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Strategic energy market intelligence

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Credit and collateral in the GB energy markets

Phase 1

Volume 1—annexes

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Strategic energy market intelligence

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- wholesale and retail energy market competition and change;
- regulation and public policy within both electricity and gas markets;
- electricity and gas market design, governance and business processes; and
- market entry.

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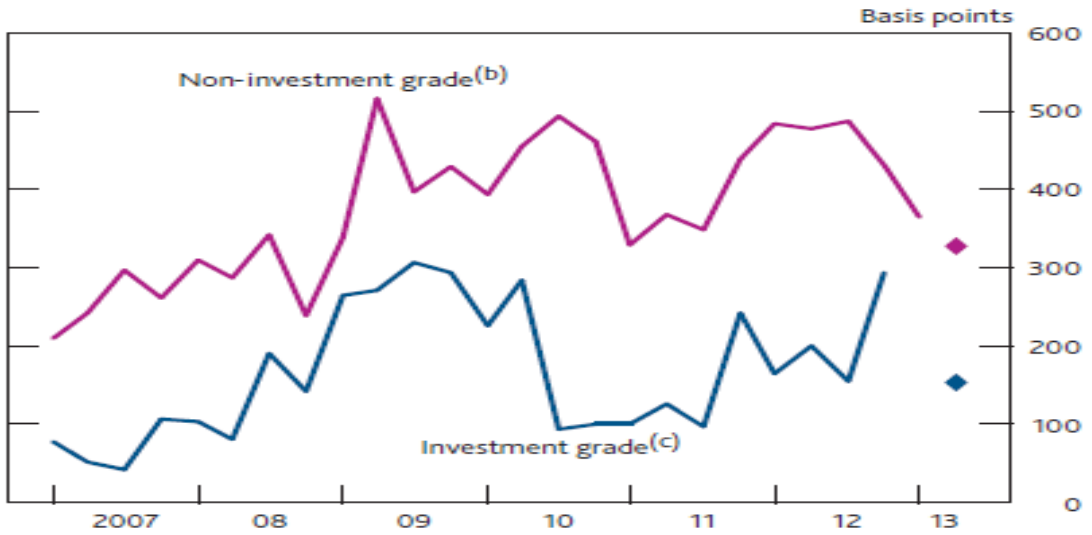
Annex A—Spreads on syndicated loans

Figure A.1: Average estimated spreads on syndicated loans, 2007-13 (basis points)



Sources: Dealogic and Bank calculations.

(a) Average disclosed spreads over reference rates in the currency in which loan tranches are denominated, weighted by tranche size. Classification may be adjusted if ratings change over the life of the loan providing this is confirmed by the banks involved in the loan. The share of loans for which spread details are disclosed varies over time. Data for 2013 Q2, denoted by diamonds, are based on deal information available at the time of publication. Data are quarterly. Non seasonally adjusted.
(b) Non-investment grade is Dealogic leveraged and highly leveraged categories.
(c) Investment grade is classified by Dealogic as a rating of BBB- or higher, on announcement of the loan. If there is no rating then the loan spread on origination is used as the basis for classification, with any spread up to 250 basis points classified as investment grade. There are no disclosed spreads for investment-grade deals in 2013 Q1 in the current data.

Annex B—Supplier benchmark assumptions

Table B.1: Assumed supplier benchmark costs of credit

Supplier	Assumed cost (%)
Intermediate domestic supplying electricity and gas	4.0
Niche domestic electricity supplier	12
Large domestic gas and electricity supplier	1.50
Small and medium-sized enterprise electricity supplier	5.0
Industrial and commercial electricity supplier	3.5
Small and medium-sized enterprise gas supplier	5.0
Industrial and commercial gas supplier	3.5
Large vertically integrated undertaking (VIU) supplying gas and electricity to domestic and non-domestic consumers	1

Table B.2: Supplier benchmark new market entrant variant financing assumptions

Supplier type	Financing costs (%)
Intermediate domestic supplying electricity and gas new supplier	10.0
Niche domestic electricity new supplier	14.0
Small and medium-sized enterprise electricity new supplier	10.0
Industrial and commercial electricity new supplier	10.0
Small and medium-sized enterprise gas new supplier	10.0
Industrial and commercial gas new supplier	10.0

Table B.3: Supplier benchmark acquisitive market entrant variant financing assumptions

Supplier type	Financing costs (%)
Intermediate domestic supplying electricity and gas new supplier	6.0
Niche domestic electricity new supplier	14.0
Small and medium-sized enterprise electricity new supplier	7.0
Industrial and commercial electricity new supplier	5.5
Small and medium-sized enterprise gas new supplier	7.0
Industrial and commercial gas new supplier	5.5

Table B.4: Assumed unsecured credit percentage for CUSC, DCUSA, UNC transmission and distribution (as a % of 2% of the relevant network operator's RAV)

Supplier	Assumed unsecured credit percentage
Intermediate domestic electricity supplier	13.3%
Niche domestic electricity supplier	6.8%
Industrial and commercial electricity supplier	15%
Small and medium-sized enterprise electricity supplier	13.3%
Industrial and commercial gas supplier	15%
Small and medium-sized enterprise gas supplier	13.3%
Large vertically integrated undertaking (VIU) supplying gas and electricity to domestic and non-domestic consumers	40%
Large domestic gas and electricity supplier	20%

Annex C (1)—Supplier benchmark map data tables

Table C1.1 below shows the average collateral amounts 2011-13 posted by the different core supplier benchmarks under each framework.

Table C1.1: Supplier benchmark average annual collateral amounts (2011-13)

Collateral amounts	Intermediate domestic (£)	Niche domestic (£)	Large supplier (£)	I&C electricity (£)	SME electricity (£)	I&C gas (£)	SME gas (£)	Large VIU (£)	Total (£)
CUSC	-	-	-	-	-	-	-	-	-
BSC	415,036.60	150,922.40	905,534.39	1,179,081.24	471,632.50	-	-	1,691,588.55	4,813,795.68
DCUSA	-	-	-	-	-	-	-	-	-
UNC balancing	26,378.45	-	56,274.03	-	-	34,737.06	17,368.53	56,464.37	191,222.45
UNC Tx/Dx	-	-	-	-	-	-	-	-	-
N2EX	27,123.29	4,931.51	1,775,342.47	154,109.59	61,643.84	-	-	1,541,095.89	3,564,246.58
Gas trading	5,171,243.86	-	55,159,934.51	-	-	34,049,342.29	3,404,934.23	123,258,619.09	221,044,073.98
Power trading	3,382,377.87	614,977.79	23,304,421.66	19,218,056.06	7,687,222.42	-	-	20,229,532.69	74,436,588.49
PPA	-	-	23,491,397.27	-	-	-	-	21,410,259.39	44,901,656.65
SEC	39,681.39	7,214.80	259,732.75	2,254.62	36,073.99	-	-	645,273.55	990,231.10
CfD	1,346,825.83	244,877.42	17,631,174.49	7,652,419.48	3,060,967.79	-	-	43,802,449.12	73,738,714.13
Capacity Market	228,301.89	41,509.43	2,988,679.25	1,297,169.81	518,867.92	-	-	7,425,000.00	12,499,528.30
Total	**10,636,969.17**	**1,064,433.36**	**125,572,490.81**	**29,503,090.80**	**11,836,408.46**	**34,084,079.35**	**3,422,302.76**	**220,060,282.65**	**436,180,057.37**

The exposure of each supplier benchmark to collateral under each code is further set out in the framework profiles in Annex C.

Table C1.2 below shows the annual average collateral costs 2011-13 posted by the different supplier benchmarks (core) under each key area where collateral is required if they are to execute their business model.

Table C1.2: Core supplier benchmark average annual collateral costs (2011-13)

Collateral costs	Intermediate domestic (£)	Niche domestic (£)	Large supplier (£)	I&C electricity (£)	SME electricity (£)	I&C gas (£)	SME gas (£)	Large VIU (£)	Total (£)
CUSC	-	-	-	-	-	-	-	-	-
BSC	16,601.46	18,110.69	13,583.02	41,267.84	23,581.62	-	-	16,915.89	130,060.52
DCUSA	-	-	-	-	-	-	-	-	-
UNC balancing	1,055.14	-	844.11	-	-	1,215.80	868.43	564.64	4,548.12
UNC Tx/Dx	-	-	-	-	-	-	-	-	-
N2EX	1,084.93	591.78	26,630.14	5,393.84	3,082.19	-	-	15,410.96	52,193.84
Gas trading	206,849.75	-	-	-	-	1,191,726.98	170,246.71	-	1,568,823.45
Power trading	135,295.11	73,797.34	-	672,631.96	384,361.12	-	-	-	1,266,085.53
PPA	-	-	-	-	-	-	-	-	-
SEC	1,587.26	865.78	3,895.99	78.91	1,803.70	-	-	6,452.74	14,684.37
CfD	53,873.03	29,385.29	264,467.62	267,834.68	153,048.39	-	-	438,024.49	1,206,633.50
Capacity Market	9,132.08	4,981.13	44,830.19	45,400.94	25,943.40	-	-	74,250.00	204,537.74
Total	**425,478.77**	**127,732.00**	**354,251.06**	**1,032,608.18**	**591,820.42**	**1,192,942.78**	**171,115.14**	**551,618.71**	**4,447,567.06**

Annex C (2)—Supplier benchmark profiles

1.1 Key assumptions

1.1.1 CUSC

- BSUoS:

  BSUoS costs for the period have been taken from the National Grid Operational Forum[1]. BSUoS costs in 2011-12 were £1.47/MWh, in 2012-13 costs were £1.41/MWh and the latest forecast for 2013-14 £1.58/MWh.

- Transmission charges:

  Transmission charges for each supplier have been based on the transmission charging schedules for each year as published by National Grid. It is assumed that each supplier has an equal share of demand in each region. A p/kWh figure for domestic, SME and I&C customers has been calculated using representative consumption patterns.

  Each supplier has an unsecured credit limit set at 2% of Regulated Asset Value (RAV) multiplied by a percentage based on the supplier's credit score. The National Grid Electricity Transmission RAV was based on the current price control period at £8,388mn[2].

  Suppliers were given credit scores based on assumptions about their relative credit-worthiness, mapping these onto independent credit score and credit ratings matrices to derive percentages of the maximum unsecured credit limit (being 2% of National Grid's RAV) that could be awarded to them as an unsecured credit allowances. This mirrors the allocations for electricity suppliers set out in Table B.4.

  None of the transmission charges for the suppliers outstrip the unsecured credit limits assumed and as such none of the benchmarks are assumed to be posting collateral.

1.1.2 BSC

- Each supplier is billed on its trading charges, which are primarily set by imbalance costs. Imbalance percentages for each supplier have been set based on experience from Cornwall Energy looking at imbalance percentages across the market. The Big Six typically have 1% imbalance and the large supplier benchmark is assumed to have 1% imbalance.
- Smaller suppliers have larger imbalance percentages as they are less able to balance well as a result of their smaller size. The intermediate domestic supplier is assumed to have an imbalance percentage of 6%, the niche domestic electricity supplier is assumed to have an imbalance percentage of 12%. The two larger non-domestic suppliers are better able to balance their positions and are both assumed to have a 3% imbalance percentage.
- Suppliers are assumed to be in imbalance in the same direction, both long and short, in equal amounts. Short volumes are charged at annual average system buy price (SBP) and short volumes are paid at annual average system sell price (SSP) for each year. The payments from being long are taken away from the short costs to get the overall daily BSC charge, which is multiplied by the 29 days of collateral required to be held under the BSC.

[1] http://www.nationalgrid.com/uk/gas/operationalinfo/operationsforum/

[2] http://www.nationalgrid.com/annualreports/2011/operating-and-financial-review/operating-environment/regulatory-environment.html

1.1.3 DCUSA

The RAV for each distribution network was taken from the Ofgem annual report on the distribution networks[3]. Each benchmark is assumed to supply equal volumes across the distribution networks.

p/kWh charges for domestic, I&C and SME customers were taken from the relevant charging statements from each DNO from the Energy Networks Association website[4] and created using representative consumption patterns.

Suppliers were given credit scores based on assumptions about their relative credit-worthiness, mapping these onto independent credit score and credit ratings matrices to derive percentages of the maximum unsecured credit limit (being 2% of the relevant DNO's RAV) that could be awarded to them as an unsecured credit allowances. This mirrors the allocations for electricity suppliers set out in Table B.4.

1.1.4 UNC

- UNC balancing

  The cash call limit for users is equal to three days non-deliverability time and 12 months average system average price (SAP). The annual average SAP was downloaded from National Grid's Data Item Explorer website[5]. Annual balancing throughput is based on assumed imbalance percentages for the different types of suppler. I&C suppliers and the large supplier benchmark are assumed to be better balancers with 1% imbalance on annual volumes. Smaller intermediate domestic, niche domestic electricity and SME non-domestic are assumed to be worse at balancing and have been given a 5% imbalance percentage on their annual volumes.

- UNC distribution and transmission

  Information on each gas DNO's charges and RAV and National Grid's gas transportation charges and RAV are available on the Gas Governance website[6].

  p/kWh charges for domestic, I&C and SME customers were taken from the relevant transmission and distribution charging statements from each DNO from the Gas Governance website and created using representative consumption patterns.

  Suppliers were given credit scores based on assumptions about their relative credit-worthiness, mapping these onto independent credit score and credit ratings matrices to derive percentages of the maximum unsecured credit limit (being 2% of the relevant GDNO's RAV) that could be awarded to them as an unsecured credit allowances. This mirrors the allocations for gas suppliers set out in Table B.4.

1.1.5 Smart Energy Code

The *Smart Metering Impact Assessment*[7] from January 2014 noted that the costs of the communications service charge would be £2,374mn (in 2011 money) out to 2030. This figure is divided by 18 (being the number of years over which this cost was derived, 2013-2030) to arrive at an annual figure, divided further by 12 and multiplied by 1.4 (being 1.4 months, the period which credit cover is to be provided for—to derive the relevant credit cover amount. DECC assumes the full roll-out of smart meters by 2020. This resolves to a figure of £15.4mn.

[3] https://www.Ofgem.gov.uk/publications-and-updates/electricity-distribution-annual-report-2010-11

[4] http://www.energynetworks.org/electricity/regulation/duos-charges/distribution-use-of-system-charges/

[5] http://marketinformation.natgrid.co.uk/gas/DataItemExplorer.aspx

[6] http://www.gasgovernance.co.uk/

[7] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78666/IA-Feb.pdf

1.1.6 Contract for Difference

See assumptions listed Chapter 8, Volume 2.

1.1.7 Capacity Market

The impact assessment accompanying the draft capacity market rules in October 2013[8] estimated the average annual cost of the scheme would be £64mn. This figure was multiplied by each benchmark's market share and then divided by 12 to achieve the monthly collateral amount required.

1.1.8 Exchange Trading

- N2EX

  All the benchmarks are expected to be purchasing 5% of their daily power requirements on the N2EX market, other than the large supplier (15%) and the large VIU supplier (25%). The base collateral call for this amount is calculated based on the rules outlined on the N2EX website[9]. As these benchmarks are suppliers they are assumed to be long and face the volatility long price.

- PPA

  Only the large supplier and large VIU supplier benchmark is assumed to have access to a significant quantity of power under a Power Purchase Agreement (PPA). Both are assumed to meet 25% of its power requirements from PPAs (in the case of the large VIU Supplier this is 25% of their non-domestic power requirements, with domestic power requirements being met by own generation), of which 83% of its power is from conventional thermal generators and 17% is from renewables generators. This figure is based on the level of gas and renewables capacity on the system. Thermal generators require two months collateral cover for the output from the station at wholesale power prices. Renewables generators required two months collateral cover for the output of their stations including wholesale costs, Renewable Obligation Certificate (Roc) costs and Levy Exemption Certificate (Lec) costs. These costs are all at a 15% discount to represent the cost of managing the PPA.

  Summary of wholesale power, Roc costs and Lec costs is in Table C2.1.

Table C2.1: Summary of benchmark PPA prices

Year	Power (£/MWh)	RO (£/MWh)	Lec (£/MWh)
2013-14	51.9	45.2	5.4
2012-13	53.1	44.4	5.4
2011-12	47.8	42.3	5.4

1.1.9 Bilateral trading

Collateral is required to trade in the wholesale power and gas markets and are typically priced to cover the cost of energy delivered but not yet paid for in the monthly cycle, the cost of energy between default and closing out a position and for any decrease in the market value of the forward position. To capture this,

[8] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252743/Capacity_Market_Impact_Assessment_Oct_2013.pdf

[9] https://www.n2ex.com/newsroom/exchange_information/adjustmentmarginparameters

forward wholesale gas and electricity prices based on an annual average of the annual April contract for each period has been used, based on Cornwall Energy pricing data.

A benchmark's daily requirement (minus any supply provided by the exchange or through PPAs) is multiplied to find a monthly level and then calculated against the annual average wholesale price for gas and power.

Annual average April gas and power prices are summarised in Table C2.2.

Table C2.2: Summary of benchmark wholesale prices

Fuel	2013-14 (£/MWh)	2012-13 (£/MWh)	2011-12 (£/MWh)
Electricity	51.9	53.1	47.8
Gas	22.4	22.9	19.0

1.1.10 Financing assumptions

See Annex B, and also each benchmark profile.

2 Large VIU supplier benchmark

2.1 Core operating assumptions

Table C2.3 shows the key assumptions we have used to determine the large supplier benchmark profile.

Table C2.3: Large supplier profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Annual gas (MWh)	Market share (%)
Large VIU Supplier	6,000,190	60	58,959	198,356	21,520,000	72,400,000	9.00

These are based on benchmarking our hypothetical large VIU supplier to large suppliers in the GB energy markets. The large VIU supplier:

- operates in the domestic and non-domestic gas and power markets;
- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage in gas and electricity of 1%, reflecting actual imbalance percentages of vertically integrated utilities, exposing it to low incursion of imbalance charges relative to its volumes of demand;
- purchases 25% of their non-domestic power demand on exchanges, and meets all of its domestic customer's power requirements from its own generation fleet;
- has a A-credit rating, affording it an ability to write long-term, bankable PPAs and hence purchase power through this route (we assume 25% of non-domestic demand); and
- is a shipper of gas.

2.2 Core financing assumptions

For the large supplier benchmark we assume:

- as it has an A-credit rating it will be able to collateralise obligations through PCGs where this is possible;
- where this is not possible it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1%.

2.3 Core collateral amounts and costs

Figure C2.1 shows the breakdown of collateral between different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.4.

Figure C2.1: Core large VIU supplier benchmark collateral amounts, 2011-13

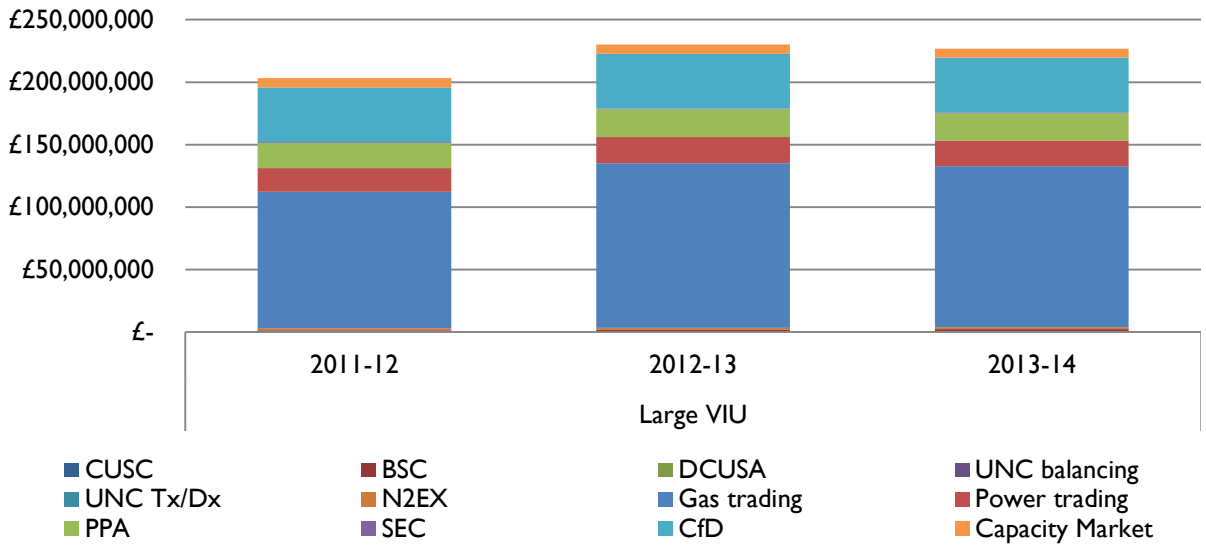


Table C2.4: Core large VIU supplier benchmark amounts by framework, 2011-13[10]

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	1,267,929.51	1,594,683.60	2,212,152.55
DCUSA	-	-	-
UNC balancing	51,579.33	57,529.20	60,284.59
UNC Tx/Dx	-	-	-
N2EX	1,541,095.89	1,541,095.89	1,541,095.89
Gas trading	109,215,104.58	131,777,479.91	128,783,272.78
Power trading	18,981,017.73	21,094,841.17	20,612,739.18
PPA	20,172,333.91	22,222,473.59	21,835,970.67
SEC	645,273.55	645,273.55	645,273.55
CfD	43,802,449.12	43,802,449.12	43,802,449.12
Capacity Market	7,425,000.00	7,425,000.00	7,425,000.00
Total	**203,101,783.62**	**230,160,826.02**	**226,918,238.32**

Figure C2.2 shows the breakdown of collateral costs between different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.5.

[10] These are hypothetical numbers. To allow for a like-for-like comparison we have assumed the DCC had been in place over our three year benchmark period.

Figure C2.2—Core large VIU supplier benchmark collateral costs, 2011-13

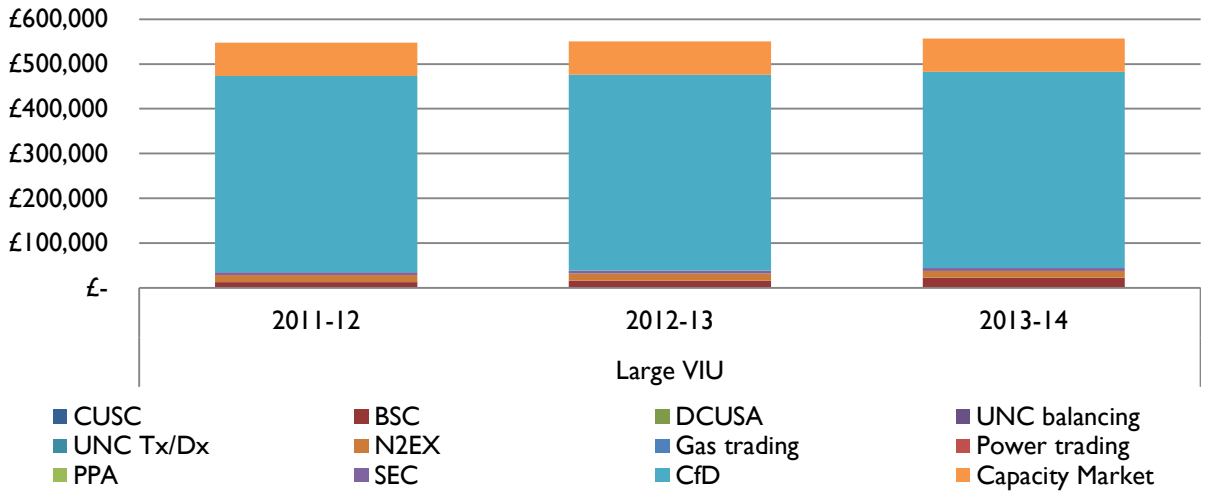


Table C2.5: Core large VIU supplier benchmark costs by framework, 2011-2013

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	12,679.30	15,946.84	22,121.53
DCUSA	-	-	-
UNC balancing	515.79	575.29	602.85
UNC Tx/Dx	-	-	-
N2EX	15,410.96	15,410.96	15,410.96
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	6,452.74	6,452.74	6,452.74
CfD	438,024.49	438,024.49	438,024.49
Capacity Market	74,250.00	74,250.00	74,250.00
Total	**547,333.27**	**550,660.31**	**556,862.56**

The relationship between amounts and costs of collateral reflect the degree to which the large VIU supplier is immune from facing collateral cost in the activities of transmission and distribution, and is able to leverage its financial standing to avoid collateralising its bilateral trading activities. It remains exposed to credit posting in areas where the provision of letter of credit or cash is mandatory. In particular, the CfD will be driving a significant increase in their collateral cost given the scale of required collateral and the link to market share.

2.4 Variant collateral costs and amounts

Figure C2.3 shows the breakdown of collateral average collateral amounts between 2011-13, including the impact of a year-ahead (50% price fall) "mark-to-market" event, and a month-ahead (10% price fall) "mark-

to-market" event different areas of activity for a large VIU supplier benchmark. Actual data is set out in Table C2.6.

Figure C2.3: Core large VIU supplier, average collateral amounts including "mark-to – market", 2011-13 average

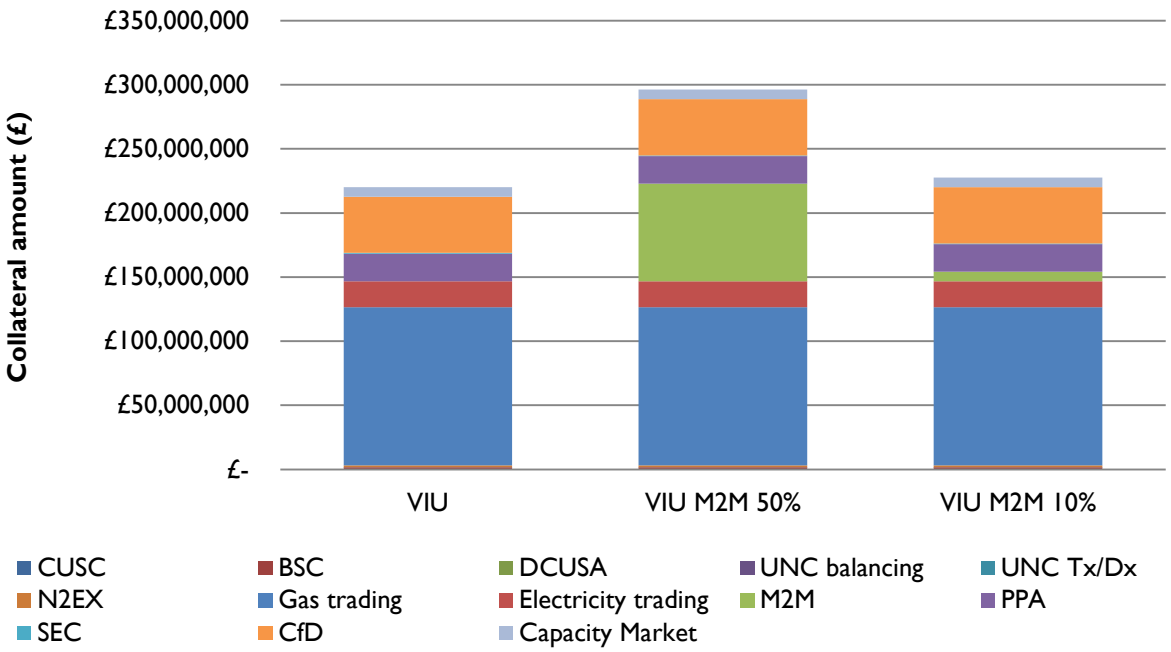


Table C2.6: Core large VIU supplier, average collateral amounts including "mark-to–market", 2011-13 average

Framework	VIU (£)	VIU M2M 50% (£)	VIU M2M 10% (£)
CUSC	-	-	-
BSC	1,691,588.55	1,691,588.55	1,691,588.55
DCUSA	-	-	-
UNC balancing	56,464.37	56,464.37	56,464.37
UNC Tx/Dx	-	-	-
N2EX	1,541,095.89	1,541,095.89	1,541,095.89
Gas trading	123,258,619.09	123,258,619.09	123,258,619.09
Electricity trading	20,229,532.69	20,229,532.69	20,229,532.69
M2M	-	76,048,720.45	7,383,940.37
PPA	21,410,259.39	21,410,259.39	21,410,259.39
SEC	645,273.55	645,273.55	645,273.55
CfD	43,802,449.12	43,802,449.12	43,802,449.12
Capacity Market	7,425,000.00	7,425,000.00	7,425,000.00
Total	**220,060,282.65**	**296,109,003.10**	**227,444,223.02**

Figure C2.4 shows the breakdown of collateral average collateral costs between 2011-13, including the impact of a year-ahead (50% price fall) "mark-to-market" event, and a month-ahead (10% price fall) "mark-to-market" event different areas of activity for a large VIU supplier benchmark. Actual data is set out in Table C2.7.

Figure C2.4: Core large VIU supplier, average collateral costs including "mark-to-market", 2011-13 average

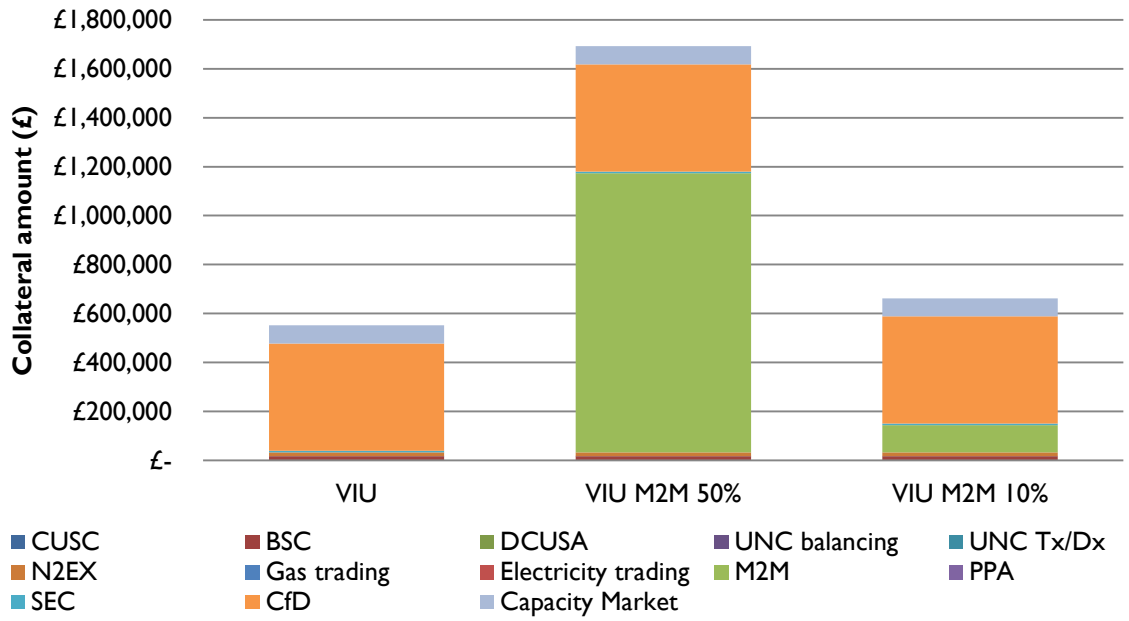


Table C2.7: Core large VIU supplier, average collateral costs including "mark-to-market", 2011-13 average

Framework	VIU (£)	VIU M2M 50% (£)	VIU M2M 10% (£)
CUSC	-	-	-
BSC	16,915.89	16,915.89	16,915.89
DCUSA	-	-	-
UNC balancing	564.64	564.64	564.64
UNC Tx/Dx	-	-	-
N2EX	15,410.96	15,410.96	15,410.96
Gas trading	-	-	-
Electricity trading	-	-	-
M2M	-	1,140,730.81	110,759.11
PPA	-	-	-
SEC	6,452.74	6,452.74	6,452.74
CfD	438,024.49	438,024.49	438,024.49
Capacity Market	74,250.00	74,250.00	74,250.00
Total	**477,368.71**	**1,692,349.52**	**662,377.82**

3 Large supplier benchmark

3.1 Core operating assumptions

Table C2.8 shows the key assumptions we have used to determine the large supplier benchmark profile.

Table C2.8: Large supplier benchmark profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual Power (MWh)	Annual Gas (MWh)	Market share (%)
Large supplier	6,000,000	60	31,562	88,767	11,520,000.00	32,400,000	3.62

These figures are based on benchmarking our hypothetical large supplier to large suppliers in the GB energy markets. Our assumptions have been externally validated. To present a flavour of heightened collateral demands in this segment of the market we have not assumed that our large supplier benchmark is representative of the Big Six. It shares some characteristics with these companies but has a slightly lower market share and number of customers.

Furthermore, the large supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- is only a supplier of gas and power to domestic customers;
- has an imbalance percentage in gas and electricity of 1%, reflecting actual imbalance percentages of vertically integrated utilities, exposing it to low incursion of imbalance charges relative to its volumes of demand;
- purchases 15% of its power demand on exchanges;
- has a BBB+ credit rating, affording it an ability to write long-term, bankable PPAs and hence purchases power through this route (we assume 25% of demand); and
- is active across gas and power supply is both a supplier and shipper of gas.

3.2 Core financing assumptions

For the large supplier benchmark we assume:

- as it has a BBB+ credit rating it will be able to collateralise obligations through PCGs where this is possible;
- where this is not possible it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

3.3 Core collateral amounts and costs

Figure C2.5 shows the breakdown of collateral between different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.9.

Figure C2.5: Core large supplier benchmark collateral amounts, 2011-13

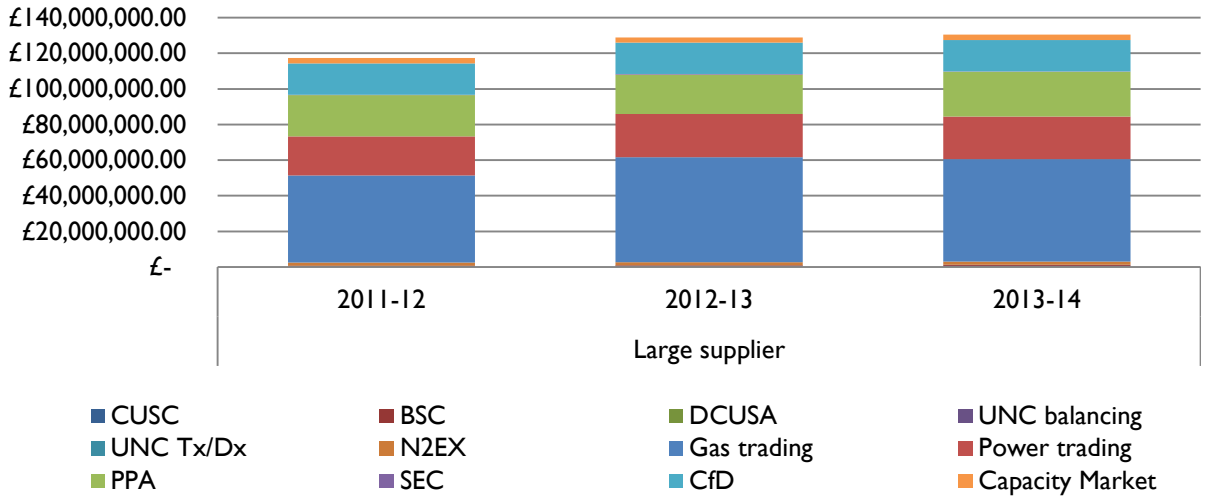


Table C2.9: Core large supplier benchmark amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	678,742.93	853,659.62	1,184,200.62
DCUSA	-	-	-
UNC balancing	51,405.46	57,335.27	60,081.37
UNC Tx/Dx	-	-	-
N2EX	1,775,342.47	1,775,342.47	1,775,342.47
Gas trading	48,875,267.80	58,972,242.39	57,632,293.35
Power trading	21,866,132.42	24,301,257.03	23,745,875.53
PPA	23,238,528.66	22,080,624.92	25,155,038.21
SEC	259,732.75	259,732.75	259,732.75
CfD	17,631,174.49	17,631,174.49	17,631,174.49
Capacity Market	2,988,679.25	2,988,679.25	2,988,679.25
Total	**117,365,006.22**	**128,920,046.18**	**130,432,418.03**

Figure C2.6 shows the breakdown of collateral costs between different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.10.

Figure C2.6: Core large benchmark collateral costs, 2011-13

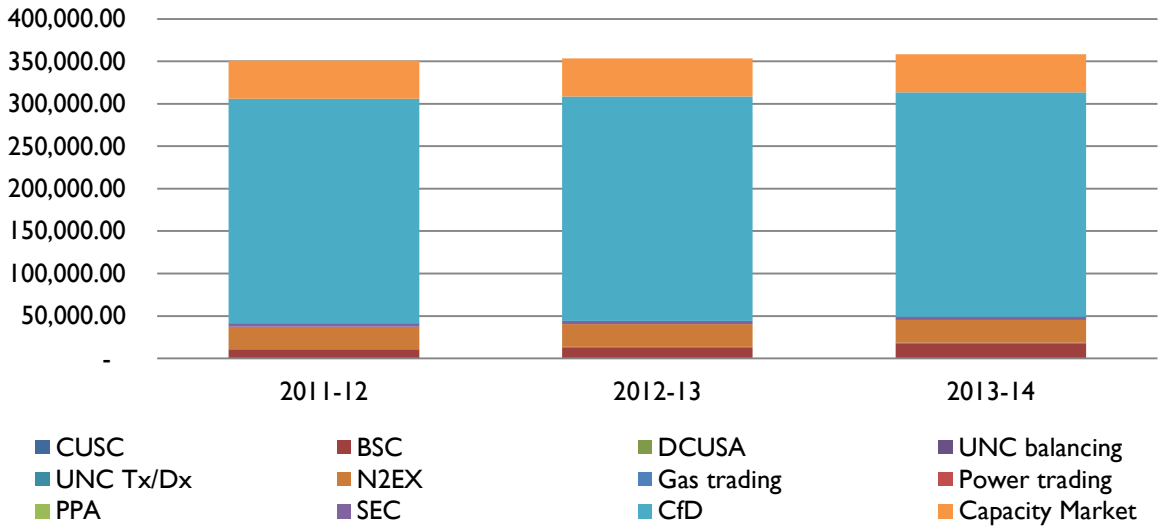


Table C2.10: Core large supplier benchmark costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	10,181.14	12,804.89	17,763.01
DCUSA	-	-	-
UNC balancing	771.08	860.03	901.22
UNC Tx/Dx	-	-	-
N2EX	26,630.14	26,630.14	26,630.14
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	3,895.99	3,895.99	3,895.99
CfD	264,467.62	264,467.62	264,467.62
Capacity Market	44,830.19	44,830.19	44,830.19
Total	**350,776.16**	**353,488.86**	**358,4788.16**

The relationship between amounts and costs of collateral reflects the degree to which the large supplier is immune from facing collateral cost in the activities of transmission and distribution, and is able to leverage its financial standing to avoid collateralising its bilateral trading activities. It remains exposed to credit posting in areas where the provision of letter of credit or cash is mandatory. In particular, the CfD will be driving a significant increase in their collateral cost given the scale of required collateral and the link to market share.

3.4 Variant collateral costs and amounts

Figure C2.7 shows the breakdown of collateral average collateral amounts between 2011-13, including the impact of a year-ahead (50% price fall) "mark-to-market" event, and a month-ahead (10% price fall) "mark-to-market" event different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.11.

Figure C2.7: Core large supplier, average collateral amounts including "mark-to–market", 2011-13 average

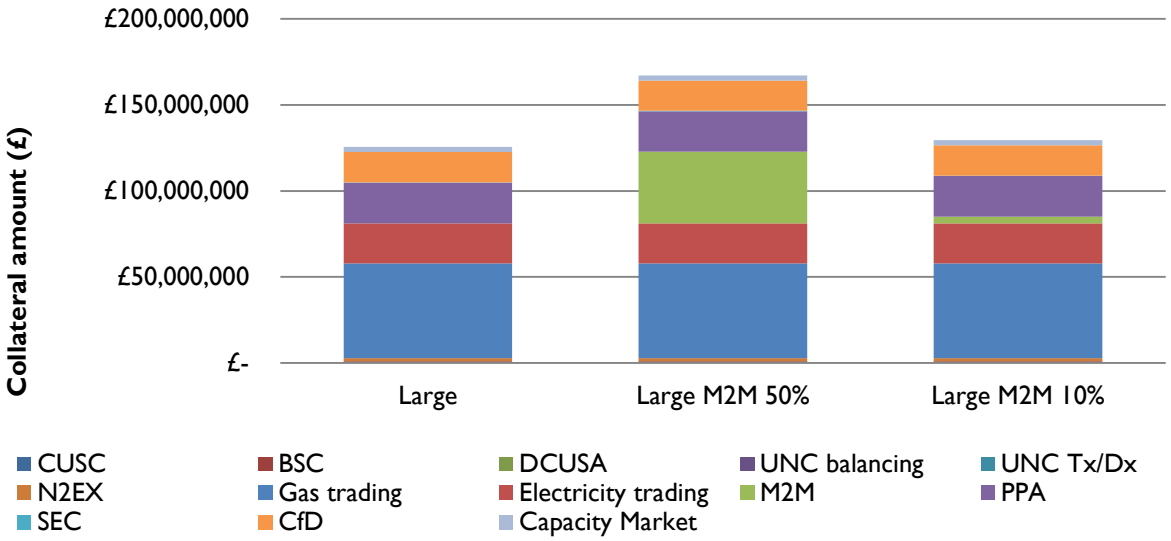


Table C2.11: Core large supplier, average collateral amounts including "mark-to-market", 2011-13 average

Framework	Large (£)	Large M2M 50% (£)	Large M2M 10% (£)
CUSC	-	-	-
BSC	905,534.39	905,534.39	905,534.39
DCUSA	-	-	-
UNC balancing	56,274.03	56,274.03	56,274.03
UNC Tx/Dx	-	-	-
N2EX	1,775,342.47	1,775,342.47	1,775,342.47
Gas trading	55,159,934.51	55,159,934.51	55,159,934.51
Electricity trading	23,304,421.66	23,304,421.66	23,304,421.66
M2M	-	41,586,108.77	3,904,097.59
PPA	23,491,397.27	23,491,397.27	23,491,397.27
SEC	259,732.75	259,732.75	259,732.75
CfD	17,631,174.49	17,631,174.49	17,631,174.49
Capacity Market	2,988,679.25	2,988,679.25	2,988,679.25
Total	**125,572,490.81**	**167,158,599.58**	**129,476,588.40**

Figure C2.8 shows the breakdown of collateral average collateral costs between 2011-13, including the impact of a year-ahead (50% price fall) "mark- to-market" event, and a month-ahead (10% price fall) "mark-to-market" event different areas of activity for a large supplier benchmark. Actual data is set out in Table C2.12.

Figure C2.8: Core large supplier, average collateral costs including "mark-to-market", 2011-13 average

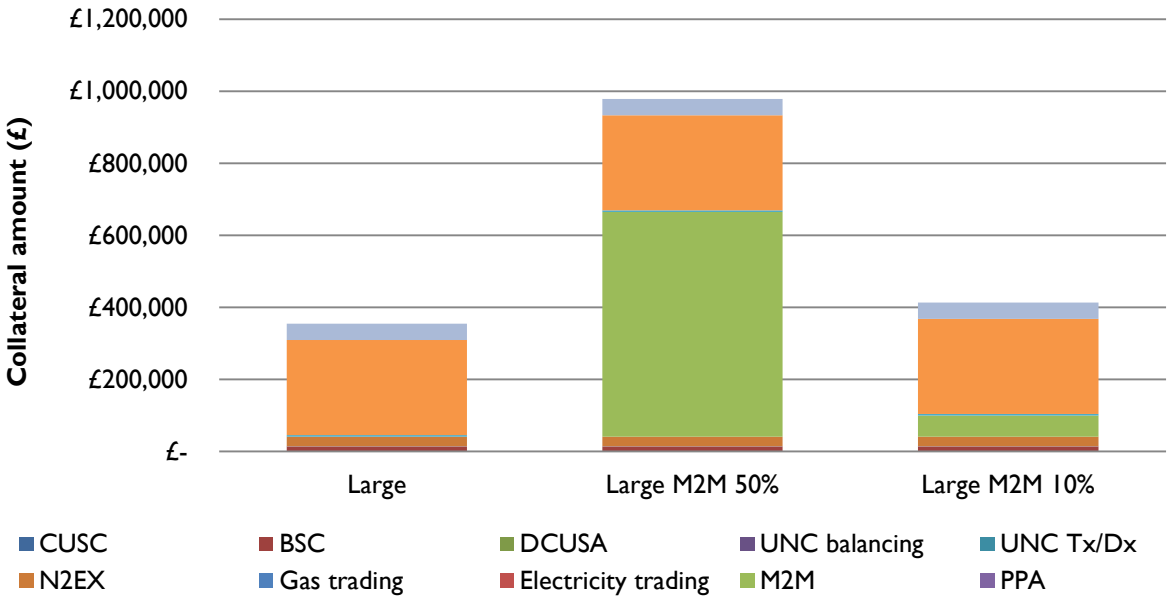


Table C2.12: Core large supplier, average collateral costs including "mark-to-market", 2011-13 average

Framework	Large (£)	Large M2M 50% (£)	Large M2M 10% (£)
CUSC	-	-	-
BSC	13,583.02	13,583.02	13,583.02
DCUSA	-	-	-
UNC balancing	844.11	844.11	844.11
UNC Tx/Dx	-	-	-
N2EX	26,630.14	26,630.14	26,630.14
Gas trading	-	-	-
Electricity trading	-	-	-
M2M	-	623,791.63	58,561.46
PPA	-	-	-
SEC	3,895.99	3,895.99	3,895.99
CfD	264,467.62	264,467.62	264,467.62
Capacity Market	44,830.19	44,830.19	44,830.19
Total	**345,251.06**	**978,042.69**	**412,812.52**

4 Intermediate domestic electricity and gas supplier benchmark

4.1 Core operating assumptions

Table C2.9 shows the key assumptions we have used to determine the intermediate domestic supplier benchmark profile.

Table C2.9 Intermediate domestic supplier benchmark profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Annual gas (MWh)	Market share (%)
Intermediate Domestic	500,000	55	2411	8322	880,000	3,037,500	0.28

These figures are based on benchmarking our hypothetical Intermediate domestic supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the intermediate domestic supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage in gas and electricity of 6%, reflecting actual imbalance percentages of independent suppliers, exposing it to a higher incursion of imbalance charges relative to its volumes of demand;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long-term, bankable PPAs so is unable to meet any demand through this route; and
- is active across gas and power supply and are both a supplier and shipper of gas.

4.2 Core Financing Assumptions

For the intermediate domestic supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 4%.

4.3 Core collateral amounts and costs

Figure C2.10 shows the breakdown of collateral between different areas of activity for an intermediate domestic supplier benchmark. Actual data is set out in Table C2.13.

Figure C2.10: Core intermediate domestic supplier benchmark collateral amount, 2011-13

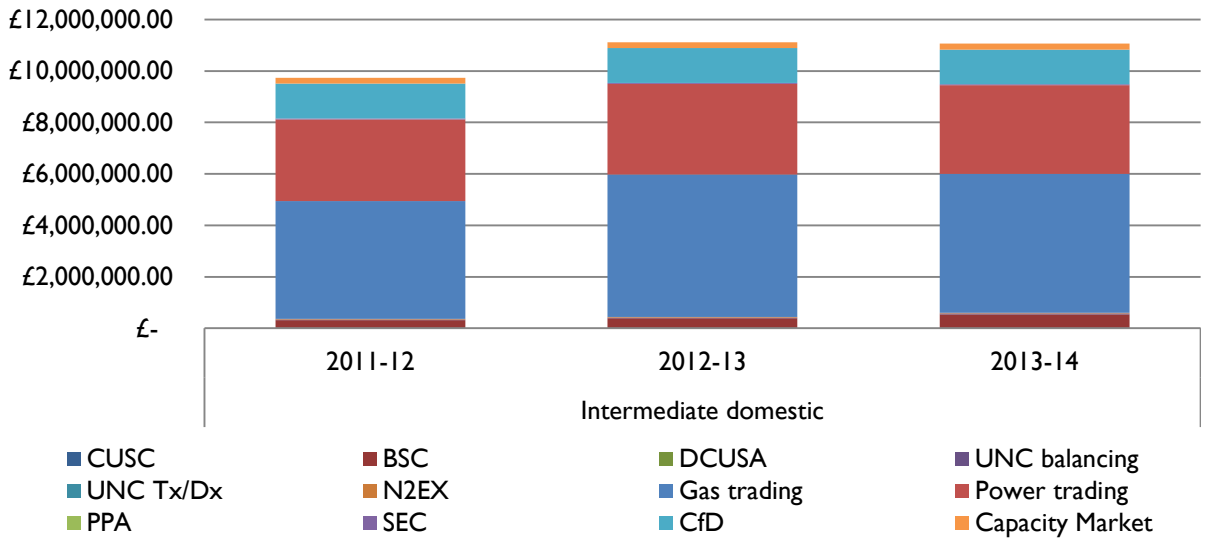


Table C2.13: Core intermediate domestic supplier benchmark amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	311,090.51	391,260.66	542,758.62
DCUSA	-	-	-
UNC balancing	24,096.31	26,875.91	28,163.14
UNC Tx/Dx	-	-	-
N2EX	27,123.29	27,123.29	27,123.29
Gas trading	4,582,056.36	5,528,647.72	5,403,027.50
Power trading	3,173,626.16	3,527,057.44	3,446,449.99
PPA	-	-	-
SEC	39,681.39	39,681.39	39,681.39
CfD	1,346,825.83	1,346,825.83	1,346,825.83
Capacity Market	228,301.89	228,301.89	228,301.89
Total	**9,732,801.74**	**9,732,801.74**	**9,732,801.74**

Figure C2.11 shows the breakdown of collateral costs between different areas of activity for an intermediate supplier benchmark. Actual data is set out in Table C2.14.

Figure C2.11: Intermediate domestic core supplier benchmark collateral costs, 2011-13

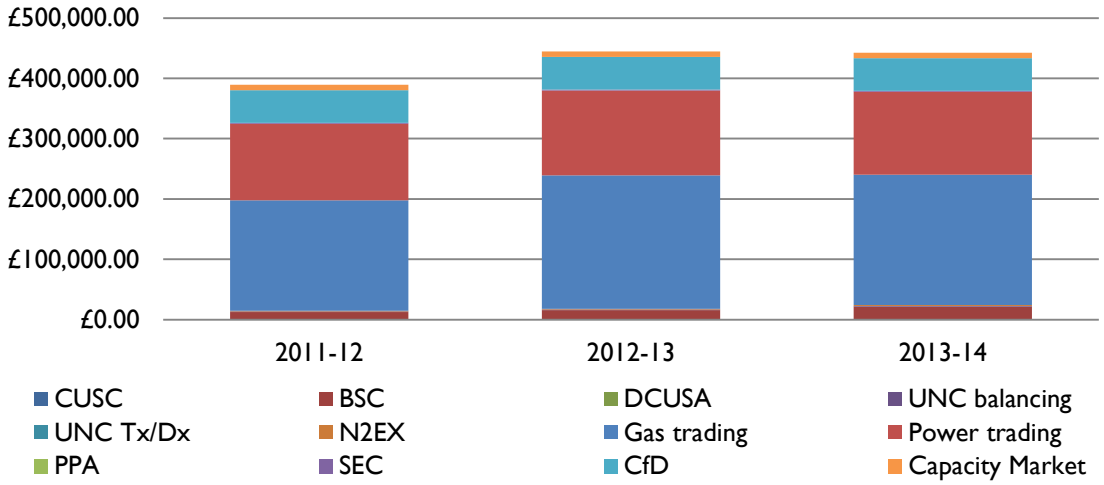


Table C2.14: Intermediate domestic core supplier benchmark costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	12,443.62	15,650.43	21,710.34
DCUSA	-	-	-
UNC balancing	963.85	1,075.04	1,126.53
UNC Tx/Dx	-	-	-
N2EX	1,084.93	1,084.93	1,084.93
Gas trading	183,282.25	221,145.91	216,121.10
Power trading	126,945.05	141,082.30	137,858.00
PPA	-	-	-
SEC	1,587.26	1,587.26	1,587.26
CfD	53,873.03	53,873.03	53,873.03
Capacity Market	9,132.08	9,132.08	9,132.08
Total	**389,312.07**	**444,630.97**	**442,493.27**

Power and gas trading makes up the majority of collateral amounts and costs for the intermediate domestic core supplier.

4.4 Variant collateral costs and amounts

Figure C2.12 illustrates the collateral amounts required of an intermediate domestic supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.15.

Figure C2.12: Annual average collateral amounts intermediate domestic new entry variants, 2011-13 average

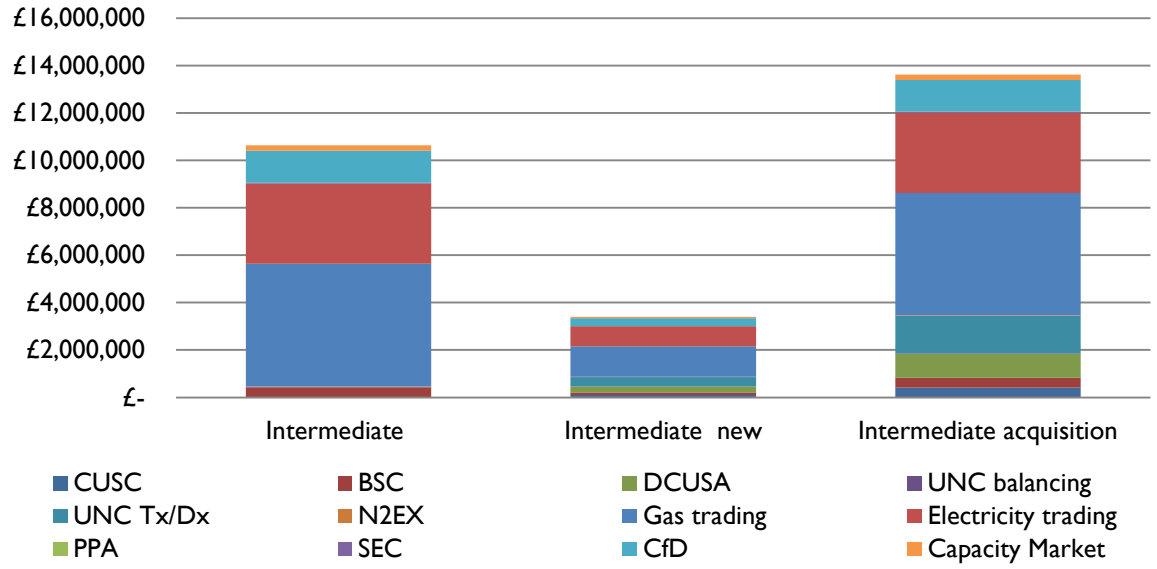


Table C2.15: Annual average collateral amounts intermediate domestic new entry variants, 2011-13 average

Framework	Intermediate electricity (£)	Intermediate new (£)	Intermediate acquisition (£)
CUSC	-	103,110.27	412,441.08
BSC	415,036.60	103,759.15	415,036.60
DCUSA	-	251,529.01	1,006,116.02
UNC balancing	26,378.45	6,594.61	26,378.45
UNC Tx/Dx	-	393,545.62	1,574,182.47
N2EX	27,123.29	6,780.82	27,123.29
Gas trading	5,171,243.86	1,292,810.97	5,171,243.86
Electricity trading	3,382,377.87	845,594.47	3,382,377.87
PPA	-	-	-
SEC	39,681.39	-	39,681.39
CfD	1,346,825.83	336,706.46	1,346,825.83
Capacity Market	228,301.89	57,075.47	228,301.89
Total	**10,636,969.17**	**3,397,506.84**	**13,629,708.74**

Figure C2.13 illustrates the collateral costs required of an intermediate domestic supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.16.

Figure C2.13: Annual average collateral costs intermediate domestic new entry variants, 2011-13 average

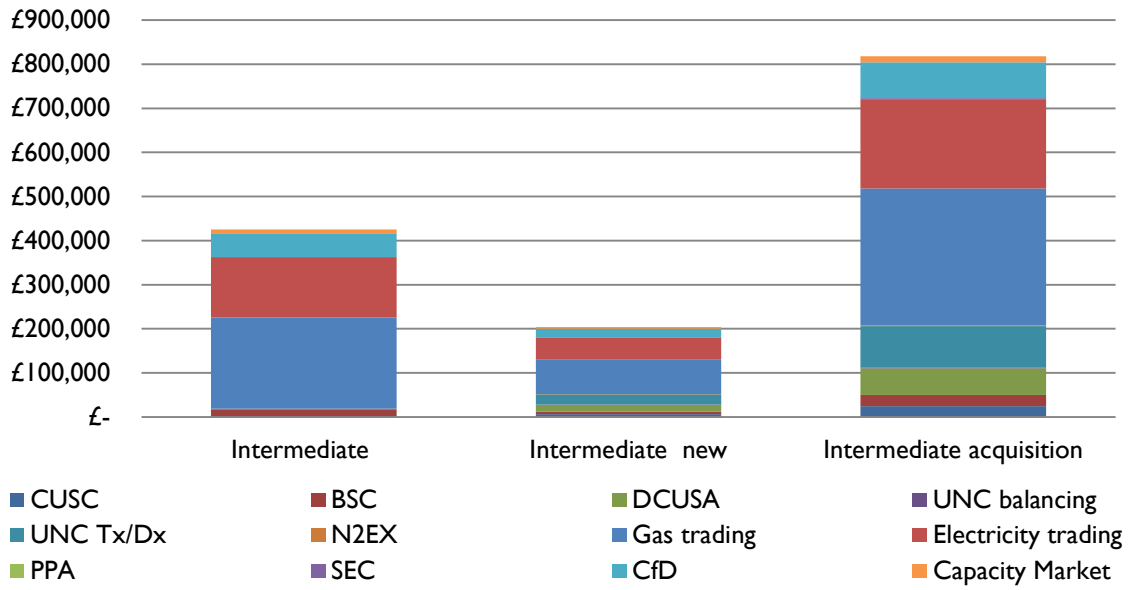


Table C2.16: Annual average collateral costs intermediate domestic new entry variants, 2011-13 average

Framework	Intermediate electricity (£)	Intermediate new (£)	Intermediate acquisition (£)
CUSC	-	6,186.62	24,746.46
BSC	16,601.46	6,225.55	24,902.20
DCUSA	-	15,091.74	60,366.96
UNC balancing	1,055.14	395.68	1,582.71
UNC Tx/Dx	-	23,612.74	94,450.95
N2EX	1,084.93	406.85	1,627.40
Gas trading	206,849.75	77,568.66	310,274.63
Electricity trading	135,295.11	50,735.67	202,942.67
PPA	-	-	-
SEC	1,587.26	-	2,380.88
CfD	53,873.03	20,202.39	80,809.55
Capacity Market	9,132.08	3,424.53	13,698.11
Total	**425,478.77**	**203,850.41**	**817,782.52**

5 SME non-domestic electricity supplier benchmark

5.1 Core operating assumptions

Table C2.17 shows the key assumptions we have used to determine the SME non-domestic electricity profile.

Table C2.17: SME non-domestic electricity profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Market share (%)
SME electricity	16,799	100%	5479	0	2,000,000.00	0.63

These are based on benchmarking our hypothetical SME non-domestic electricity supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the SME non-domestic electricity supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage of 5% in electricity, reflecting actual imbalance percentages of non-domestic suppliers, with more predictable consumption patterns;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by Standard & Poors, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is only active in the electricity supply market.

5.2 Core financing assumptions

For the SME non-domestic supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 5%.

5.3 Core collateral amounts and costs

Figure C2.14 shows the breakdown of collateral between different areas of activity for the SME non-domestic electricity supplier benchmark. Actual data is set out in Table C2.18.

Figure C2.14: Core SME non-domestic electricity supplier benchmark collateral amounts, 2011-13

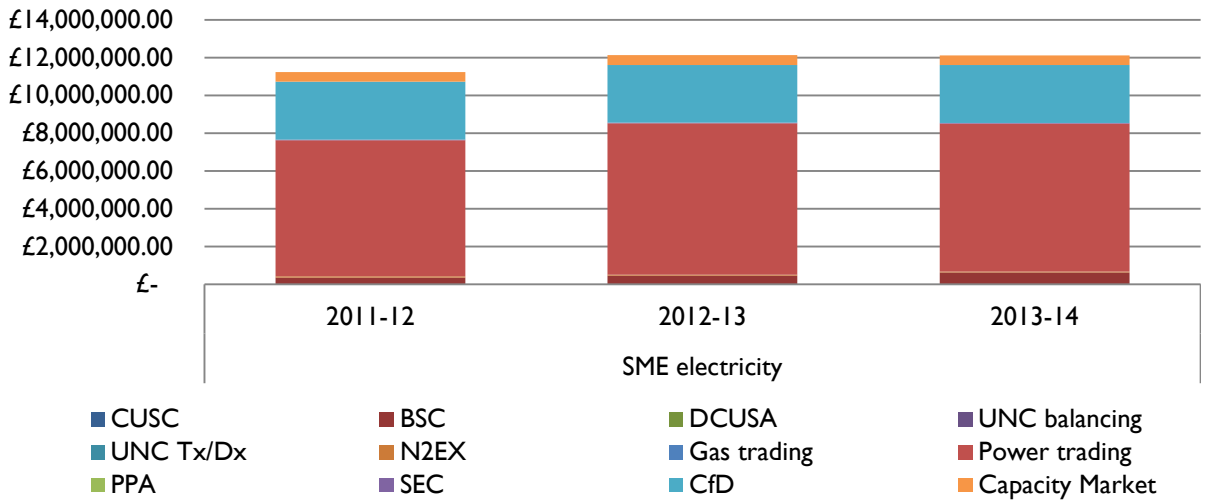


Table C2.18: Core SME non-domestic electricity supplier benchmark collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	353,511.94	444,614.39	616,771.16
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	61,643.84	61,643.84	61,643.84
Gas trading	-	-	-
Power trading	7,212,786.74	8,016,039.65	7,832,840.89
PPA	-	-	-
SEC	36,073.99	36,073.99	36,073.99
CfD	3,060,967.79	3,060,967.79	3,060,967.79
Capacity Market	518,867.92	518,867.92	518,867.92
Total	**11,243,852**	**12,138,208**	**12,127,166**

Figure C2.15 shows the breakdown of collateral costs between different areas of activity for an SME non-domestic electricity supplier benchmark. Actual data is set out in Table C2.19.

Figure C2.15: SME non-domestic electricity benchmark collateral costs, 2011-13

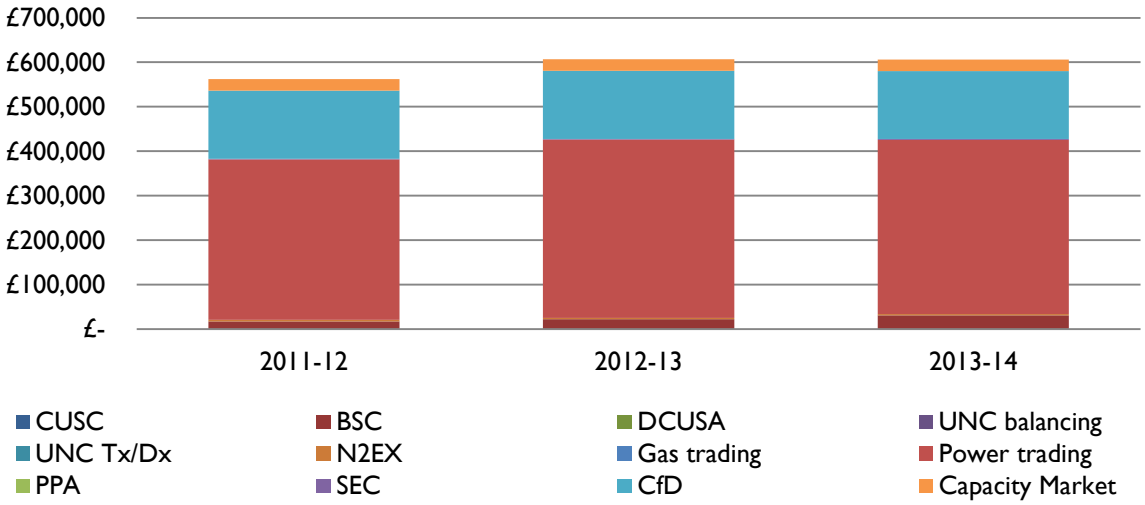


Table C2.19: SME non-domestic electricity benchmark collateral costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	17,675.60	22,230.72	30,838.56
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	3,082.19	3,082.19	3,082.19
Gas trading	-	-	-
Power trading	360,639.34	400,801.98	391,642.04
PPA	-	-	-
SEC	1,803.70	1,803.70	1,803.70
CfD	153,048.39	153,048.39	153,048.39
Capacity Market	25,943.40	25,943.40	25,943.40
Total	**562,193**	**606,910**	**6006,358**

Power trading and the CfD makes up the majority of collateral amounts and costs for SME non-domestic electricity supplier benchmark.

5.4 Variant collateral costs and amounts

Figure C2.16 illustrates the collateral amounts required of SME non-domestic supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.20.

Figure C2.16: Annual average collateral amounts SME non-domestic electricity supplier new entry variants, 2011-13 average

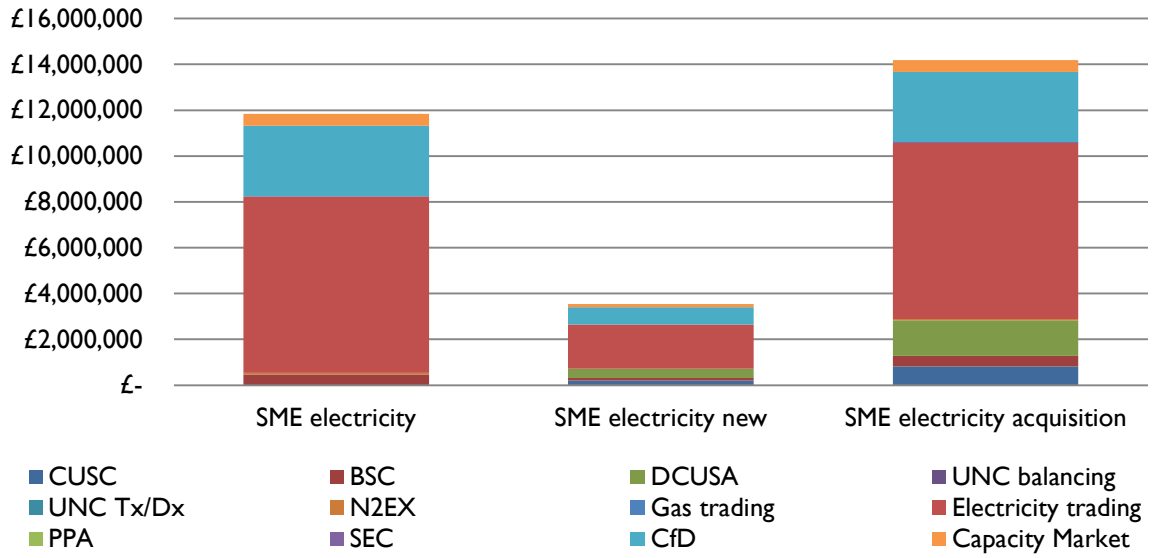


Table C2.20: Annual average collateral amounts SME non-domestic electricity supplier new entry variants, 2011-13 average

Framework	SME electricity (£)	SME electricity new (£)	SME electricity acquisition (£)
CUSC	-	203,439.19	813,756.75
BSC	471,632.50	117,908.12	471,632.50
DCUSA	-	384,559.98	1,538,239.93
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	61,643.84	15,410.96	61,643.84
Gas trading	-	-	-
Electricity trading	7,687,222.42	1,921,805.61	7,687,222.42
PPA	-	-	-
SEC	36,073.99	-	36,073.99
CfD	3,060,967.79	765,241.95	3,060,967.79
Capacity Market	518,867.92	129,716.98	518,867.92
Total	**11,836,408**	**3,538,083**	**14,188,405**

Figure C2.17 illustrates the collateral costs required of an SME non-domestic supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.21.

Figure C2.17: Annual average collateral cost SME non-domestic electricity suppliers new entry variants, 2011-13 average

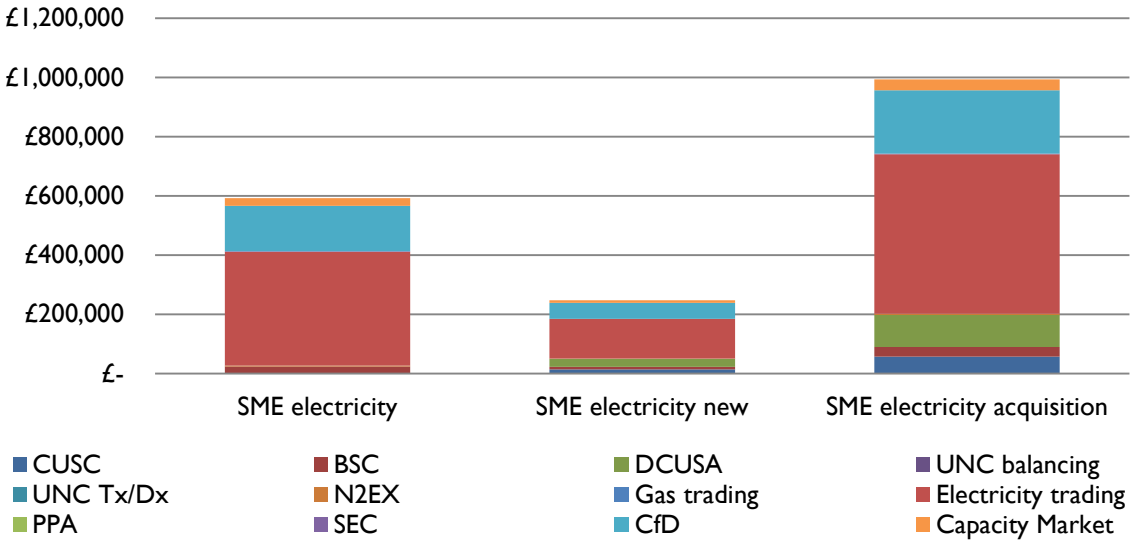


Table C2.21: Annual average collateral cost SME non-domestic electricity suppliers new entry variants, 2011-13 average

Framework	SME electricity (£)	SME electricity new (£)	SME electricity acquisition (£)
CUSC	-	14,240.74	56,962.97
BSC	23,581.62	8,253.57	33,014.27
DCUSA	-	26,919.20	107,676.80
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	3,082.19	1,078.77	4,315.07
Gas trading	-	-	-
Electricity trading	384,361.12	134,526.39	538,105.57
PPA	-	-	-
SEC	1,803.70	-	2,525.18
CfD	153,048.39	53,566.94	214,267.75
Capacity Market	25,943.40	9,080.19	36,320.75
Total	**591,820.42**	**247,665.80**	**993,188.36**

6 I&C non-domestic electricity supplier benchmark

6.1 Core operating assumptions

Table C2.22 shows the key assumptions we have used to determine the I&C non-domestic electricity profile.

Table C.22: I&C non-domestic electricity profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Annual gas (MWh)	Market share (%)
I&C electricity	95	100%	13699	0	5,000,000.00	0	1.57%

These are based on benchmarking our hypothetical I&C non-domestic electricity supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the I&C non-domestic electricity supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage of 5% in gas and electricity of 3%, reflecting actual imbalance percentages of non-domestic suppliers, with more predictable consumption patterns;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is only active in the electricity supply market.

6.2 Core financing assumptions

For the I&C non-domestic electricity supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 3.5%.

6.3 Core collateral amounts and costs

Figure C2.18 shows the breakdown of collateral between different areas of activity for the I&C non-domestic electricity supplier benchmark. Actual data is set out in Table C2.23.

Figure C2.18: Core I&C non-domestic electricity supplier benchmark collateral amounts, 2011-13

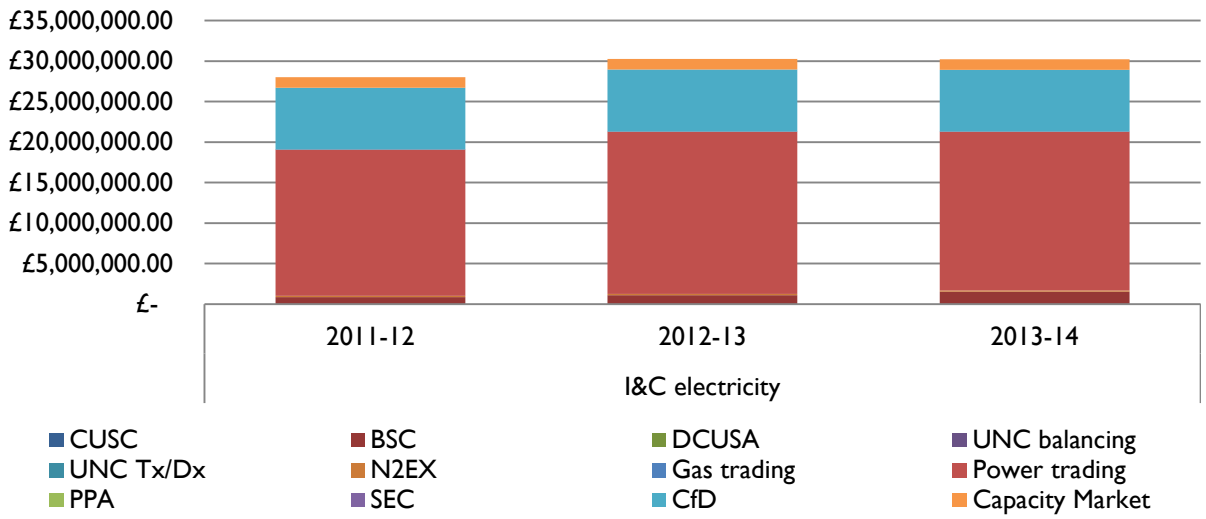


Table C2.23: Core I&C non-domestic electricity supplier benchmark collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	883,779.86	1,111,535.97	1,541,927.89
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	154,109.59	154,109.59	154,109.59
Gas trading	-	-	-
Power trading	18,031,966.84	20,040,099.11	19,582,102.22
PPA	-	-	-
SEC	2,254.62	2,254.62	2,254.62
CfD	7,652,419.48	7,652,419.48	7,652,419.48
Capacity Market	1,297,169.81	1,297,169.81	1,297,169.81
Total	**28,021,700**	**30,257,589**	**30,229,984**

Figure C2.19 shows the breakdown of collateral costs between different areas of activity for an I&C non-domestic electricity supplier benchmark. Actual data is set out in Table C2.24.

Figure C2.19: I&C non-domestic electricity benchmark collateral costs, 2011-13

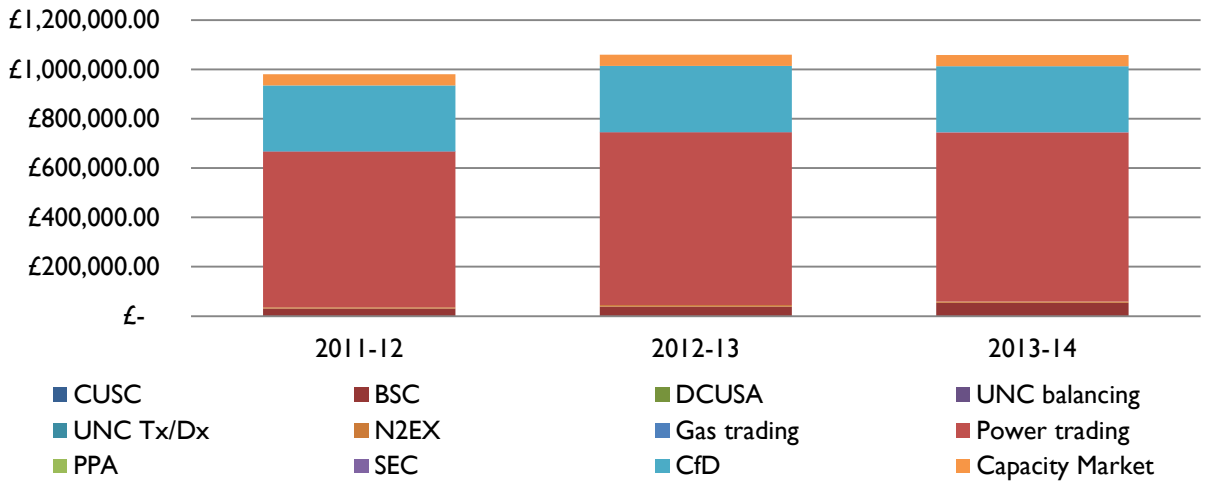


Table C2.24: I&C non-domestic electricity benchmark collateral costs by framework, 2011-2013

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	30,932.30	38,903.76	53,967.48
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	5,393.84	5,393.84	5,393.84
Gas trading	-	-	-
Power trading	631,118.84	701,403.47	685,373.58
PPA	-	-	-
SEC	78.91	78.91	78.91
CfD	267,834.68	267,834.68	267,834.68
Capacity Market	45,400.94	45,400.94	45,400.94
Total	**980,760**	**1,059,016**	**1,058,049**

Power trading and the CfD make up the majority of collateral amounts and costs for an I&C non-domestic electricity supplier benchmark.

6.4 Variant collateral costs and amounts

Figure C2.20 illustrates the collateral amounts required of an I&C non-domestic electricity supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C.25.

Figure C2.20: Annual average collateral amounts I&C non-domestic electricity supplier new entry variants, 2011-13 average

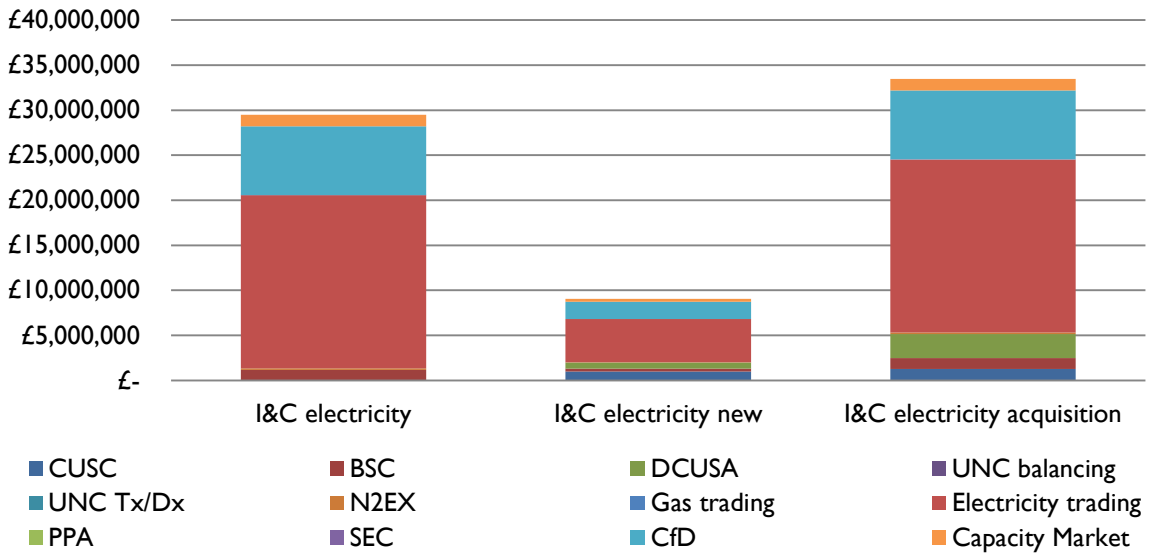


Table C2.25: Annual average collateral amounts I&C non-domestic electricity suppliers new entry variants, 2011-13 average

Framework	I&C power (£)	I&C power new (£)	I&C power acquisition (£)
CUSC	-	994,182.56	1,281,884.41
BSC	1,179,081.24	294,770.31	1,179,081.24
DCUSA	-	674,086.41	2,696,345.63
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	154,109.59	38,527.40	154,109.59
Gas trading	-	-	-
Power trading	19,218,056.06	4,804,514.01	19,218,056.06
PPA	-	-	-
SEC	2,254.62	-	2,254.62
CfD	7,652,419.48	1,913,104.87	7,652,419.48
Capacity Market	1,297,169.81	324,292.45	1,297,169.81
Total	**29,503,091**	**9,043,478**	**33,481,321**

Figure C2.21 illustrates the collateral costs required of an I&C non-domestic electricity supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.26.

Figure C2.21: Annual average collateral cost I&C non-domestic electricity suppliers new entry variants, 2011-13 average

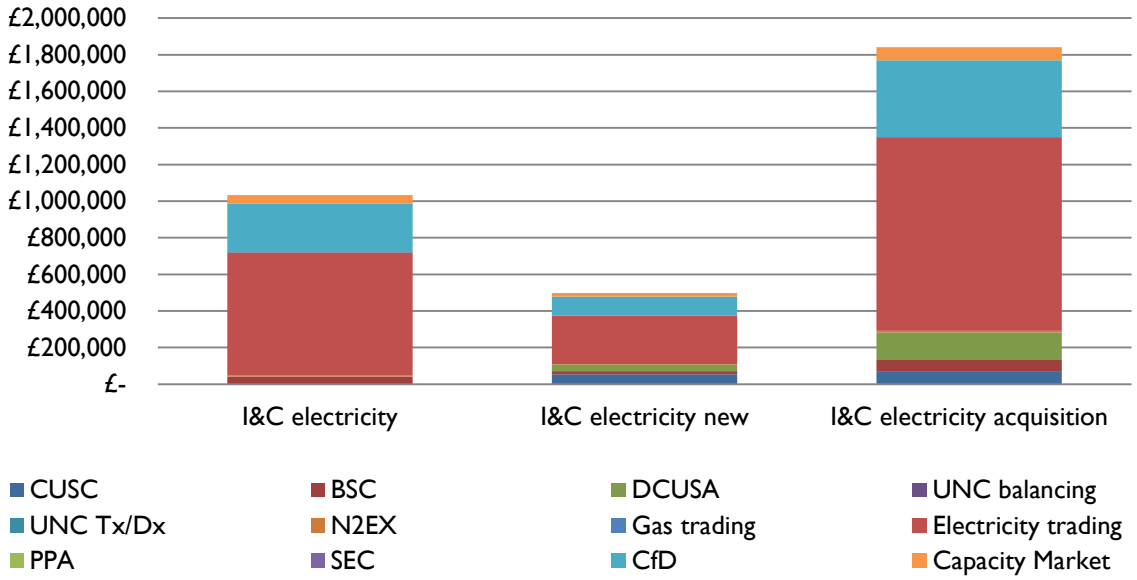


Table C2.26: Annual average collateral cost I&C non-domestic electricity suppliers new entry variants, 2011-13 average

Framework	I&C power (£)	I&C power new (£)	I&C power acquisition (£)
CUSC	-	54,680.04	70,503.64
BSC	41,267.84	16,212.37	64,849.47
DCUSA	-	37,074.75	148,299.01
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	5,393.84	2,119.01	8,476.03
Gas trading	-	-	-
Power trading	672,631.96	264,248.27	1,056,993.08
PPA	-	-	-
SEC	78.91	-	124.00
CfD	267,834.68	105,220.77	420,883.07
Capacity Market	45,400.94	17,836.08	71,344.34
Total	**1,032,608**	**497,391**	**1,841,473**

7 SME non-domestic gas supplier benchmark

7.1 Core operating assumptions

Table C2.27 shows the key assumptions we have used to determine the SME non-domestic gas supplier profile.

Table C2.27: SME non-domestic gas supplier profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Annual gas (MWh)	Market share (%)
SME gas	40,000	0%	0	5,479	0	2,000,000.00	0.63%

These are based on benchmarking our hypothetical SME non-domestic gas supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the SME non-domestic gas supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage of 5% in gas reflecting actual imbalance percentages of non-domestic suppliers, with more predictable consumption patterns;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is only active in the gas supply market.

7.2 Core financing assumptions

For the SME non-domestic gas supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 5%.

7.3 Core collateral amounts and costs

Figure C2.22 shows the breakdown of collateral between different areas of activity for the SME non-domestic gas supplier benchmark. Actual data is set out in Table C2:28.

Figure C2.22: Core SME non-domestic gas supplier benchmark collateral amounts, 2011-13

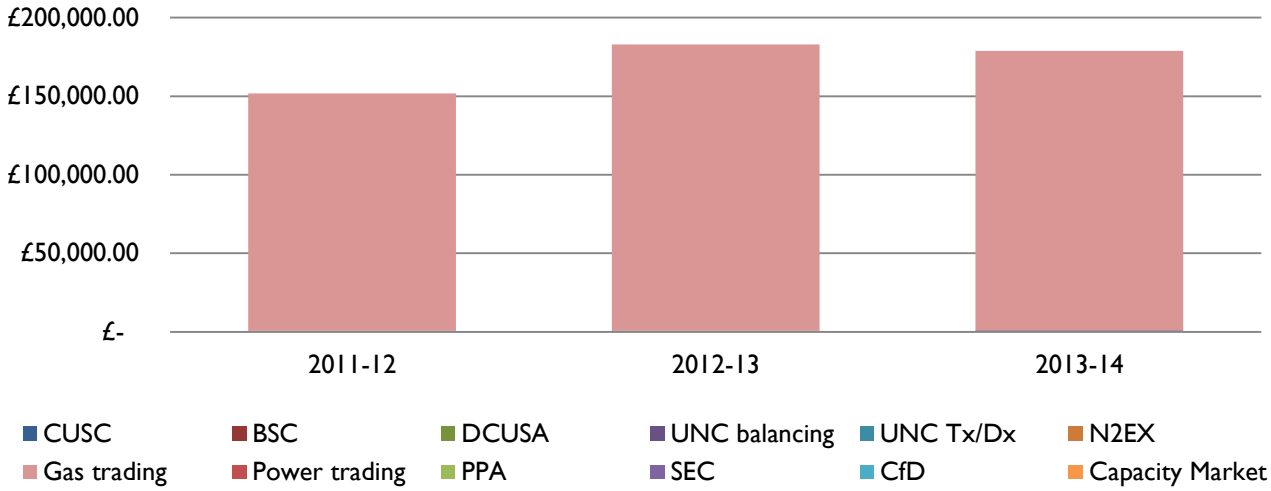


Table C2.28: Core SME non-domestic gas supplier benchmark collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	15,865.88	17,696.07	18,543.63
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	3,016,991.84	3,640,261.88	3,557,548.97
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**3,032,858**	**3,657,958**	**3,576,093**

Figure C2.23 shows the breakdown of collateral costs between different areas of activity for an SME non-domestic gas supplier benchmark. Actual data is set out in Table C2:29.

Figure C2.23: SME non-domestic gas supplier benchmark collateral costs, 2011-13

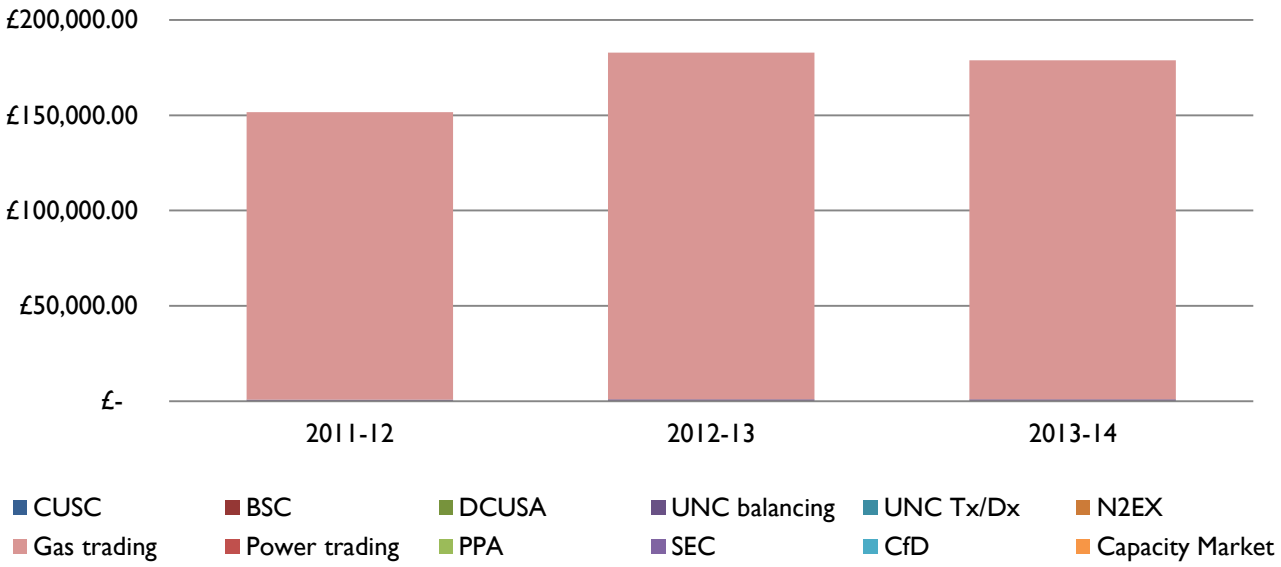


Table C2.29: SME non-domestic gas supplier benchmark collateral costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	793.29	884.80	927.18
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	150,849.59	182,013.09	177,877.45
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**151,643**	**182,898**	**178,805**

Gas trading and UNC balancing makes up the majority of collateral amounts and costs for the SME non-domestic gas supplier benchmark.

7.4 Variant collateral costs and amounts

Figure C2.24 illustrates the collateral amounts required of an SME non-domestic gas supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.30.

Figure C2.24: Annual average collateral amounts SME non-domestic gas supplier new entry variants, 2011-13 average

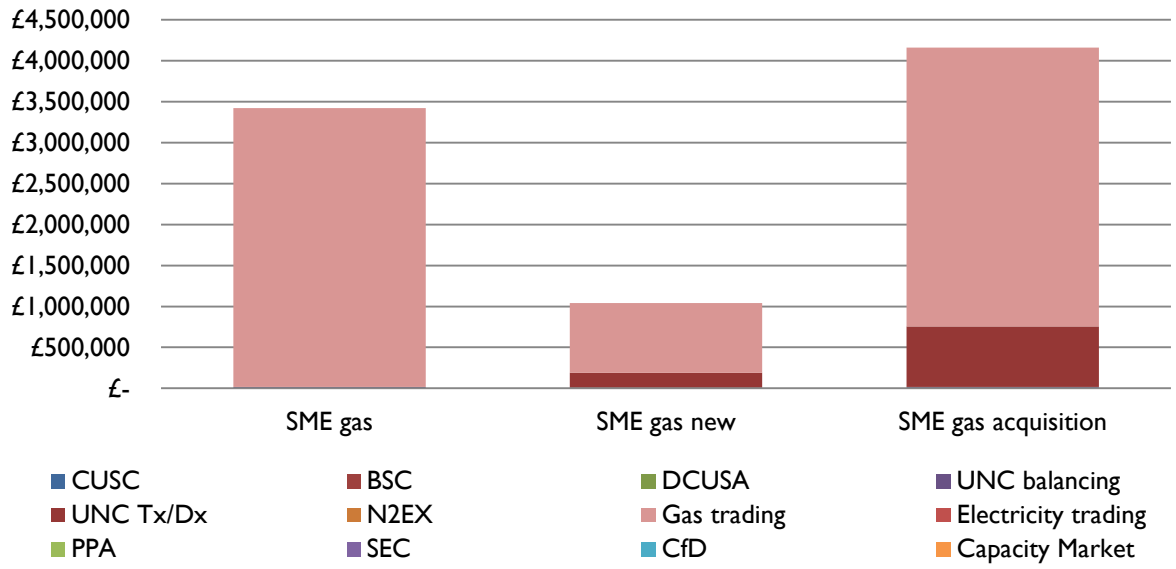


Table C2.30: Annual average collateral amounts SME non-domestic gas supplier new entry variants, 2011-13 average

Framework	SME gas (£)	SME gas new (£)	SME gas acquisition (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	17,369	34,737	8,684
UNC Tx/Dx	-	-	1,628,201
N2EX	-	-	-
Gas trading	3,404,934	34,049,342	8,512,336
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**3,422,303**	**34,084,079**	**10,149,221**

Figure C2.25 illustrates the collateral costs required of an SME non-domestic gas supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.31.

Figure C2.25: Annual average collateral cost SME non-domestic gas suppliers new entry variants, 2011-13 average

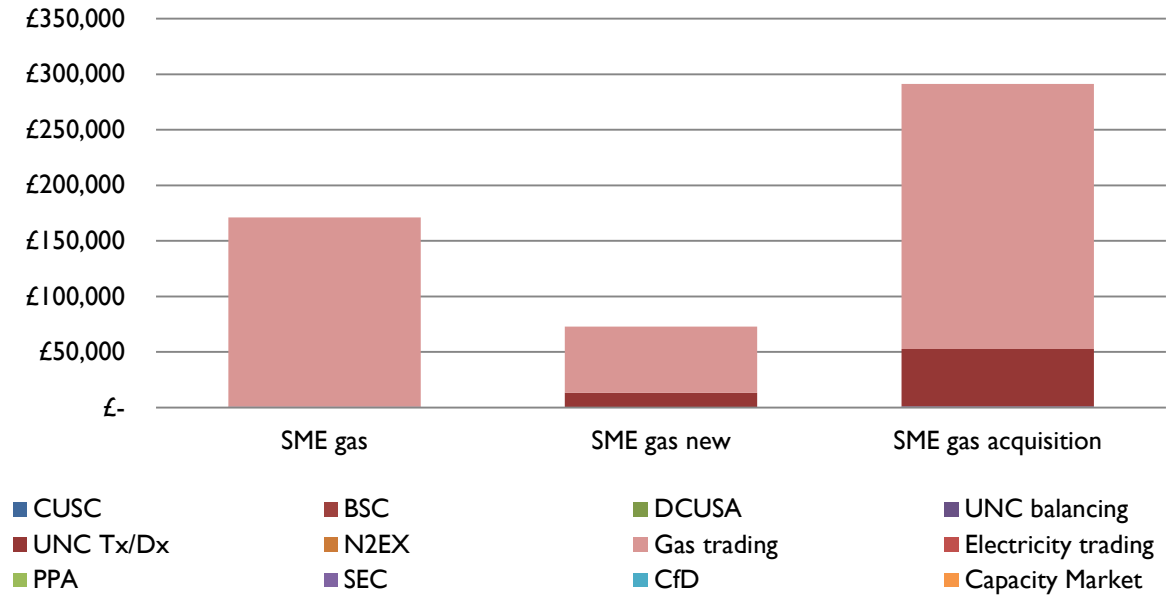


Table C2.31: Annual average collateral cost SME non-domestic gas supplier's new entry variants, 2011-13 average

Framework	SME gas (£)	SME gas new (£)	SME gas acquisition (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	868.43	303.95	1,215.80
UNC Tx/Dx	-	12,912.47	51,649.88
N2EX	-	-	-
Gas trading	170,246.71	59,586.35	238,345.40
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**171,115.14**	**72,802.77**	**291,211.08**

8 I&C non-domestic gas supplier benchmark

8.1 Core operating assumptions

Table C2.32 shows the key assumptions we have used to determine the I&C non-domestic gas supplier profile.

Table C2.32: I&C non-domestic gas profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual power (MWh)	Annual gas (MWh)	Market share (%)
I&C gas	1,000	0	0	54,795	0	20,000,000	1.57

These are based on benchmarking our hypothetical I&C non-domestic gas supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the I&C non-domestic gas supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage of 5% in gas reflecting actual imbalance percentages of non-domestic suppliers, with more predictable consumption patterns;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is only active in the gas supply market.

8.2 Core financing assumptions

For the I&C non-domestic gas supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 3.5%.

8.3 Core collateral amounts and costs

Figure C2.26 shows the breakdown of collateral between different areas of activity for the I&C non-domestic gas supplier benchmark. Actual data is set out in Table C2.33.

Figure C2.26: Core I&C non-domestic gas supplier benchmark collateral amounts, 2011-13

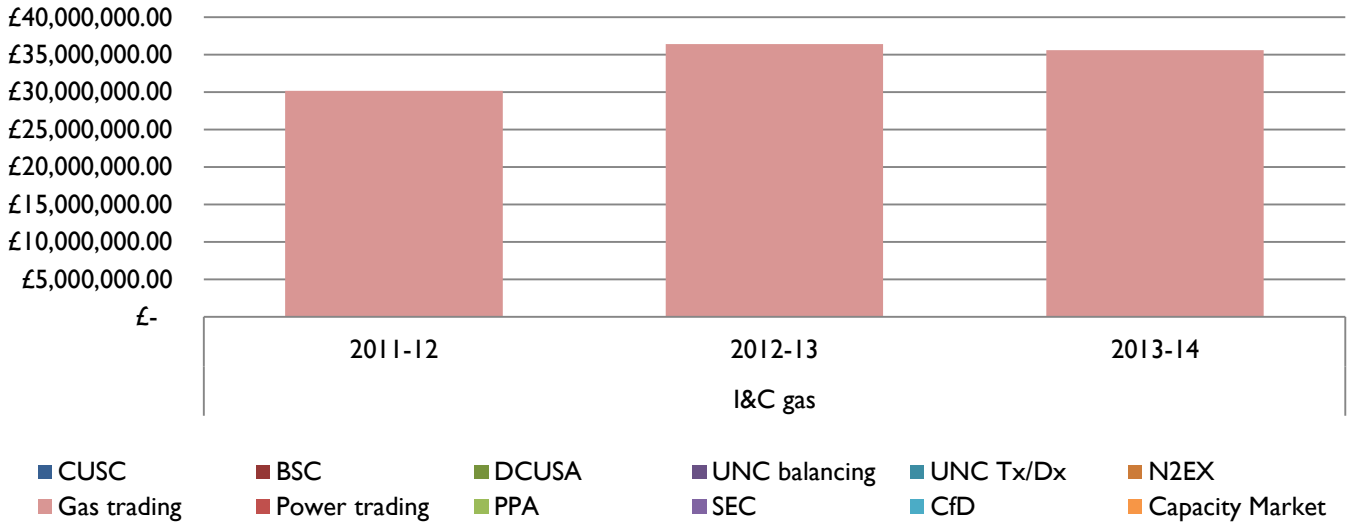


Table C2.33: Core I&C non-domestic gas supplier benchmark collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	31,731.77	35,392.14	37,087.27
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	30,169,918.39	36,402,618.76	35,575,489.72
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**30,201,650**	**36,438,011**	**35,612,577**

Figure C2.27 shows the breakdown of collateral costs between different areas of activity for an I&C non-domestic gas supplier benchmark. Actual data is set out in Table C2.34.

Figure C2.27: I&C non-domestic gas supplier benchmark collateral costs, 2011-13

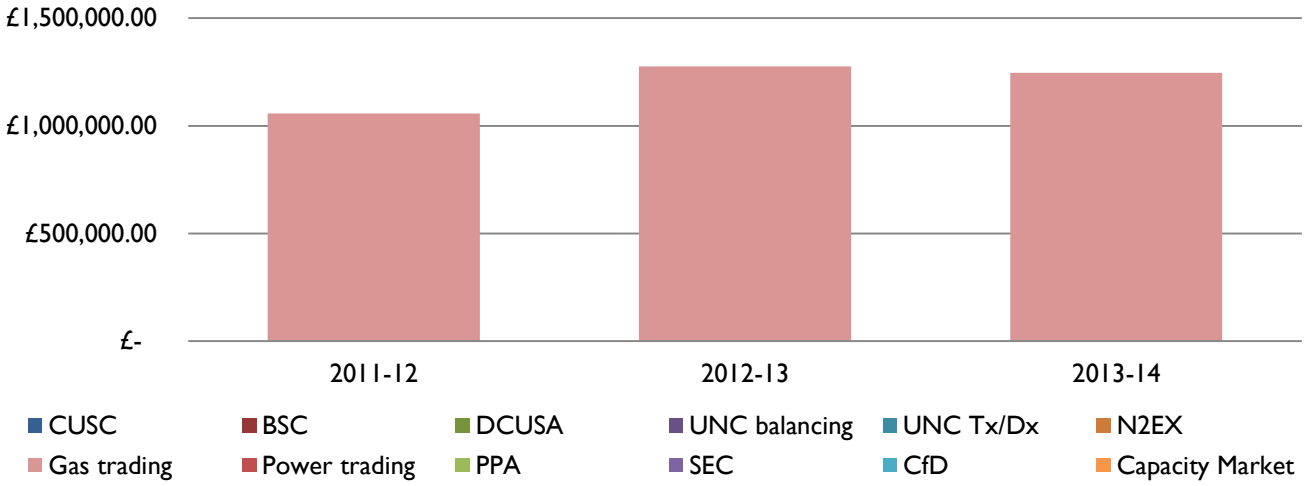


Table C2.34: I&C non-domestic gas supplier benchmark collateral costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	1,110.61	1,238.72	1,298.05
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	1,055,947.14	1,274,091.66	1,245,142.14
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**1,057,058**	**1,275,330**	**1,246,440**

Gas trading and UNC balancing makes up the majority of collateral amounts and costs for I&C non-domestic gas supplier benchmark.

8.4 Variant collateral costs and amounts

Figure C2.28 illustrates the collateral amounts required of an I&C non-domestic gas supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.35.

Figure C2.28: Annual average collateral amounts I&C non-domestic gas suppliers new entry variants, 2011-13 average

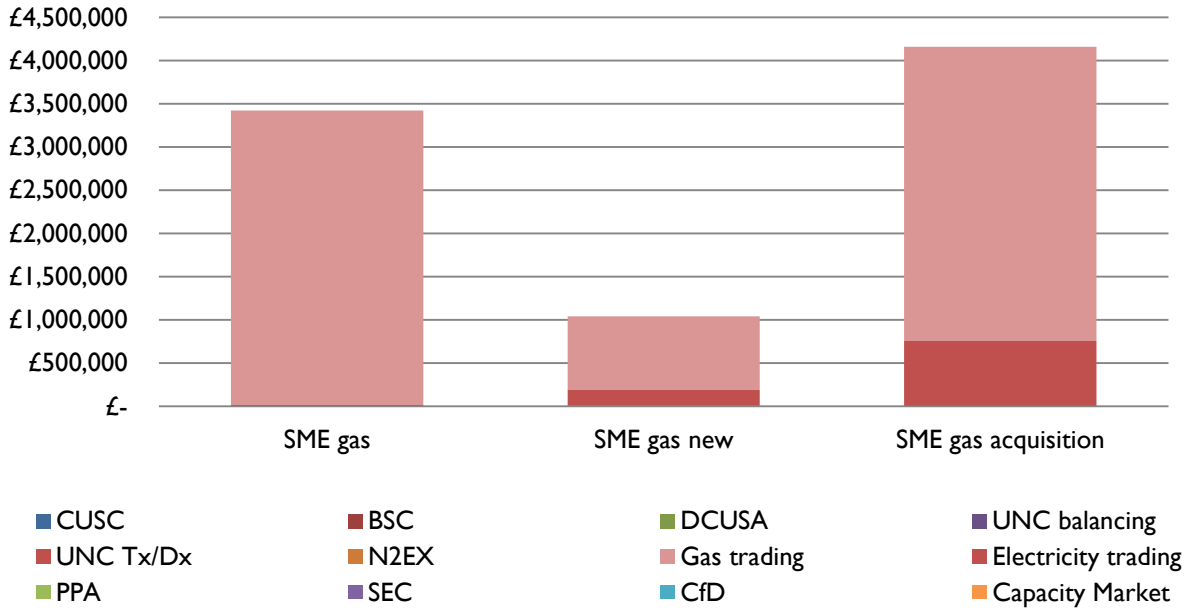


Table C2.35: Annual average collateral amounts I&C non-domestic gas suppliers new entry variants, 2011-13 average

Framework	I&C gas (£)	I&C gas new (£)	I&C gas acquisition (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	34,737	8,684	34,737
UNC Tx/Dx	-	1,628,201	6,512,806
N2EX	-	-	-
Gas trading	34,049,342	8,512,336	34,049,342
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**34,084,079**	**10,149,221**	**40,596,885**

Figure C2.29 illustrates the collateral costs required of an I&C non-domestic gas supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C.36.

Figure C2.29 Annual average collateral costs I&C non-domestic gas suppliers new entry variants, 2011-13 average

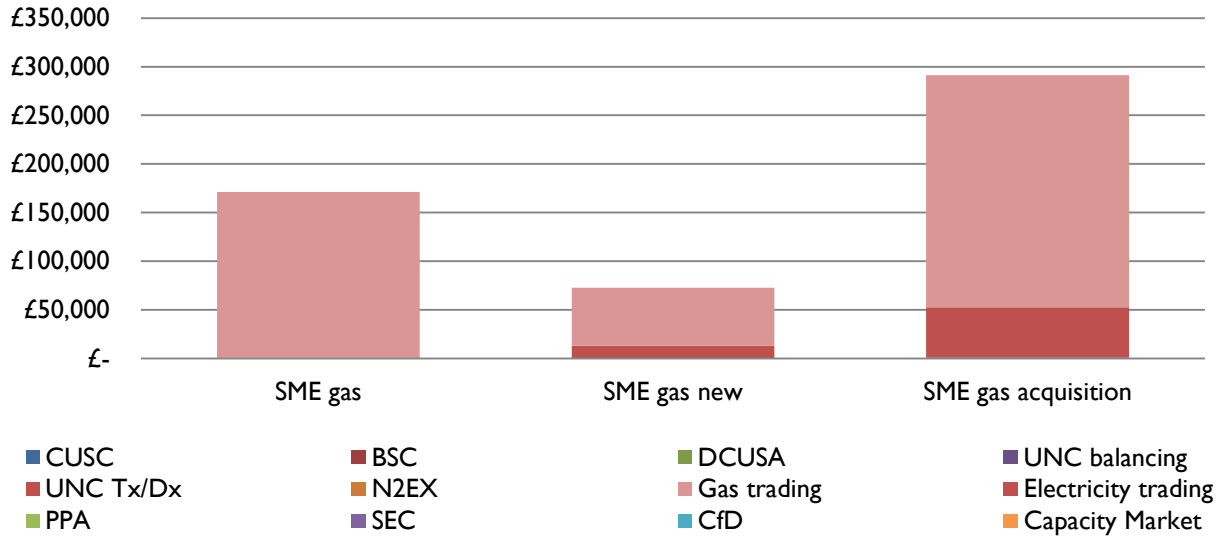


Table C2.36: Annual average collateral costs I&C non-domestic gas supplier's new entry variants, 2011-13 average

Framework	I&C gas (£)	I&C gas new (£)	I&C gas acquisition (£)
CUSC	-	-	-
BSC	-	-	-
DCUSA	-	-	-
UNC balancing	1,215.80	477.63	1,910.54
UNC Tx/Dx	-	89,551.08	358,204.30
N2EX	-	-	-
Gas trading	1,191,726.98	468,178.46	1,872,713.83
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**1,192,942.78**	**558,207.17**	**2,232,828.67**

9 Niche domestic electricity supplier benchmark

9.1 Core operating assumptions

Table C2.37 shows the key assumptions we have used to determine the niche domestic electricity supplier benchmark profile.

Table C2.37: Niche domestic electricity supplier benchmark profile key assumptions

Type	Customers	Power/gas split (by customer) (%)	Daily power (MWh)	Daily gas (MWh)	Annual Power (MWh)	Annual Gas (MWh)	Market share (%)
Niche Domestic	50,000	100	438	0	160,000	0	0.05

These are based on benchmarking our hypothetical niche domestic electricity supplier to peer suppliers in the GB energy markets. Our assumptions have been externally validated.

Furthermore, the niche domestic supplier:

- has operated in the market for longer than five years, and has acquired an independent credit score or credit rating that affords it the relevant unsecured credit allowance set out in Table B.4 under transmission and distribution rules. Therefore, our analysis calculates that it avoids posting collateral under these frameworks;
- has an imbalance percentage of 12% in electricity reflecting actual imbalance percentages of small utility companies, which are exposed to a greater level of imbalance as their customers are less predictable and the company has less access to balancing products;
- purchases 5% of their power demand on exchanges;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is only active in the power supply market.

9.2 Core financing assumptions

For the niche domestic electricity supplier benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 12%.

9.3 Core collateral amounts and costs

Figure C2.30 shows the breakdown of collateral between different areas of activity for a niche domestic electricity supplier benchmark. Actual data is set out in Table C2.38.

Figure C2.30—Core niche domestic electricity supplier benchmark collateral amounts, 2011-13

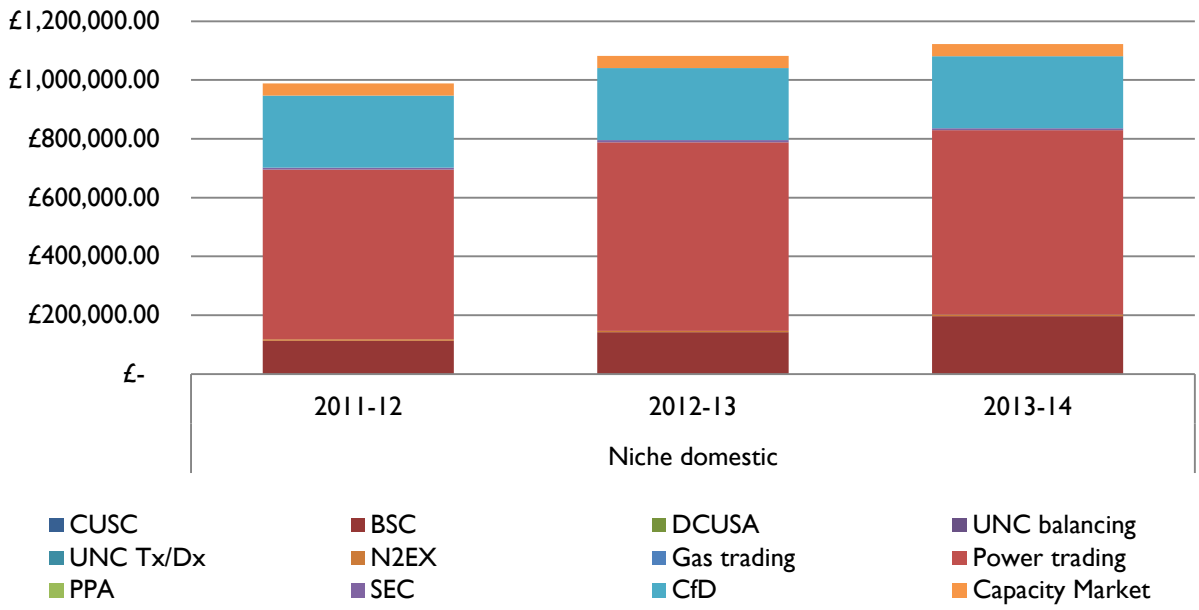


Table C2.38: Core niche domestic electricity supplier benchmark collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	113,123.82	142,276.60	197,366.77
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	4,931.51	4,931.51	4,931.51
Gas trading	-	-	-
Power trading	577,022.94	641,283.17	626,627.27
PPA	-	-	-
SEC	7,214.80	7,214.80	7,214.80
CfD	244,877.42	244,877.42	244,877.42
Capacity Market	41,509.43	41,509.43	41,509.43
Total	**988,680.92**	**1,082,092.94**	**1,122,527.20**

Figure C2.31 shows the breakdown of collateral costs between different areas of activity for a niche domestic electricity supplier benchmark. Actual data is set out in Table C2.39.

Figure C2.31: Niche domestic core supplier benchmark collateral costs, 2011-13 average

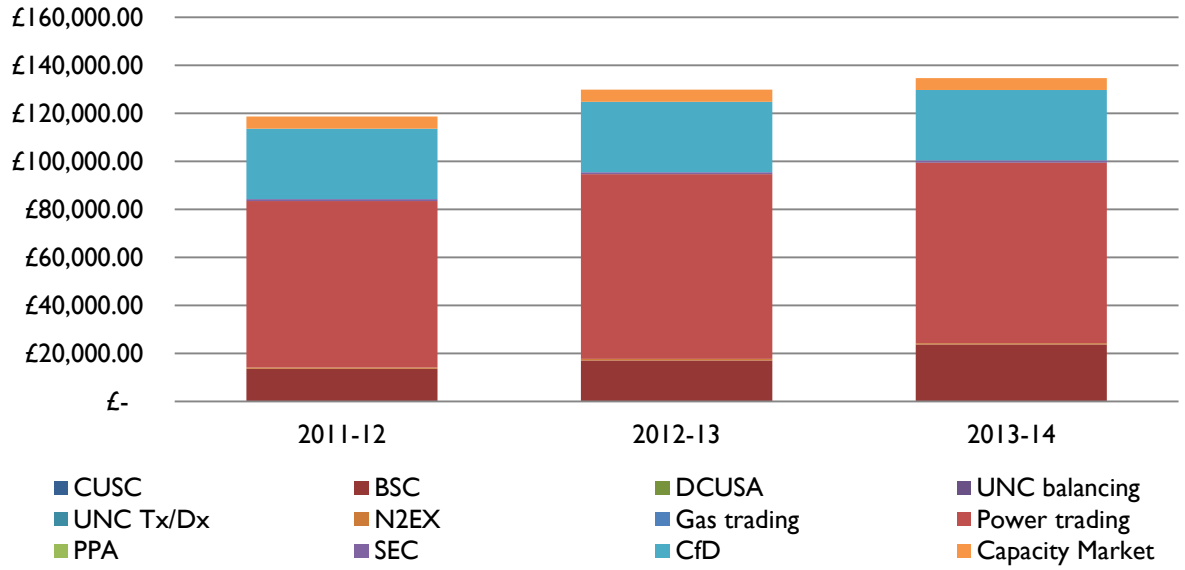


Table C2.39: Niche domestic core supplier benchmark costs by framework, 2011-13 average

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	13,574.86	17,073.19	23,684.01
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	591.78	591.78	591.78
Gas trading	-	-	-
Power trading	69,242.75	76,953.98	75,195.27
PPA	-	-	-
SEC	865.78	865.78	865.78
CfD	29,385.29	29,385.29	29,385.29
Capacity Market	4,981.13	4,981.13	4,981.13
Total	**118,642.59**	**129,851.15**	**134,703.26**

Power trading makes up the majority of collateral amounts and costs for the niche domestic supplier.

9.4 Variant collateral costs and amounts

Figure C2.32 illustrates the collateral amounts required of a niche domestic supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.40.

Figure C2.32: Annual average collateral amounts niche domestic new entry variants, 2011-13 average

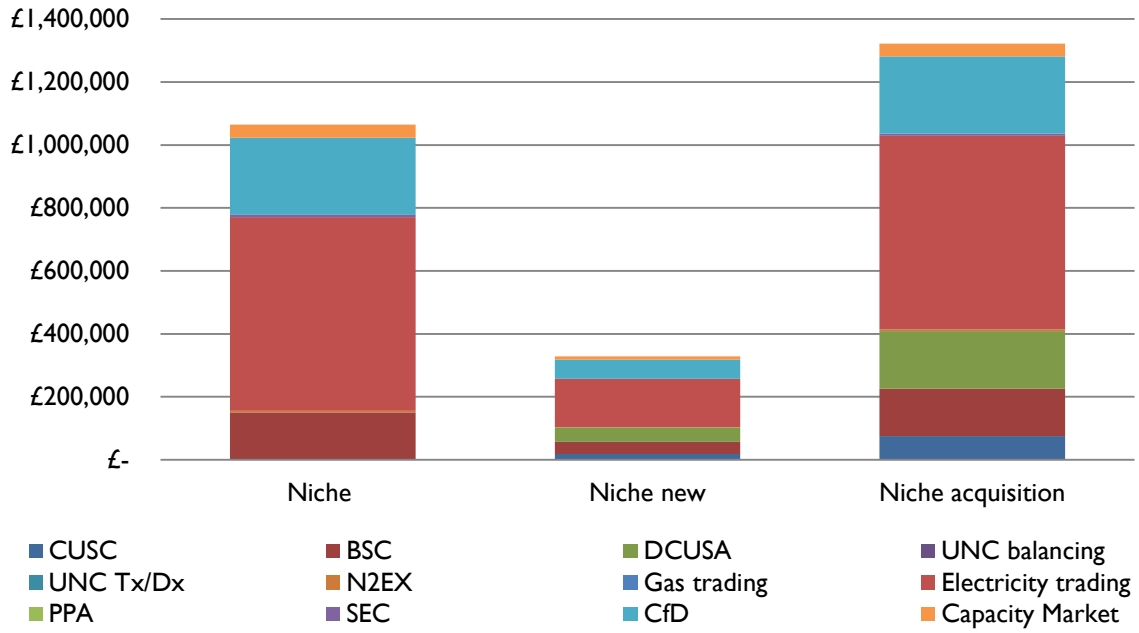


Table C2.40: Annual average collateral amounts niche domestic new entry variants, 2011-13 average

Framework	Niche (£)	Niche new (£)	Niche acquisition (£)
CUSC	-	18,747.32	74,989.29
BSC	150,922.40	37,730.60	150,922.40
DCUSA	-	45,732.55	182,930.19
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	4,931.51	1,232.88	4,931.51
Gas trading	-	-	-
Power trading	614,977.79	153,744.45	614,977.79
PPA	-	-	-
SEC	7,214.80	-	7,214.80
CfD	244,877.42	61,219.36	244,877.42
Capacity Market	41,509.43	10,377.36	41,509.43
Total	**1,064,433**	**328,785**	**1,322,353**

Figure C2.33 illustrates the collateral amounts required of a niche domestic electricity supplier benchmark in instances where it is a new market entrant or an acquisitive market entrant. Actual data is shown in Table C2.41.

Figure C2.33: Annual average collateral costs niche domestic new entry variants, 2011-13 average

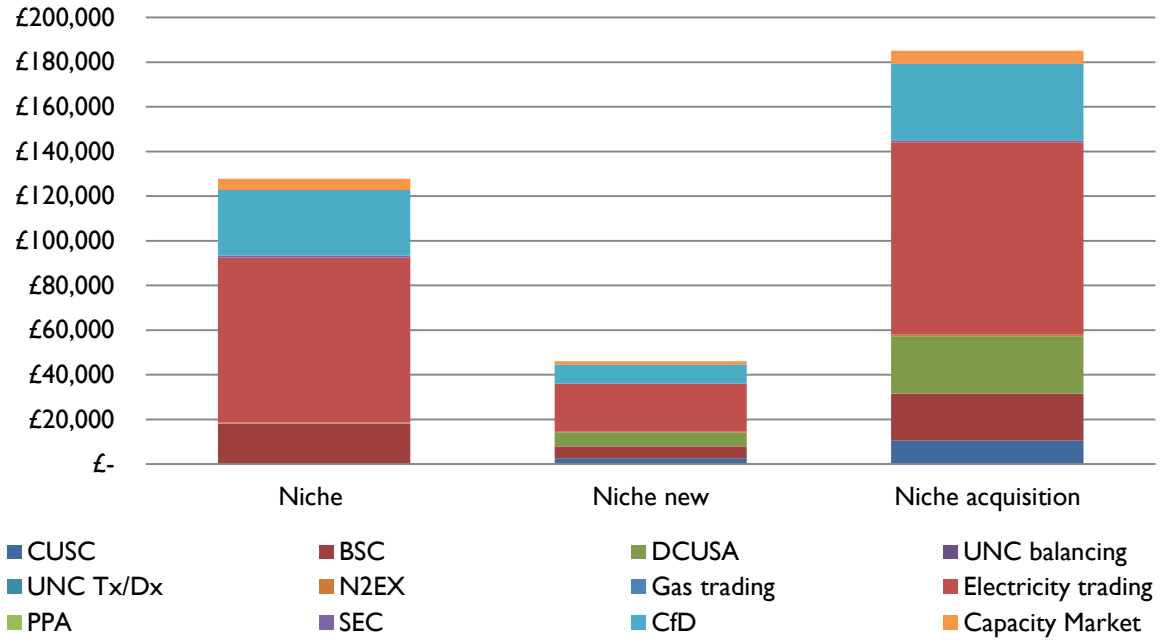


Table C2.41: Annual average collateral costs niche domestic variants, 2011-13 average

Framework	Niche (£)	Niche new (£)	Niche acquisition (£)
CUSC	-	2,624.63	10,498.50
BSC	18,110.69	5,282.28	21,129.14
DCUSA	-	6,402.56	25,610.23
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	591.78	172.60	690.41
Gas trading	-	-	-
Power trading	73,797.34	21,524.22	86,096.89
PPA	-	-	-
SEC	865.78	-	1,010.07
CfD	29,385.29	8,570.71	34,282.84
Capacity Market	4,981.13	1,452.83	5,811.32
Total	**127,732**	**46,030**	**185,129**

Annex D (1)—Generator benchmark data tables

Table D1.1 below shows the average annual collateral amounts[11] 2011-13 posted by the different core generator benchmarks under each key area where collateral is required if they are to execute their business model.

Table D1.1: Generator benchmark average annual collateral amounts, 2011-13[12]

	CCGT (£)	Large biomass conversion (£)	Offshore wind (£)	Biomass plant (£)	Onshore wind (£)	Solar (£)
CUSC	-	-	-	-	-	-
BSC	557,455.39	668,946.46	-	111,491.08	-	-
DCUSA	-	-	-	-	-	-
UNC balancing	-	-	-	-	-	-
UNC Tx/Dx	-	-	-	-	-	-
N2EX	-	-	-	-	-	-
Gas trading	12,142,163.18	-	-	-	-	-
Power trading	-	-	-	-	-	-
PPA	-	-	-	-	-	-
SEC	-	-	-	-	-	-
CfD	-	-	-	-	-	-
Capacity Market	-	-	-	-	-	-
Total	**12,699,618.56**	**668,946.46**	**-**	**111,491.08**	**-**	**-**

[11] CfD, Capacity Market and Smart Energy Code based on a representative year 2015-20. Further detail contained in Annex 3.

[12] In some cases the amounts listed will be zero; the reasoning for this is set in Section 4.

Table D1.2 below shows the annual average collateral costs 2011-13 posted by the different core generator benchmarks[13] under each key area where collateral is required if they are to execute their business model.

Table D1.2: Generator benchmark average annual collateral costs, 2011-13

	CCGT (£)	Large Biomass Conversion (£)	Offshore wind (£)	Biomass plant (£)	Onshore wind (£)	Solar (£)
CUSC	-	-	-	-	-	-
BSC	8,361.83	8,387.74	-	1,672.37	-	-
DCUSA	-	-	-	-	-	-
UNC balancing	-	-	-	-	-	-
UNC Tx/Dx	-	-	-	-	-	-
N2EX	-	-	-	-	-	-
Gas trading	182,132.45	-	-	-	-	-
Power trading	-	-	-	-	-	-
PPA	-	-	-	-	-	-
SEC	-	-	-	-	-	-
CfD	-	-	-	-	-	-
Capacity Market	-	-	-	-	-	-
Total	**190,494.28**	**8,387.74**	**-**	**1,672.37**	**-**	**-**

[13] As opposed to variant profiles, which are shown for each Benchmark in Section 4 of the Report.

Annex D (2)—Generator benchmark profiles

1 800MW CCGT plant benchmark

1.1 Core operating assumptions

Table D2.1 shows the key assumptions we have used to determine the 800MW CCGT thermal plant benchmark profile.

Table D2.1

Benchmark	Capacity (MW)	Load factor	Annual output (MWh)	Daily output (MWh)	Connection	Location
CCGT	800	50%	3504000	9600	Transmission	England

These are based on benchmarking our hypothetical 800MW CCGT thermal plant to peer generators in the GB energy markets.

1.2 Core financing assumptions

For the 800MW CCGT thermal plant benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

1.3 Core collateral amounts and costs

Figure D2.1 shows the breakdown of collateral between different areas of activity for 800MW CCGT thermal plant benchmark. Actual data is set out in Table D2.2.

Figure D2.1: Core 800MW CCGT thermal plant benchmark collateral amounts, 2011-13

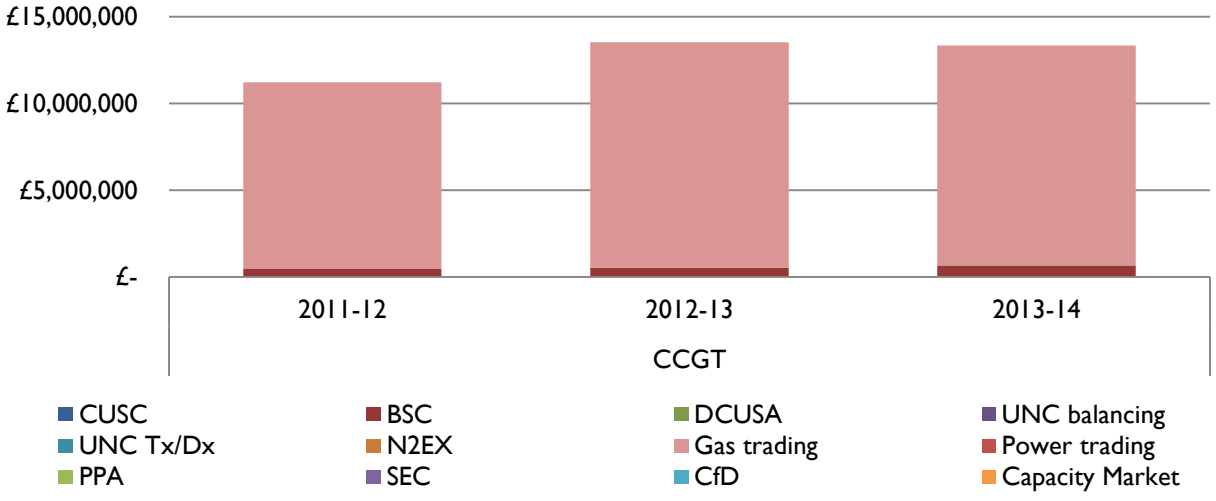


Table D2.2: Annual average collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	465,985.44	540,603.34	665,777.38
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	10,758,741.51	12,981,353.16	12,686,394.87
Power trading	-	-	-
PPA	-	-	-
Total	**11,224,726.95**	**13,521,956.50**	**13,352,172.24**

Figure D2.2 shows the breakdown of collateral costs between different areas of activity for an 800MW CCGT thermal plant benchmark. Actual data is set out in Table D2.3.

Figure D2.2: Core 800MW CCGT thermal plant benchmark collateral costs, 2011-13

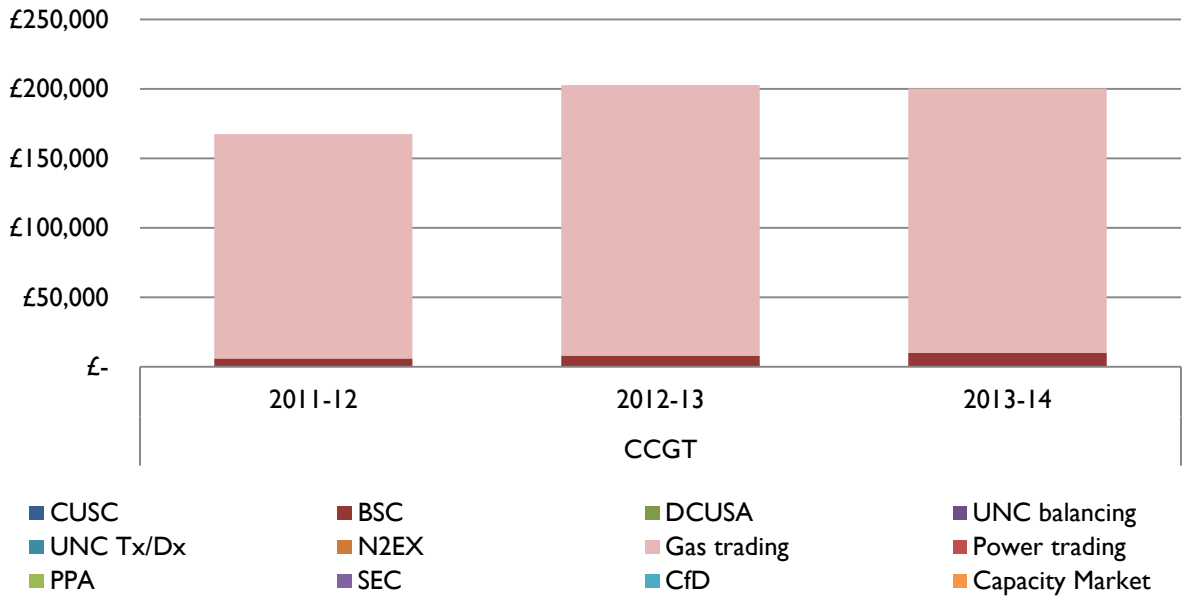


Table D2.3: Core 800MW CCGT thermal plant annual average collateral costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	6,989.78	8,109.05	9,986.66
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	161,381.12	194,720.30	190,295.92
Power trading	-	-	-
PPA	-	-	-
Total	**168,370.90**	**202,829.35**	**200,282.58**

Gas trading and the credit requirement under the BSC form the major parts of the cost of collateral for the CCGT thermal plant benchmark.

1.4 Variant collateral costs and amounts

Figure D2.3 illustrates the collateral amounts required of an 800MW CCGT thermal plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.4.

Figure D2.3: Annual average collateral amounts 800MW CCGT thermal plant variants, 2011-13 average

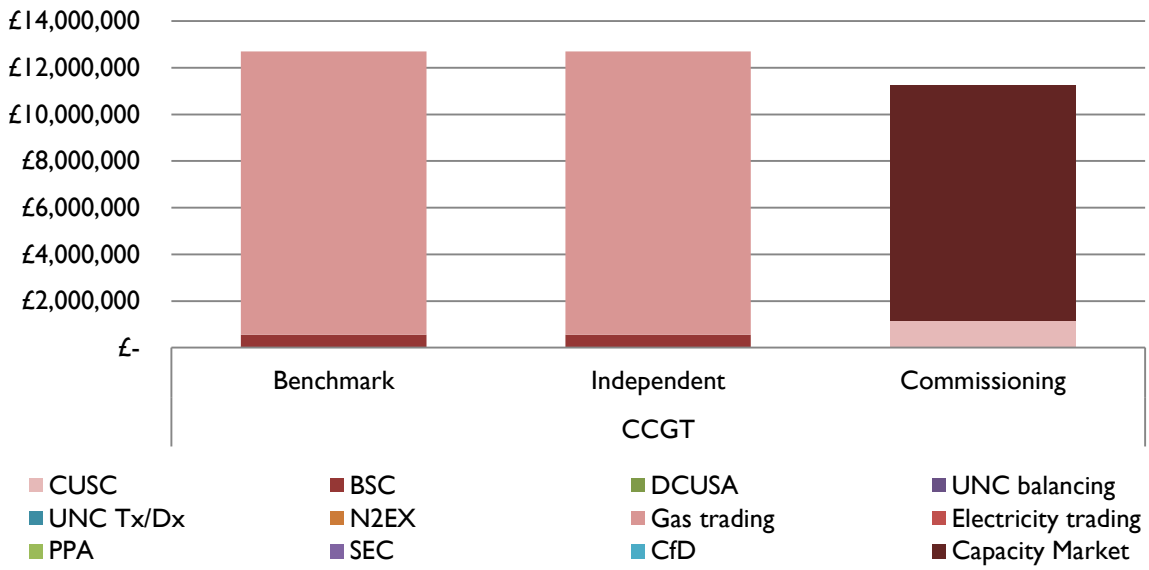


Table D2.4: Annual average collateral costs 800MW CCGT thermal plant variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	1,148,302.25
BSC	557,455.39	557,455.39	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	12,142,163.18	12,142,163.18	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	10,092,000.00
Total	**12,699,618.56**	**12,699,618.56**	**11,240,302.25**

Figure D2.4 illustrates the collateral costs required of an 800MW CCGT thermal plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.5.

Figure D2.4: Annual average collateral costs 800MW thermal plant variants, 2011-13 average

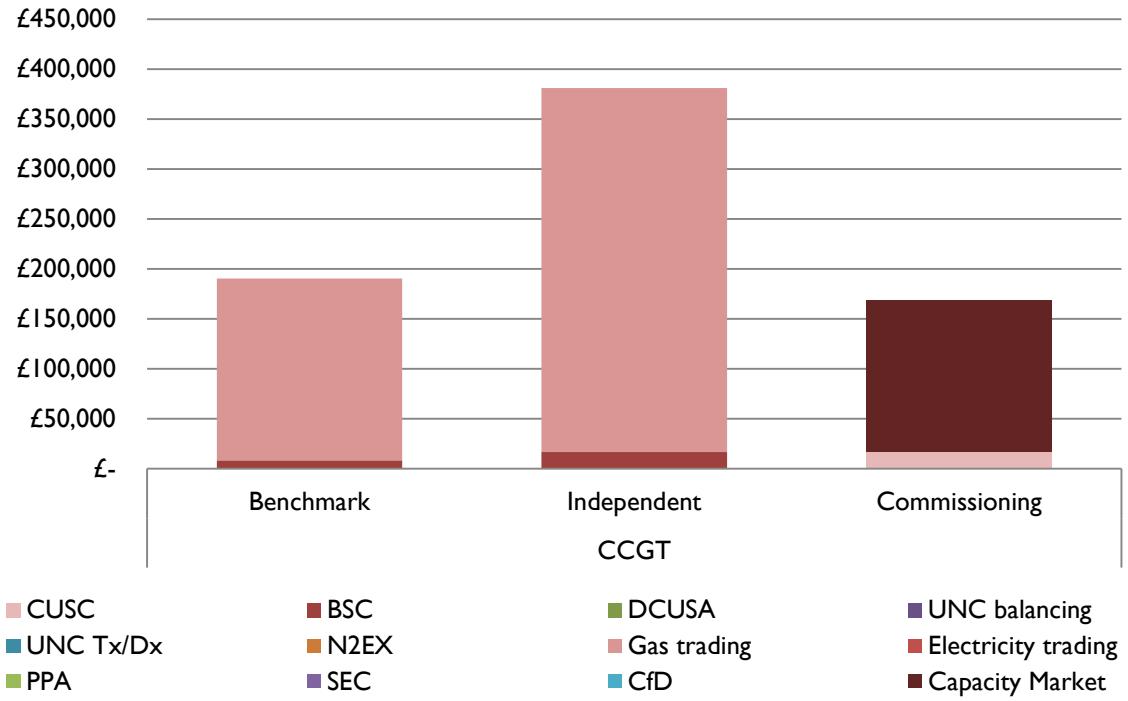


Table D2.5: Annual average collateral costs 800MW CCGT thermal plant variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	17,224.53
BSC	8,361.83	16,723.66	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	182,132.45	364,264.90	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	151,380.00
Total	**190,494.28**	**380,988.56**	**168,604.53**

2 Large biomass conversion benchmark

2.1 Core operating assumptions

Table D2.6 shows the key assumptions we have used to determine the 600MW biomass conversion thermal plant benchmark profile.

Table D2.6

Benchmark	Capacity (MW)	Load factor	Annual output (MWh)	Daily output (MWh)	Connection	Location
Large biomass conversion	600	0.8	4204800	11520	Transmission	England

2.2 Core financing assumptions

For the 600MW biomass conversion thermal plant benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

2.3 Core collateral amounts and costs

Figure D2.5 shows the breakdown of collateral between different areas of activity for a 600MW biomass conversion benchmark. Actual data is set out in Table D2.7.

Figure D2.5: Core 600MW biomass conversion benchmark collateral amounts, 2011-13

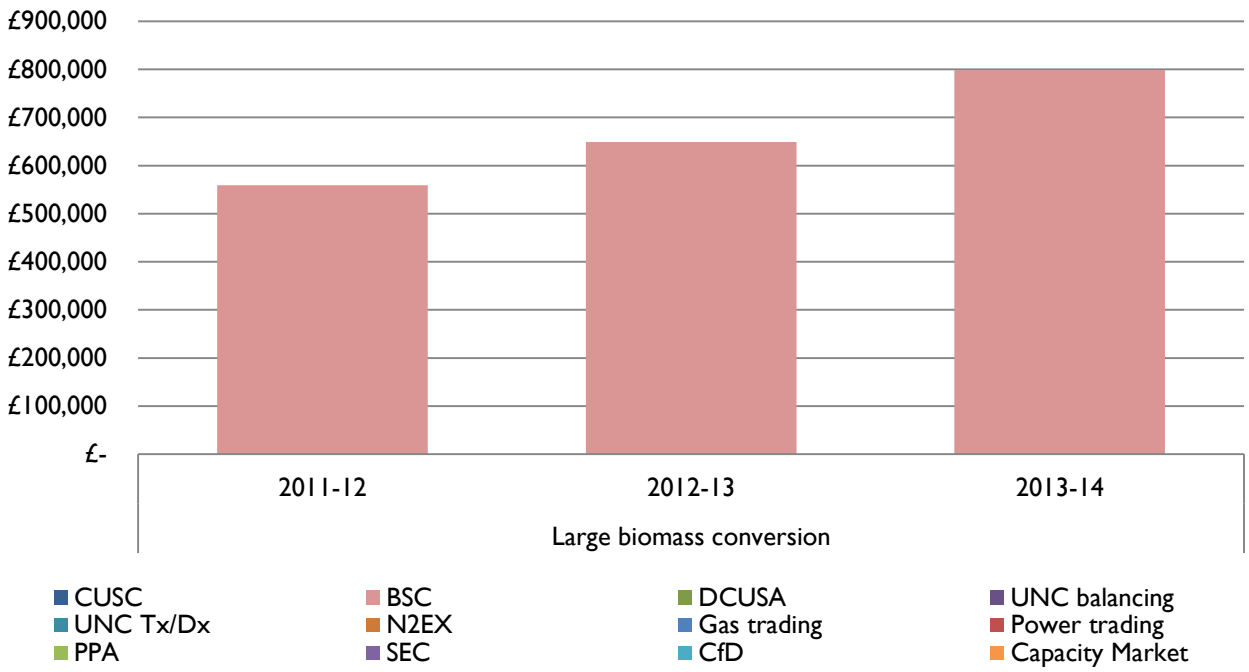


Table D2.7: 600MW biomass conversion annual average collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	559,182.53	648,724.01	798,932.85
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading			
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**559,182.53**	**648,724.01**	**798,932.85**

Figure D2.6 shows the breakdown of collateral costs between different areas of activity for a 600MW biomass conversion thermal plant benchmark. Actual data is set out in Table D2.8.

Figure D2.6: Core 600MW biomass conversion plant benchmark collateral costs, 2011-13

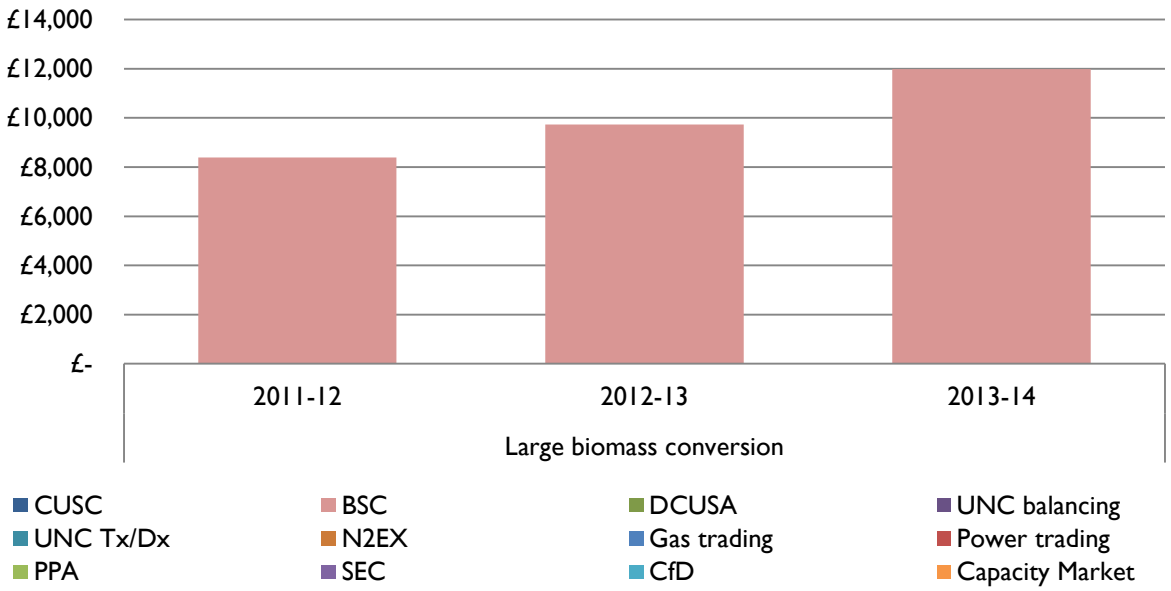


Table D2.8: Core 600MW biomass conversion plant annual average collateral costs by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	8,387.74-	9,730.86	11,983.99
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading			
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**8,387.74**	**9,730.86**	**11,983.99**

Credit requirements under the BSC form the major parts of the cost of collateral for the biomass conversion plant.

2.4 Variant collateral costs and amounts

Figure D2.7 illustrates the collateral amounts required of a 600MW biomass conversion plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning, i.e undergoing conversion. The costs for the commissioning plant are zero as the biomass conversion is not a new-build plant and is not facing new build collateral under the CUSC. Actual data is shown in Table D2.9.

Figure D2.7: Annual average collateral amounts 600MW biomass conversion variants, 2011-13 average

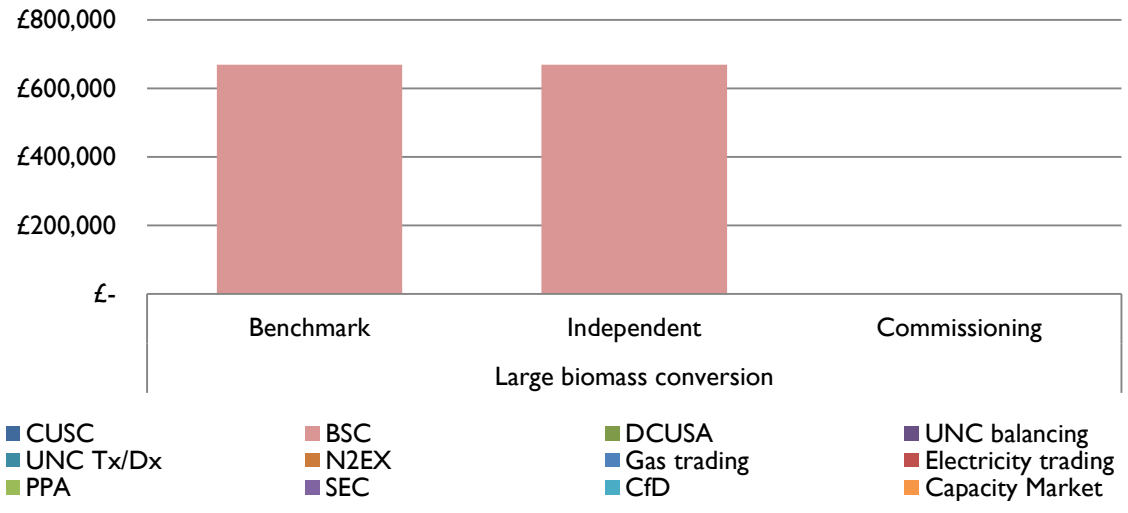


Table D2.9: Annual average collateral amounts 600MW biomass conversion variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	-
BSC	668,946.46	668,946.46	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**668,946.46**	**668,946.46**	**-**

Figure D2.8 illustrates the collateral costs required of a 600MW biomass conversion thermal plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.10.

Figure D2.8: Annual average collateral costs 600MW biomass conversion thermal plant variants, 2011-13 average

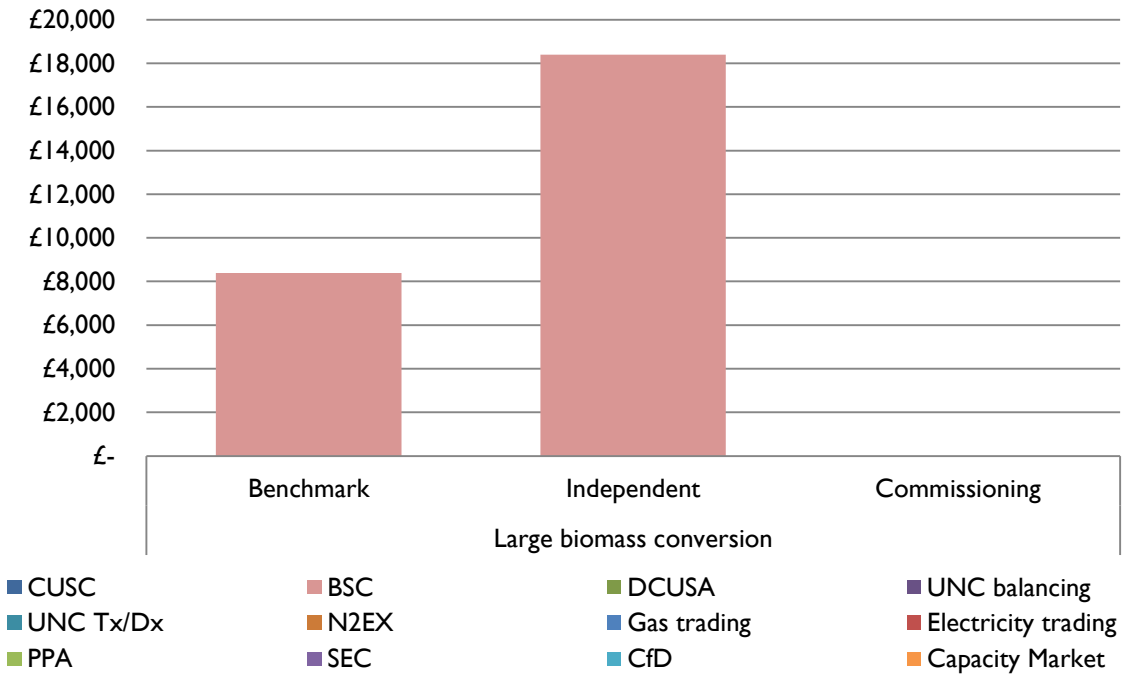


Table D2.10: Annual average collateral costs 600MW biomass conversion thermal plant variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	-
BSC	8,387.74	18,396.03	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**8,387.74**	**18,396.03**	**-**

3 500MW offshore plant benchmark

3.1 Core operating assumptions

Table D2.11 shows the key assumptions we have used to determine the 500MW offshore wind farm benchmark profile

Table D2.11

Benchmark	Capacity (MW)	Load factor	Annual output (MWh)	Daily output (MWh)	Connection	Location
Offshore wind	500	0.3	1314000	3600	Transmission	Offshore England

These are based on benchmarking our hypothetical 500MW offshore wind farm to peer generators in the GB energy markets.

Furthermore, the 500MW offshore wind farm generator:

- has operated in the market for longer than five years, and has been a good payer of charges allowing it to build up unsecured credit allowances under transmission and distribution rules and avoid collateral posting in these areas;
- has an imbalance percentage of 12% in electricity reflecting the uncertainty surrounding imbalance for parties with intermittent technologies;

- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is active in the power generation market.

3.2 Core financing assumptions

For the 500MW offshore wind farm benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

3.3 Variant collateral costs and amounts

Figure D2.9 illustrates the collateral amounts required of a 500MW offshore wind farm benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.12.

Figure D2.9: Annual average collateral amounts 500MW offshore wind farm variants, 2011-13 average

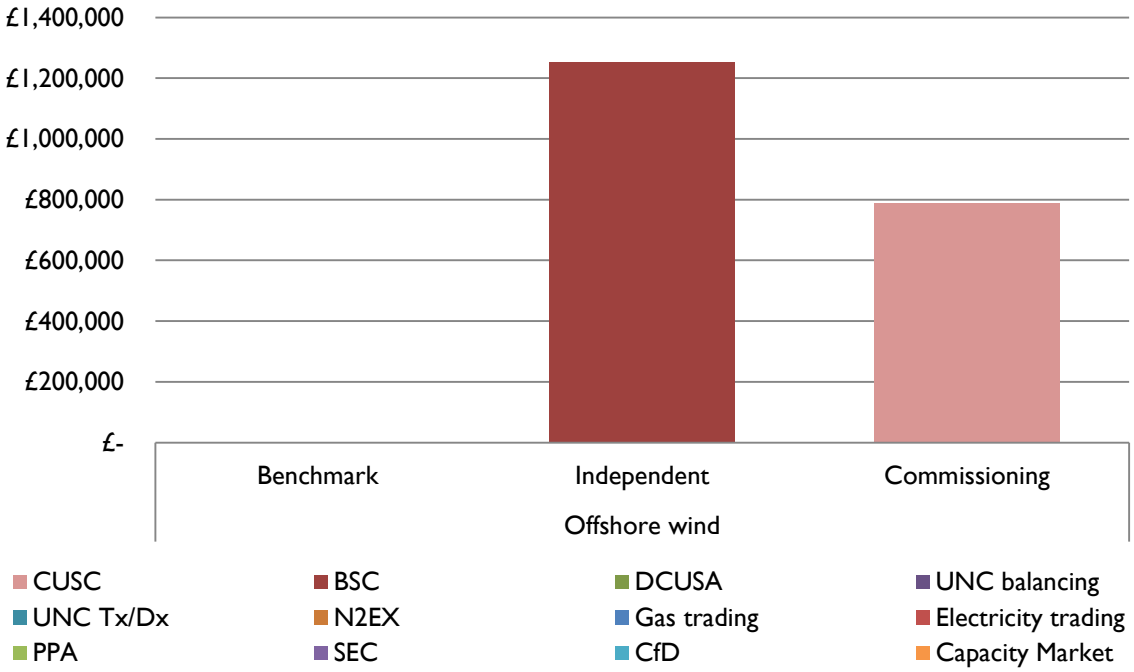


Table D2.12: Annual average collateral amounts 500MW offshore wind farm variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	789,268.89
BSC	-	1,254,274.62	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**-**	**1,254,274.62**	**789,268.89**

Figure D2.10 illustrates the collateral costs required of a 500MW offshore wind farm benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.13.

Figure D2.10: Annual average collateral costs 500MW offshore wind farm variants, 2011-13 average

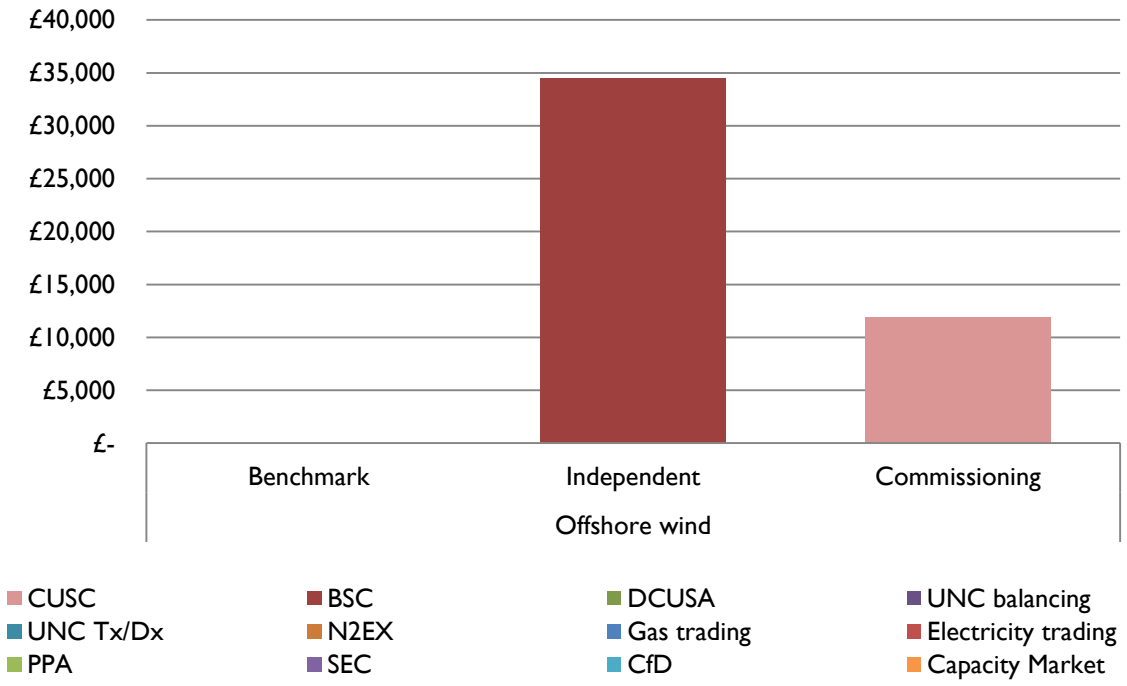


Table D2.13: Annual average collateral costs 500MW offshore wind farm variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	11,839.03
BSC	-	34,492.55	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**-**	**34,492.55**	**11,839.03**

4 100MW dedicated biomass plant benchmark

4.1 Core operating assumptions

Table D2.14 shows the key assumptions we have used to determine the 100MW biomass plant benchmark profile

Table D2.14

Benchmark	Capacity (MW)	Load factor	Annual output (MWh)	Daily output (MWh)	Connection	Location
Biomass plant	100	0.8	700800	1920	Transmission	England

These are based on benchmarking our hypothetical 100MW biomass plant to peer generators in the GB energy markets.

Furthermore, the 100MW biomass plant generator:

- has operated in the market for longer than five years, and has been a good payer of charges allowing it to build up unsecured credit allowances under transmission and distribution rules and avoid collateral posting in these areas;
- has an imbalance percentage of 1% in electricity reflecting the flexibility and contracted positions of vertically integrated generators;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is active in the power generation market.

4.2 Core financing assumptions

For the 100MW biomass plant benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

4.3 Core collateral amounts and costs

Figure D2.11 shows the breakdown of collateral between different areas of activity for 100MW biomass plant benchmark. Actual data is set out in Table D2.15.

Figure D2.11: Core 100MW biomass plant benchmark collateral amounts, 2011-13

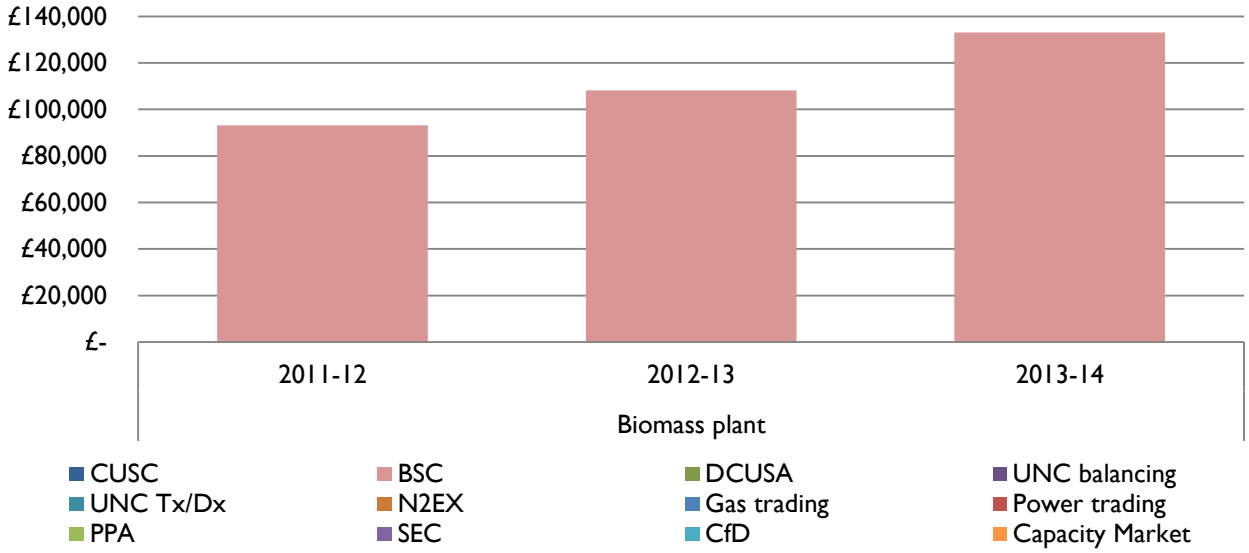


Table D2.15: 100MW biomass plant annual average collateral amounts by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	93,197.09	108,120.67	133,155.48
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading			
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**93,197.09**	**108,120.67**	**133,155.48**

Figure D2.12 shows the breakdown of collateral costs between different areas of activity for 100MW biomass plant benchmark. Actual data is set out in Table D2.16.

Figure D2.12: Core 100MW biomass plant benchmark collateral costs, 2011-13

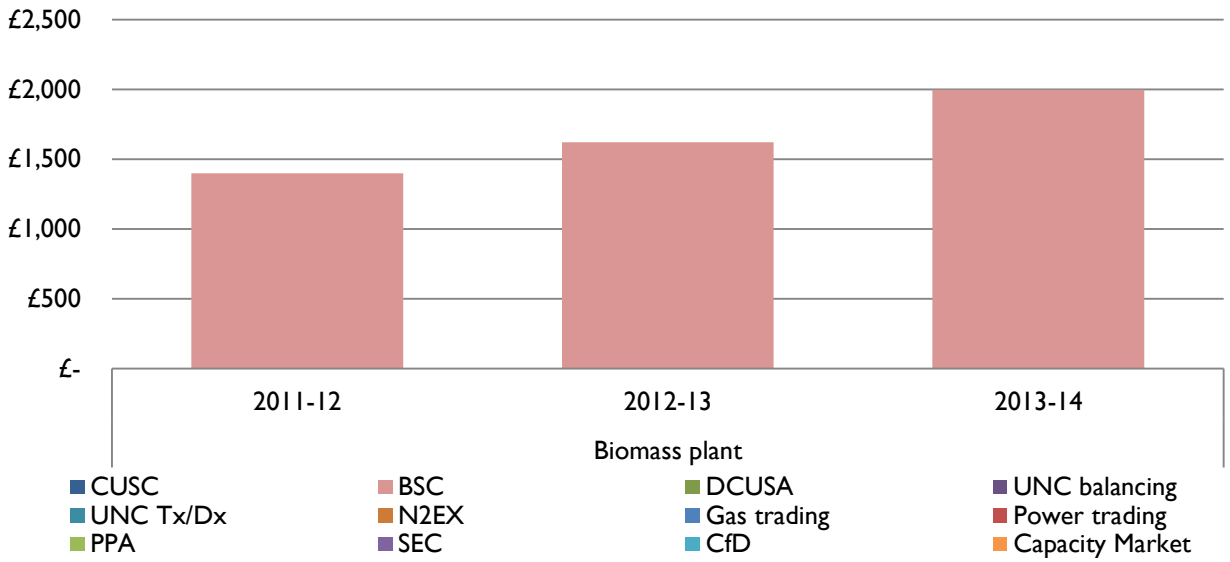


Table D2.16: Core 100MW biomass plant annual average collateral cost by framework, 2011-13

Code	2011-12 (£)	2012-13 (£)	2013-14 (£)
CUSC	-	-	-
BSC	1,397.96	1,621.81	1,997.33
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading			
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**1,397.96**	**1,621.81**	**1,997.33**

Credit requirements under the BSC form the major parts of the cost of collateral for 100MW biomass plant.

4.4 Variant collateral costs and amounts

Figure D2.13 illustrates the collateral amounts required of a 100MW biomass plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.17.

Figure D2.13: Annual average collateral amounts 100MW biomass plant variants, 2011-13 average

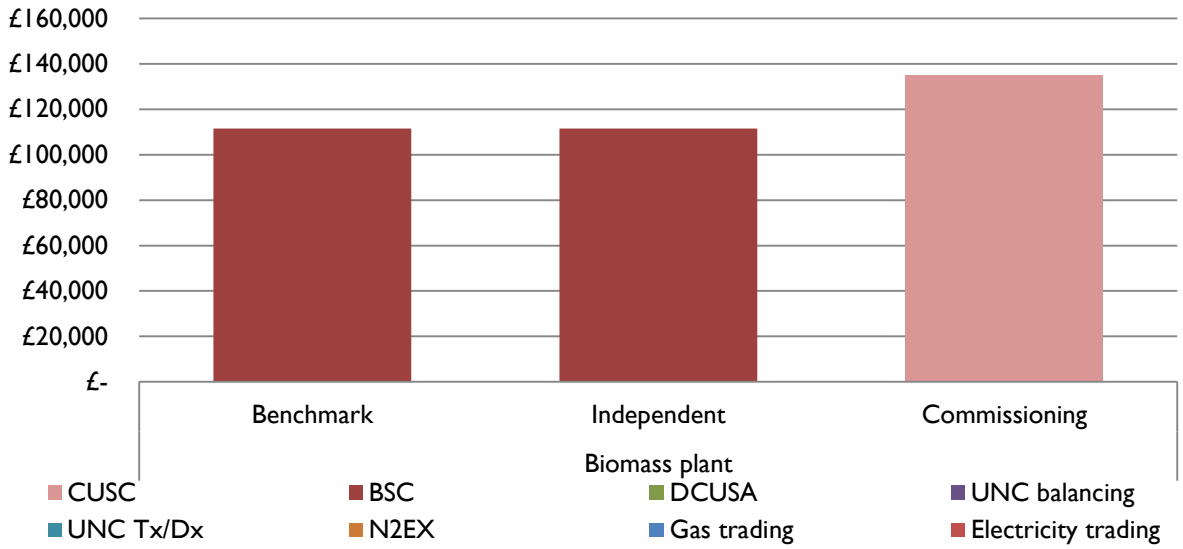


Table D2.17: Annual average collateral amounts 100MW biomass plant variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	134,907.05
BSC	111,491.08	111,491.08	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**111,491.08**	**111,491.08**	**134,907.05**

Figure D2.14 illustrates the collateral costs required of a 100MW biomass Plant benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.18.

Figure D2.14: Annual average collateral costs 100MW biomass plant variants, 2011-13 average

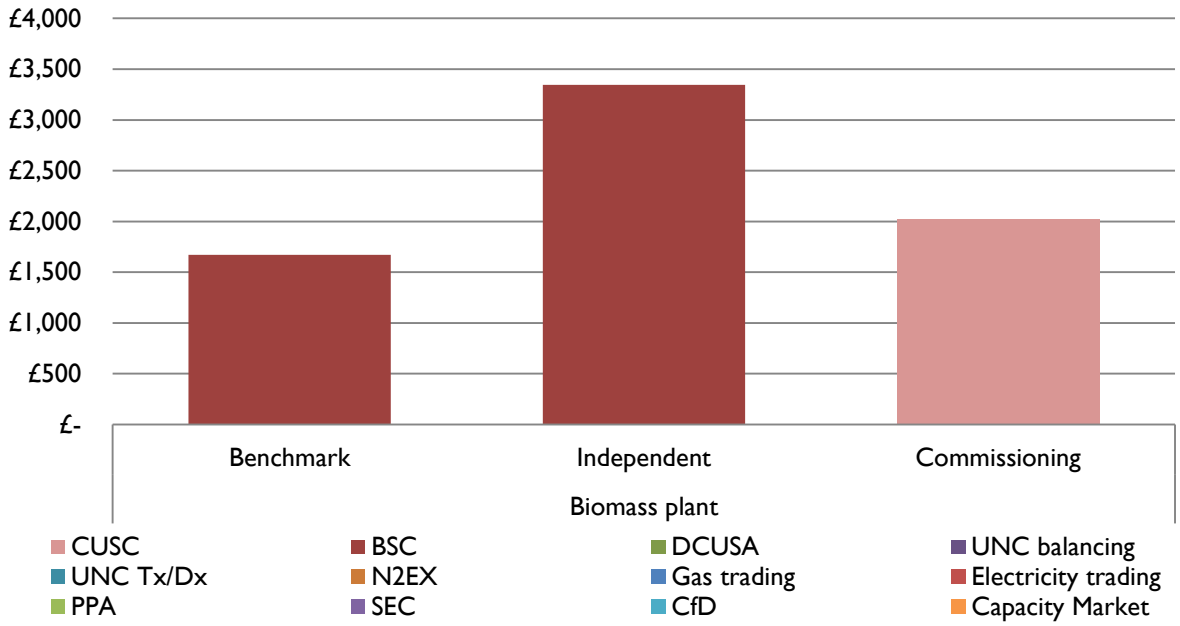


Table D2.18: Annual average collateral costs 100MW biomass plant variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	2,023.61
BSC	1,672.37	3,344.73	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**1,672.37**	**3,344.73**	**2,023.61**

5 50MW onshore wind plant

5.1 Core operating assumptions

Table D2.19 shows the key assumptions we have used to determine the 50MW onshore wind plant benchmark profile.

Table D2.19

Benchmark	Capacity (MW)	Load factor	Annual output (MWh)	Daily output (MWh)	Connection	Location
Onshore wind	50	27%	118260	324	Transmission	Scotland

These are based on benchmarking our hypothetical 50MW onshore wind plant to peer generators in the GB energy markets.

Furthermore, the 50MW onshore wind plant generator:

- has operated in the market for longer than five years, and has been a good payer of charges allowing it to build up unsecured credit allowances under transmission and distribution rules and avoid collateral posting in these areas;
- has an imbalance percentage of 12% in electricity reflecting the errors which can affect a party's imbalance position as a result of forecasting wind speed;
- does not have a recognised long term credit rating (by S&P, Moody's or Fitch), and nor is it owned by a company that does. Hence, it is unable to write long term, bankable PPAs so is unable to meet any demand through this route; and
- is active in the power generation market.

5.2 Core financing assumptions

For the 50MW onshore wind farm benchmark we assume:

- as it has no long term credit rating it will not be able to collateralise obligations through PCGs where this is possible;
- it will issue letter of credit in preference to cash as collateral; and
- the fee on the face value of the letter of credit is assumed to be 1.5%.

5.3 Variant collateral costs and amounts

Figure D2.15 illustrates the collateral amounts required of a 50MW onshore wind benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.20.

Figure D2.15: Annual average collateral amounts 50MW onshore wind farm variants, 2011-13 average

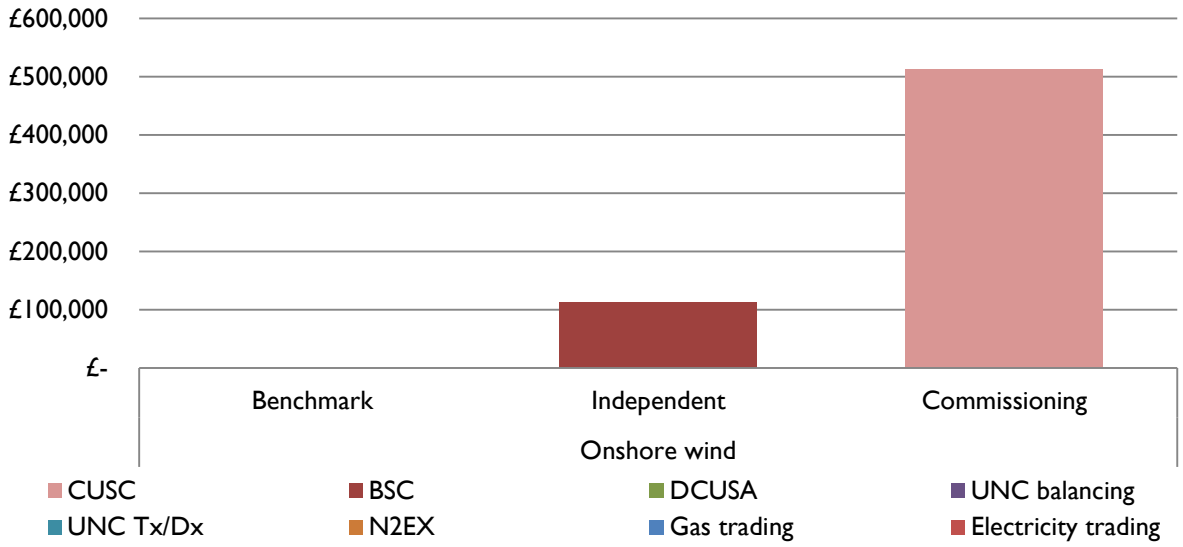


Table D2.20: Annual average collateral amounts 50MW onshore wind farm variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	513,321.22
BSC	-	112,884.72	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**-**	**112,884.72**	**513,321.22**

Figure D2.16 illustrates the collateral costs required of a 50MW onshore wind farm benchmark in instances where it is an independent player trading under its own account or a plant currently commissioning. Actual data is shown in Table D2.21.

Figure D2.16: Annual average collateral costs 50MW onshore wind farm variants, 2011-13 average

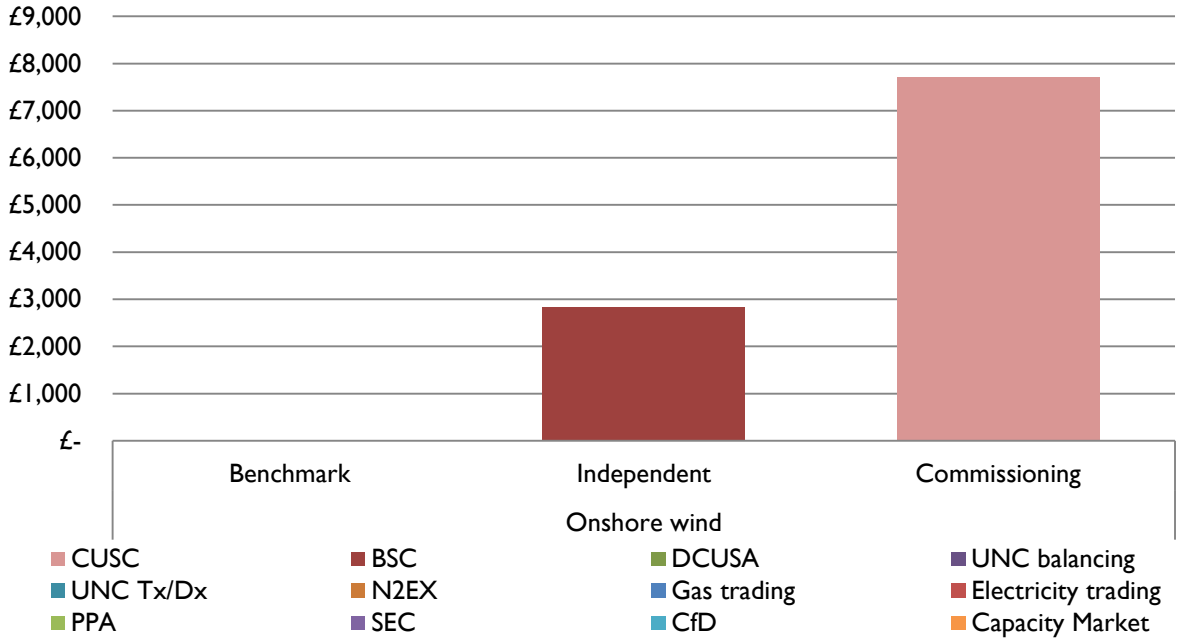


Table D2.21: Annual average collateral costs 50MW onshore wind farm variants, 2011-13 average

Framework	Benchmark (£)	Independent (£)	Commissioning (£)
CUSC	-	-	7,699.82
BSC	-	2,822.12	-
DCUSA	-	-	-
UNC balancing	-	-	-
UNC Tx/Dx	-	-	-
N2EX	-	-	-
Gas trading	-	-	-
Power trading	-	-	-
PPA	-	-	-
SEC	-	-	-
CfD	-	-	-
Capacity Market	-	-	-
Total	**-**	**2,822.12**	**7,699.82**

Annex E—Commodity price trends

Figure E:1 below shows the movement in commodity prices that underpins the analysis of "mark-to-market" sensitivity in Section 4:5.

Figure E.1: Winter 2009 power prices (January 2008 to September 2009)