there may be wider economic impacts of the recovery mechanism choice. Under the baseline scenario, the method of recovery could have indirect impacts elsewhere in the economy. In contrast a cost recovery mechanism may generate wider welfare impacts as consumers respond to higher energy bills by changing their behaviour. The size of these impacts will depend on how consumers' demand for energy changes with changes in the price of energy, and the size of the change in energy prices. The net impact of these wider effects is difficult to quantify. For this reason these costs and benefits are highlighted as a risk but not quantified.

63. Secondly, there may be distributional implications. For example, there will be distributional benefits from avoiding costs on current taxpayers, consumers of public services, or future

generations, depending on the specific nature of how any shortfall is recovered in the absence of a cost recovery mechanism. However, there may also be distributional costs of recovering a shortfall from energy customers. The distributional impact will depend on the nature of the charge itself. For example, in the analysis considered, the charge would be recovered via a charge based on consumption. Alternative charges may have different distributional impacts. However, as the IA accompanying the primary legislation showed, energy customers are the primary beneficiaries of esc administration. It is therefore appropriate for those benefiting from the policy to meet the majority of its costs.

64. In addition there may be distributional impacts on electricity suppliers and gas shippers depending on which charge is used to recover any shortfall. The decision on which charge should be raised would be taken by the SoS, in consultation with Ofgem and National Grid, at the time a shortfall direction is issued. The proportion of the shortfall to be paid by electricity suppliers and shippers would be determined by their market share. The SoS will seek to use a charge that distributes the cost equitably (based on market share) and does not lead to any market distortions.

Risks and Assumptions

65. The modelled cost to be recovered is sensitive to a number of input assumptions, including:
    - average operating costs;
    - average revenue generated during esc administration;
    - value of saleable assets, including customer accounts;
    - length of esc administration;
    - size (in terms of customers and customer profile) of the insolvent supplier;
    - year in which esc administration takes place.

66. In addition, given the uncertainties involved, should esc administration take place, the realised costs to be recovered are likely to be different to the modelled estimates presented above. However, given the assumptions we have made, the modelled estimates may provide an upper bound to potential shortfall costs.

67. The net benefit of the cost recovery mechanism, relative to the counterfactual, is sensitive to assumptions made over how a shortfall would be recovered in the baseline scenario and the distributional impact this would have. The scale of the quantitative net benefit result reflects the different assumptions used to estimate total administrative costs. An average cost of collection figure is used to estimate costs under a taxpayer recovered shortfall, whereas assumptions made over labour costs are used to determine the administrative costs of the cost recovery mechanism option. In reality the administrative costs of the two options are likely to both be marginal (in comparison to the average costs of collection used to assess administrative costs of collecting the shortfall via tax). However, given the infrastructure to recover costs through charges is already in place, and given the presented evidence and sensitivities, it is reasonable to suggest that administrative costs may be smaller under the cost recovery mechanism.

Wider Impacts

68. Competition Assessment: The Government believes that esc administration protects all suppliers as it will prevent financial contagion spreading across the market and maintain market stability. The cost of recovering any short fall in meeting the expenses of esc administration should be borne by all suppliers and shippers in proportion to their market share. No evidence was provided that any class of supplier or shipper would be disproportionately impacted by the proposals during the consultation.

69. Greenhouse Gas Impact Test: Should higher electricity and gas prices under the cost recovery mechanism (relative to the counterfactual) lead to lower energy demand, traded greenhouse gas emissions may be marginally lower under the cost recovery mechanism. However, given the scale of the expected price increases and subsequent consumer response, this impact is not expected to be significantly large. This impact is not quantified, given the uncertainties and difficulties in quantifying how consumers would respond to these price increases.

70. Small Firms Impact Test: The proposals do not have any impact on micro businesses other than as energy consumers or taxpayers.

71. No other wider impacts are expected as a result of the cost recovery mechanism.

Summary of Options

72. A quantitative assessment of the expected administrative costs suggests that the cost recovery mechanism provides net benefits, relative to the do-nothing option, by incurring lower administrative costs. In addition, on equity grounds, under the cost recovery mechanism those that benefit from esc administration meet its direct costs.

73. A qualitative assessment of the wider economic and distributional impacts of the cost recovery mechanism is less conclusive. Wider, or indirect, economic impacts under both the cost recovery and baseline option are difficult to quantify and therefore highlighted as a risk. In addition, distributional impacts will be complex, with potentially positive and negative impacts on different consumer types and businesses.

Appendix A: Estimation of shortfall estimates

1. The extent to which there is any shortfall in the unmet expenses of esc administration will depend on:

- whether the company is rescued or sold as a going concern, or whether its assets (including customer accounts) are sold to one or more supplier;
- the length of time the company is in esc administration;
- the volumes of energy supplied to its customers;
- the value of its assets if it is not rescued or sold.

2. In order to assess the impact on consumers' bills we have to understand the extent of any shortfall in unmet esc administration expenses. In the event of restructuring or trade sale the expectation is that any funding provided by the Government would be repaid by the supplier itself.

3. There are considerable uncertainties around forecasting the potential shortfall from esc administration at some unknown future date, with an unknown supply company, in unknown circumstances. We have therefore examined a range of possible shortfalls estimated to reflect potential costs under hypothetical future scenarios. The assumptions produce a range of possible shortfalls, from a best case to a worst case, and assess the best way of recovering the shortfall under these different scenarios.

Determining the level of funding provided to the company in esc administration

4. We assume that funding provided by the Government reflects a shortfall in the costs of running the supply company and the revenues it receives from customers. Therefore the total financial resource the Government may have to provide during esc administration will be determined by the operating loss of the supply company (or the difference between operating revenues and operating costs) and the duration of the esc administration.

5. In advance of the event that triggered esc administration we do not know what the difference between revenues and costs might be. Therefore we test a number of scenarios to provide a range of possible operating losses, which reflect the loss incurred in the event of esc administration.

6. The operating loss will be highly dependent on the specific circumstances of the supplier in esc administration e.g. the number and profile of customers (domestic or non-domestic), the size and efficiency of the supplier and ultimately their profitability. We estimate the shortfall of an 'average' or 'typical' supplier going into esc administration. In this way we capture the indicative costs of any large energy supplier going into esc administration, irrespective of their customer base, size or efficiency.

Estimating Average Operating Costs and Revenues by supplier

7. Ofgem requires all energy supply companies to publish annual calendar year consolidated segmental reports.[13] The reports allow an energy company's financial performance to be separated into its supply business and its generation business. For 2009, 2010 and 2011 (the years for which data is available at the time) and for electricity and gas separately the total operating cost of supplying energy is recorded from the segmental reports.[14] Segmental reports are disaggregated by domestic and non-domestic customers and costs are disaggregated by direct fuel costs, other direct costs and indirect costs. For each of the largest suppliers in each year, this total cost figure is divided by the number of electricity and gas customer accounts to derive an average annual operating cost per customer. This annual figure is divided by 12 to derive a monthly average cost per customer for each of the largest suppliers.

[13] The relevant links to each of large suppliers segmental reports are included in Appendix B
[14] 2009, 2010 and 2011 data is uplifted to 2012 values using HMT deflator.

8. The average cost per customer figures are averaged across years and across supply companies so that a single average cost per customer per month figure can be generated. Averaging across both periods and across each of the largest suppliers we have 18 observations from which to derive a single average. A single average is calculated across all suppliers to limit the impact of one off costs or shocks biasing any single observation (the segmental reports do not give detail on specific cost items that are included in operating costs). The size of a company will also impact the cost of supply, as larger companies can take advantage of economies of scale. An average across three years and across all suppliers provides a good proxy for the average cost of supplying energy on a monthly basis for an average sized supply company. Two averages are estimated. A simple average and a weighted average (weighted by customer numbers). Both are used in the analysis to provide sensitivities and reflect the uncertainty inherent in estimating cost and revenue per customer estimates. The sensitivities allow us to assess how sensitive the models outputs are to changing input assumptions, in particular the revenue and cost per customer estimates.

9. This cost proxies the short term cost of maintaining an energy supply company on a monthly basis. In reality, there may be additional costs associated with the administration process not faced by solvent firms (such as the administrator's fees). These are not reflected in the data used. We have assumed that the estimated costs represent a reasonable approximation of the operating costs of an energy supply company.

10. The same process is undertaken to derive an average revenue per customer per month estimate from the segmental reports. These averages provide an estimate of the costs and revenues associated with an average supply company going into esc administration with an unknown customer profile and unknown size and efficiency. The estimates are presented in Table 8.[15]

Table 8: Average cost and revenue per customer

	Electricity Cost per Customer per month (£ 2012 prices)	Gas Cost per Customer per month (£ 2012 prices)	Electricity Revenue per Customer per month (£ 2012 prices)	Gas Revenue per Customer per month (£ 2012 prices)
Simple Average	75	55	77	55
Weighted Average	60	49	66	54

Estimating operating losses in esc administration

11. Using the segmented accounts from 2009, 2010 and 2011 we can derive average costs and average revenues consistent with supplying energy to customers, but we cannot, of course, derive operating losses for companies in sound financial health. For the supplier to be in esc administration something has to have gone wrong. It is difficult to predict the circumstances in which a large supplier may fail financially, as the majority of suppliers that have entered administration have been small suppliers that have been exposed to significant wholesale energy price hikes which they were unable to pass through to customers on fixed term contracts. The only large supplier to have failed was quickly bought by another supplier in a trade sale.

12. Therefore, rather than speculating on what hypothetical scenario may have caused a company to enter into esc administration we consider three possible operating loss scenarios – that the company collects no revenue, 50 per cent of revenue, and 65 per cent of revenue (based on our earlier estimates of monthly revenue per customer). We have no evidence to suggest that in esc administration 0,50 or 65 per cent of revenues would be collected. These scenarios are simply designed to artificially create an operating loss from the 2009, 2010 and 2011 data. The values were selected to provide a range of operating losses to represent an incurred loss should a company enter esc administration. For example the zero per cent assumption was selected to represent a highly unlikely worst case scenario where no revenue is being collected and the Government is then seeking to recover the entire cost of esc administration.

[15] Average costs and revenues for each the supply companies is not presented as customer account estimates could be derived from these values – and some of the figures we have used have been provided by the supply companies directly.

Estimating total Government funding during esc administration

13. Having estimated the operating loss per customer per month, under three different scenarios, we determine the total value of funding provided by the Government by selecting three other variables:

    - The size of the energy supply company (in terms of customer accounts)
    - How long the supply company is in esc administration (3 or 6 months)
    - The year within which the esc administration takes place (2012, 2015 or 2020)

14. The first variable simply determines how many customers the supply company has (since from the segmented accounts we determined an operating loss per customer). In all the scenarios we test we assume that the supply company is an averaged sized supplier (determined by the mean number of customers across the largest 6 suppliers from 2011 customer account data) with approximately 6 million electricity customers and 4.5 million gas customers (we make no distinction between domestic and non-domestic customers as that information is reflected in the average cost of supply).

15. The second variable determines how long the supplier is in esc administration and therefore how long the Government may be providing financial support. The 3 or 6 month assumption is consistent with the assumptions made in the original IA, regarding the length of esc administration.

16. The final assumption reflects the uncertainty about when esc administration might take place. The cost and revenue information we derive from the segmented accounts relates to 2009, 2010 and 2011. If the esc administration took place in future years we would expect the cost of supplying energy to be higher, reflecting changes to wholesale, transmission, distribution and policy costs of energy. However, as the cost of supplying energy rises we would expect revenues to rise too. To reflect this uncertainty, an index is applied to the 2009, 2010 and 2011 costs and revenues to uplift them into comparable costs and revenues in 2012, 2015 and 2020 respectively. The growth factors for both electricity and gas are derived from a weighted average of the DECC domestic and commercial electricity and gas retail price forecasts from 2010 to 2020 (weighted by the domestic and non-domestic consumption shares).[16]

17. For example, to estimate costs and revenues per customer in 2015, the 2012 average cost and revenue per customer figures, estimated from the segmental reports, are multiplied by the respective electricity and gas growth factor from Table 9 (in the case of 2015, 1.28 and 1.22 respectively). These new estimates are treated as forecasts for the likely costs and revenues per customer in 2015. In the case of 2015 the growth factors imply that electricity costs and revenues per customer will be 28 per cent higher in 2015, relative to 2012, and gas costs and revenues per customer will be 22 per cent higher in 2015, relative to 2012. Inherent in this methodology is the assumption that revenues and costs will increase over time at the same proportional rate (and at a rate equivalent to the rate of increase in retail prices). There are limitations to this approach. Revenues may not rise by the same rate as prices if customers respond to higher prices by altering their consumption habits. Supply companies' costs may not rise at the same rate as retail prices for a number of reasons e.g. the introduction of efficiency measures. To reflect the uncertainty around the input assumptions a wide range of sensitivities are calculated

Table 9: Price Growth Factors

Year	Electricity Growth Factor (relative to 2012)	Gas Growth Factor (relative to 2012)
2015	1.28	1.22
2020	1.44	1.19

[16] Electricity and Gas prices are taken from publicly available DECC retail price forecasts (Tables 1-20) https://www.gov.uk/government/policies/using-evidence-and-analysis-to-inform-energy-and-climate-change-policies/supporting-pages/policy-appraisal Demand forecasts are taken from publicly available DECC UEP forecasts. https://www.gov.uk/government/publications/2012-energy-and-emissions-projections

18. Varying the proportion of revenue that is collected from an average sized supply company, for 3 or 6 months and across the three different years generates a number of potential operating loss estimates. An example is described to aid understanding. The operating loss from supplying electricity assuming esc administration lasts 3 months, occurs in 2015 and 50 per cent of average revenue is collected is calculated as: (60-(0.5*66))*3*6.2*1.28 = £643m (where the 60 represents the average cost per customer per month, the 66 is the average revenue per customer per month, the 0.5 reflects 50% of revenue is recovered, the 3 represents 3 months of support, the 6.2 represents the number (in millions) of electricity customers and the 1.28 represents the uplift for reflect price growth to 2015).

Estimating costs recovered through asset sales: Customer Account Values

19. The supply company may hold assets which can be sold to cover some of the expenses of esc administration and therefore reduce the amount the SoS may seek to recover through a shortfall direction. It is assumed that an energy supply company has a single asset to sell, its customer base. Although in reality a supply company may have other assets (for example property, contracts or ICT), it has not been possible to estimate values for these assets. It is assumed that relative to the value of the customer base these assets would be marginal (bearing in mind esc administration applies only to the supply side of a business).

20. For the modelling the value of a customer to a competing energy supply company is estimated as the discounted stream of profits the customer is expected to generate. This is calculated using earnings before interest and taxes (EBIT) from the segmental reports, in a similar way to the cost and revenue estimates. An average electricity (and gas) profit per customer for each of the large suppliers in 2009, 2010 and 2011 is estimated. After averaging across all suppliers and all years an average value per customer is estimated assuming a discount rate of 5 per cent and a customer retention period of two years.[17]

Table 10: Estimated Customer Asset Values	
	Value per customer (2012 prices)
Electricity	£42
Gas	£44

21. One approach to validating these estimates is by comparing the estimates to the acquisition costs energy supply companies are willing to pay to acquire new customers. Supply companies will compete for customers through marketing and promotional activity. Advertising incurs a cost, therefore a customer must have a value for suppliers to compete for them. Discussions have suggested the modelled estimates are not unreasonable.

22. An alternative way of assessing the appropriateness of these estimates is to use the net margin indicators produced by Ofgem. In the 'Electricity and Gas Supply Market Report' Ofgem provide estimates of costs, prices and net margins for electricity and gas supply companies, from as far back as 2004.[18] It should be noted that the Ofgem modelling is designed to help track the relationship between wholesale and retail prices over time, and is not an assessment of actual company profitability[19]. Notwithstanding this, these indicators provide an additional cross-check to the estimates above, against a longer time horizon. The net margins presented in Table 11 present estimates of the net margin from a given year. Therefore the Ofgem estimated electricity margin for the year beginning from December 2011 (Dec 2011 to Nov 2012) is £45.[20]

[17] The electricity and gas price growth factors are applied to EBIT estimates for 2009, 2010 and 2011 to proxy for potential EBIT growth by 2012. A separate general price growth factor is also applied to convert the values into 2012 prices.

[18] Up until the end of 2011 Ofgem had published this information on a quarterly basis in the form of a Market Report. The last quarterly Market Report was published in December 2011 (available here: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Documents1/SMR_Dec_2011.pdf). From January 2012 Ofgem has published these indicators on a more regular basis on their website (available here: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Pages/indicators.aspx)

[19] The Ofgem modelling uses simplifying assumptions and, for example, does not consider discounted or fixed price tariffs.

[20] In some cases the figures presented in this section will not match the equivalent figures presented in the referenced source material. Ofgem have provided us with updated estimates, which reflect a number of revisions to the published estimates due to data revisions. The following Ofgem webpage details methodology changes: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Pages/indicators.aspx

Table 11: Net Margin		
	Electricity (£/customer/year)	Gas (£/customer/year)
Dec-07	10	-60
Dec-08	15	0
Dec-09	20	70
Dec-10	30	60
Dec-11	45	70

Source: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Documents1/SMR_Dec_2011.pdf

23. The estimates in Table 11 suggest that the electricity margin used in the modelling is broadly consistent with the Ofgem net margins for the last two to three years. However, before 2009 net margins were much lower. Gas margins from 2007 and 2008 are also different from the values used in the modelling, but in this case the values between 2009 and 2011 are higher than the values used in the modelling.

24. To highlight the uncertainty attached to estimating profit margins it is worth highlighting the more recent changes to the net margin value published by Ofgem. Ofgem produces a rolling average net margin of supplying a typical standard tariff customer. This is an average of the estimated net margin data for the previous six months, the current month, and the next six months. They also produce a snapshot estimate of the net margin on supplying a typical, standard tariff customer for the next 12 months. At the time of writing, the relevant estimates were:

Table 12: Net Margin				
	Rolling net margin		Total indicative margin for the next 12 months	
	Electricity (£/customer/year)	Gas (£/customer/year)	Electricity (£/customer/year)	Gas (£/customer/year)
Mar-09	10	5	15	-30
Mar-10	25	50	35	60
Mar-11	30	35	40	30
Mar-12	30	60	25	45
Mar-13	50	80	60	90

Source: http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Pages/indicators.aspx (accessed on 21/03/2013)

25. Changes over time highlight the difficulty in estimating net margin values, even over a relatively short period, as markets change on a regular basis. Estimating the value of a customer to a supply company in the future, and in a time of market stress, is even more uncertain. To reflect this uncertainty, a number of sensitivities are conducted to assess the importance of the customer value input assumption to the models outputs.

26. Estimating the value of a customer to a business is difficult during normal market conditions. For example, a customer may have value beyond the profit stream they generate. Estimating their value during a period of market stress is even harder. For example, it is difficult to know how strong the relative bargaining position of the energy administrator and energy supply companies would be. Would the supply companies view the customer base as a distressed asset, and bid a low price? Or could the energy administrator auction the customer base in a competitive market to extract full value? Other considerations would also determine the costs the administrator could expect to recover through the sale of the customer base. For example, would the customers of the company in esc administration seek to switch to other suppliers voluntarily or would competing supply companies be in a position to bid during a period of market stress?

27. To reflect this uncertainty, the values presented above are not adjusted for any changing value in future years (consistent with the idea or profit margins remaining constant) and when calculating 'worst case' scenarios it is assumed that there's no value from the sale of customers.

28. The value from selling customer accounts (the total number accounts multiplied by the number of customers) is assumed to accrue at the end of esc administration and offset the expenses of esc

administration. The shortfall that the SoS seeks to recover is therefore calculated as the operating loss (or difference between revenue and costs) minus the value of customers sold.

Cost Recovery Scenarios

29. The IA to the primary legislation stated that the Government envisaged the costs being recovered through an existing market charge, maintaining consistency with the special administration regime for network and distribution companies. This would mean costs were spread across electricity suppliers and gas shippers and ultimately consumers (if we assume all costs are passed onto consumers – discussed in more detail below). The relative merits of this cost recovery mechanism are compared against a do-nothing baseline whereby any shortfall is met by the Government and is recovered through general taxation.

30. The proposed cost recovery mechanism would allow the SoS to determine which charge National Grid should raise to discharge a shortfall direction, the period over which the charge would be raised and the rate of any interest charged.

31. To model these options two further variables are introduced to the modelling:

- Payback period (years): the number of years over which the costs are recovered. The modelling assumes either a 5 year or 10 year option.
- Interest Rate: The shortfall to the Government is treated as debt, chargeable at a defined interest rate. For modelling purposes an interest rate of 5 per cent is assumed.

32. A range of shortfalls are calculated by varying the input assumptions described in the previous section to generate a number of different scenarios. These scenarios were chosen to reflect the uncertainty when estimating operating losses and customer account valuations. The scenarios are designed to produce a range of possible shortfalls to be recovered. For example, in the 'worst case' scenario the highest cost per customer across the major suppliers is used rather than the average. In addition, in the worst case scenario customers are assumed to have no asset value.

33. For the range of shortfall values in each scenario an annual payback amount is calculated, assuming that the principal debt (the shortfall) is paid back over a set period of years at the defined interest rate.

34. The estimated smallest and largest annual costs to be recovered for 2013, 2016 and 2021 are presented in Table 13.[21]

Table 13: Lower and Upper bound cost estimates (2012 prices)

Year[22]	Electricity cost to recover £m (2012 prices) – lower bound	Electricity cost to recover £m (2012 prices) – upper bound	Gas cost to recover £m (2012 prices) – lower bound	Gas cost to recover £m (2012 prices) – upper bound
2013	8	861	0*	376
2016	19	1,098	5	460
2021	26	1,238	4	448

[21]The IA accompanying the primary legislation suggested that the total cost of supplying energy to customers under a SAR for a 6 month period would be around £3.1bn (£2.3bn worth of transfers and just under £800m worth of distribution and transmission charges). The equivalent estimate generated by the current modelling (using 2009/10/11weighted average prices) and assuming esc administration takes place in 2012 would suggest an equivalent cost of 3.6bn. The higher cost estimate will reflect differences in 08/09 energy prices, different assumptions over the average sized customer base, transmission & distribution charges and supplier costs and profit margins. The much higher worst case scenarios reflect the high average cost used, the price growth assumed between 08/09 and 2013 and differences in the average customer base size.

[22] The costs are recovered in the year after the esc administration takes place, and therefore if the esc administration occurred in 2020, the costs would begin to be recovered in 2021

*In this scenario there is a small payback (of around £1m) as the customer account values offset shortfall costs completely.

35. The scenarios which generate the upper and lower bounds are the same across each year. The lower bound is generated assuming:

    - 65 per cent of average revenue is recovered;
    - A weighted average of costs and revenue;
    - Customer accounts are sold to competitors;
    - Esc administration lasts 3 months; and
    - The shortfall is recovered over a 10 year period.

36. The upper bound is generated assuming:
    - 0 per cent of revenue is recovered;
    - Costs are determined using the highest cost per customer figure from across the largest suppliers;
    - Customer accounts are not sold to competitors
    - Esc administration lasts 6 months and
    - The shortfall is recovered over a 5 year period.

37. Within these best and worst case scenarios lie a range of costs, determined by slightly varying the input assumptions, some more likely than others. The attempt to derive the upper and lower bounds was driven by the need to determine the feasibility and impact of recovering a shortfall of this scale.

38. In addition to the methodology described above, an alternative methodology was used to validate the results. Given the uncertainties associated with the data, this alternative approach avoided the use of customer account data. Instead, revenue and costs per unit of energy supplied were used. Energy volume data is provided in the segmental statements and therefore this alternative approach provides a consistency check using a single data source. The results suggest that the alternative method would produce higher lower bound estimates than the approach adopted above, but lower high bound estimates. The equivalent low and high bound estimates described above using this alternative approach are presented below:

Table 14: Lower and Upper bound cost estimates alternative methodology (2012 prices)

Year[23]	Electricity cost to recover £m (2012 prices) – lower bound	Electricity cost to recover £m (2012 prices) – upper bound	Gas cost to recover £m (2012 prices) – lower bound	Gas cost to recover £m (2012 prices) – upper bound
2013	38	583	19	278
2016	48	744	24	341
2021	54	839	23	332

39. The final stage of the analysis determines how these costs are to be recovered and the relative merits of the different approaches.

Cost Recovery Scenarios: options for recovery

40. The charges we considered for electricity were the Balancing Services Use of System (BSUoS) charge which recovers the cost of operating the transmission system; and Transmission Network Use of System (TNUoS) charge which recovers the cost of assets that make up the GB transmission system, including maintenance and other associated overheads. For modelling we

[23] The costs are recovered in the year after the esc administration takes place, and therefore if the esc administration occurred in 2020, the costs would begin to be recovered in 2021

chose the BSUoS charge as it is automatically updated each day and it would be administratively simple to recover an extra amount through it. This charge applies to generators and suppliers so that revenue is recovered equally between them and is calculated in £/MWh based on the volumes entering and exiting the network.[24]We decided against using TNUoS because for generators the actual charge is based on generation capacity and for suppliers it is based on a measure of peak demand. Therefore it does not reflect actual production / consumption in the same way that BSUoS does. It should be noted that we are not proposing to raise charges paid by generators to implement the cost recovery mechanism.

41. For gas we considered the two types of commodity charge, System Operator (SO) and Transmission Operator (TO), which are applied to gas shippers and are both updated twice a year (April and October). Like TNUoS, TO Commodity Charges generally recover revenues associated with the transmission system assets, maintenance, and overheads. The TO revenues are split equally between entry and exit volumes. There are capacity charges for both entry and exit but, for various reasons, these may not collect the right total revenue. Therefore the TO entry and exit commodity charges are set in such a way that ensures the correct total revenue and revenue split is recovered. The SO Commodity Charge recovers the cost of operating the gas transmission system and is akin to the BSUoS charge. The rate of the SO commodity charge is the same for entry and exit, so broadly speaking SO revenues are recovered equally between entry and exit. For these reasons we chose to use the SO commodity charge for modelling which would be consistent with our choice of BSUoS.

42. We modelled the impact of recovering the cost of a shortfall on these charges to assess the feasibility of their use. It is not necessarily the case that these will be the charges used to recover any shortfall in the expenses of esc administration. In reality the SoS will make a decision based on advice at the time. The 2013 lower bound costs generate a relatively small increase in both BSUoS and the SO commodity charge (around 1%). The unlikely upper bound cost would imply around a doubling of both BSUoS and the SO commodity charge. These results are for illustration only. The largest impact on charges is the result of an unlikely worst case scenario. In the majority of cases the impact on the modelled charges is relatively small.[25]

[24] The previous IA stated that at the time of writing National Grid was consulting on a proposal to remove BSUoS charges from GB Generators, and, instead, recover BSUoS charges from GB Suppliers only to align the GB market arrangements with other EU member states. Currently, the proposal (code modification) is with Ofgem.

[25]The impact is presented for 2013 only as the base price from which the impact is calculated relates to the 2012/13 average charge BSUoS and SO commodity charges. These impacts are calculated against a 2012/13BSUoS charge of £1.50/MWh and a SO commodity charge of £0.228/MWh. The increase in the charges is calculated as the total shortfall to be recovered (estimated using the methodology described above) divided the 2012/13 chargeable volume for BSUoS and SO Commodity Charge. If the charge were recovered from suppliers only it would not be determined from total chargeable volume.

Appendix B

http://www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/Reporting%202011%20Results%20Overview%20text.pdf

Appendix C

Table 15: Energy Bill Impact (year in which costs are initially recovered)[26]			
	% Increase in Domestic Bill	% Increase in Medium-sized Non-Domestic Bill	% Increase in Large EII Bill
Scenario 1	0	0	1
Scenario 2	1	2	2
Scenario 3	2	2	3
Scenario 4	0	1	1
Scenario 5	2	3	3
Scenario 6	0	1	1
Scenario 7	1	2	3
Scenario 8	1	3	4

[26] For example, for Scenario 1, the percentage increase relates to the increase in bills in 2013.Annual bills will increase at a level similar to this for the duration of the payback period (although due to the fact bills are forecast to change over time, the percentage increase in bills is not the same in each and every year).

Appendix D Balancing and settlement

The arrangements by which the electricity industry manages electricity balancing and settlement are governed by a Code (The Balancing and Settlement Code or BSC). Suppliers are obliged by a licence condition to be a party to the code and comply with it. The energy balancing aspect allows parties to make submissions to National Grid to either buy or sell electricity into/out of the market in order to keep the system balanced. The settlement aspect relates to monitoring and metering the actual positions of generators and suppliers (and interconnectors) against their contracted positions and settling imbalances when actual delivery or offtake does not match contractual positions.

Supply must always match demand as electricity cannot be stored. Although the generation, transportation, delivery and usage of electricity is continuous, for the purposes of trading and settlement electricity is considered to be generated, transported, delivered and used in half-hour chunks called Settlement Periods. For each half-hour, those with demand for electricity and/or those with customers with demand for electricity (e.g. Suppliers) will assess in advance what the demand will be. They will then contract with generator(s) for that volume of electricity. Contracts can be struck up to an hour before the Settlement Period which the contract is for (this cut-off is known as Gate Closure and contracts can't be notified after this time). In the half hour itself, generators are expected to generate and deliver their contracted volume of electricity and suppliers are expected to use their contracted volume of electricity. Afterwards, metered volumes are collected for the half hour from generators and suppliers, and compared against their contracted volumes. If a supplier has used more electricity than they contract for, they must buy more electricity from the grid to meet the amount used. If they haven't used all their contracted energy then they must sell the energy back to the grid. These prices reflect the balancing actions National Grid have had to take and are designed to incentivise suppliers and generators to balance. The 'buy' price will usually be more expensive than the market price of electricity; and the sell price will normally be below market price.

These differences are referred to as imbalances, and settlement is the process of calculating the volumes of imbalance and the prices to be paid for these imbalances. As more accurate data comes into Settlement, Elexon, the company responsible for running the balancing and settlement mechanism, repeats the calculations on four occasions, spaced across 14 months for each half-hour period, providing a more accurate picture of Settlement each time. If a company is unable to pay its settlement costs, this cost is borne by all the parties to the code in proportion to their contracted volumes.

If a supplier goes into administration it is likely that its energy purchasing contracts will have been cancelled. However, electricity would continue to flow to customers. The company would be obliged by the BSC to purchase electricity through the balancing mechanism. The company does not contract to buy electricity, but is given a bill after Elexon have carried out their imbalance calculations, which show the discrepancies between what companies forecast they would supply and what they actually supplied. In the case of an insolvent supplier all of whose purchasing contracts have been cancelled, this would be all the electricity used by their portfolio of customers they since their contracts had been cancelled. As the system is designed to incentivise suppliers and generators to forecast their generation and supply needs as accurately as possible, the cost of buying electricity through balancing is usually considerably higher than "normal" contract prices. Usually around 3% of electricity is purchased through balancing and it is generally used to make up unanticipated additional demand. Where a settlement bill is unpaid, Elexon will ultimately smear those charges across other participants to the Balancing and Settlement Code.

As gas can be stored, demand and supply does not have to be balanced on a second by second basis. Gas supply and demand is balanced over a 24 hour period. Shippers are responsible for balancing demand and supply and are therefore signatories to the Uniform Network Code. It is shippers, not suppliers, that incur financial penalties if they do not buy and sell the gas for which they have contracted. Suppliers are not party to Uniform Network Code. However, in many cases (and certainly in the case of large suppliers), the Shipper and the Supplier are the same company and hold both licences. There is a requirement in the gas supply licence for establishing an agreement that if a shipper is unable to pay its debts, then the supplier is responsible for payment.