ofgem Making a positive difference for energy consumers

Supply Market Indicator

Methodology

Last updated	
Methodology	29/01/2015
Appendix 1	30/04/2015

Contact: Retail Market Analysis team

Tel: 020 7901 7000

Email: SMI@ofgem.gov.uk

Overview:

To make the energy market clearer for consumers, Ofgem regularly publishes its Supply Market Indicator, which provides a forward-looking estimate of average costs and margins for a representative large supplier.

This report shows how we produce the SMI.

Contents

Version history

Version date	Summary of changes
27/03/14	First edition following 2013/14 review of methodology
31/07/14	Consumption input methodology amended
27/11/14	Network charges methodology amended to note that we use indicative and final charges when available.
29/01/15	Methodology updated to include Contracts for Difference (CfDs) cost estimates.

1. Introduction

Chapter Summary

This chapter defines the Supply Market Indicator (SMI) and provides a brief background on its origin.

What is the SMI?

1.1. The purpose of the SMI is to help consumers and other stakeholders understand pricing trends in the domestic energy supply market. It provides commentary on recent and possible future cost trends. It does so by estimating average costs and margins for a representative large supplier, using publicly available and verifiable data where we can.

1.2. The SMI examines the relationship between this stylised supplier's annual costs and revenue in the form of the average domestic consumer's annual energy bills. It calculates the indicative average pre-tax margin that a large supplier may register for a gas, electricity and dual-fuel customer for the following 12 months.

Background

1.3. Following the 2008 Ofgem study of the state of the GB energy supply markets (the 'Probe'), we committed to continually monitoring price changes to help interested parties better understand the relationship between retail prices and wholesale costs. This commitment formed the basis of the current SMI, which we update monthly on our website.

1.4. The Probe was concerned with the functioning of competition in GB electricity and gas retail supply markets for domestic and small non-domestic customers. One of its aims was to investigate the relationship between domestic retail bills and wholesale energy prices. This was partly in response to concerns that falls in wholesale energy prices were not translating into lower retail prices as quickly as increases were leading to higher retail prices.

1.5. The Probe concluded that there is a long-run relationship between both parts of the market. We found clear evidence of a lag between wholesale and retail price changes which is largely a result of suppliers' hedging their wholesale market exposures, and to a lesser degree the effect of administrative lags.

Stakeholder feedback

1.6. We are keen to ensure that stakeholders understand how we construct the SMI. We are also keen to hear your views on how we could improve our

methodology. This will help us ensure that the SMI gives the best estimate of trends in costs and margins in the future.

1.7. We do not propose to hold a formal consultation on this but please contact us with any suggestions at SMI@ofgem.gov.uk.

2. Interpreting the SMI

Chapter Summary

This chapter provides guidance on how to interpret the SMI. It also outlines how the SMI relates to our wider market monitoring work including the Consolidated Segmental Statements (CSS) and Ofgem's State of the Market Report.

How to interpret the SMI

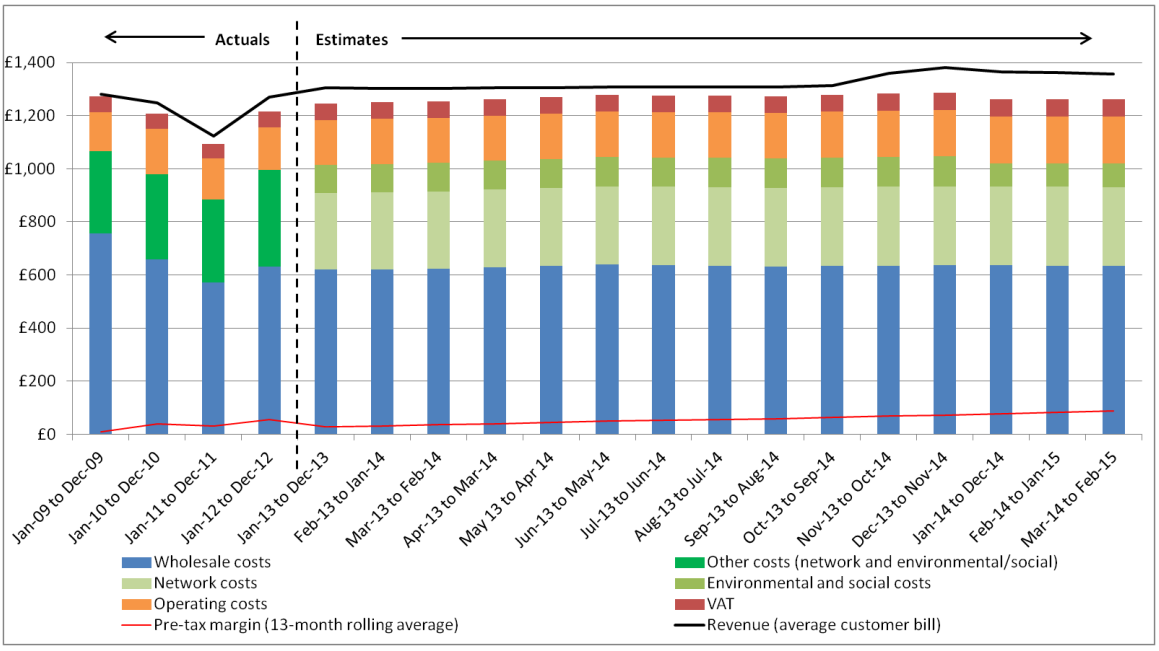
2.1. The SMI provides a forward-looking estimate of trends in energy costs and margins over the following 12 months. Using the current average bill, the SMI shows how the individual cost components of the bill are expected to change over time.

2.2. The SMI uses a mixture of publicly available and verifiable data and informed assumptions to provide an estimate of future trends in costs. As such, the SMI should be viewed as an estimate rather than as a factual report (as is the case with all forecasts). In energy, several factors are inherently uncertain including the wholesale price of energy, which is sensitive to a variety of demand-side and supply-side factors. It is therefore impossible for us to have certainty over these factors and the SMI should be interpreted with this in mind.

2.3. The SMI is *not* based on contemporaneous information from the large suppliers such as current hedging strategies, actual and forecast energy consumption and suppliers' operating costs. The SMI also does not try to estimate suppliers' financing costs and corporate tax liabilities, which would imply knowing details of their capital structure. Therefore the **SMI cannot and does not seek to provide a forecast of company profits**. A reliable indicator of profitability (before interest payments and taxes) is provided in the individual companies' Consolidated Segmental Statements (CSS). These present the required information in historical form. Only by looking back can we accurately observe a company's profitability in a given time period.

Interpretation example

Figure 2.1: SMI example chart



2.4. Every month, the SMI shows the annual average bill, costs and pre-tax margin per customer for the following 12 months starting that month. For example, Bob signs a 12-month fixed price contract in January 2013. Bob has average gas and electricity consumption and the contract he is on is a blended tariff based on the weighted average of tariffs open to customers.[1]

2.5. In this example, Bob is expected to pay a total of £1,304 over the coming 12 months. His supplier (whose costs are similar to the average of the large suppliers) will likely incur around £1,246 in costs supplying Bob with electricity and gas. The difference between Bob's bill and the supplier's costs is the supplier's pre-tax margin. The supplier will have to pay corporate taxes to the government and interest payments with part of that money.

2.6. The implied annual pre-tax margin that the representative supplier would make per customer is £59 in the above example. As noted above, this should not be interpreted as a forecast of suppliers' profitability.

[1] No customer therefore will be on exactly the same tariff as is described in the SMI.

Links with our wider market monitoring

Consolidated Segmental Statements

2.7. As noted above, the SMI provides a frequently updated, forward-looking estimate of suppliers' costs and margins and does not seek to provide estimates of companies' profits, either collectively or individually.

2.8. Detailed information on individual companies' revenues, costs and earnings before interest and taxes (EBIT) in both their generation and supply arms is available on a backward-looking basis in their CSS. We require the large vertically-integrated companies to produce these annually, based on audited figures.

2.9. In order to make things simpler and minimise confusion, we have taken steps to align the SMI and the CSS. To do so, we:

- disaggregate costs into consistent categories for both the SMI and the CSS.[2]
- use CSS data, where available, for those components in the SMI that are based on historical figures, such as operating costs and depreciation and amortisation charges.
- base the SMI on average prices across all tariffs by the large suppliers, rather than standard tariffs only.
- add VAT in the CSS revenue when comparing the two in the SMI outputs. This because the SMI includes VAT; however the CSS does not. In the SMI revenue, VAT is implicitly included as part of the bill so we explicitly state it as a cost in the breakdown. The revenue reported in the CSS is after the companies pay VAT to HM Revenue and Customs (ie lower than the SMI revenue based on advertised bills) and therefore isn't included as a cost
- estimate unbilled volumes based on reconciling latest CSS average revenue and the corresponding SMI revenue after accounting for VAT, the Warm Home Discount and the proportion of CSS revenue attributable to unrestricted meter tariffs.

2.10. However, when comparing the CSS and SMI there are still some important differences to note, including the following:

- The CSS is based on actual historic consumption whereas the SMI is generated using our assumption of annual consumption. Actual consumption, particularly of gas, can vary quite significantly depending on, for example, the weather.
- The SMI revenue calculation only includes tariffs offered to customers with unrestricted meters. It does not include tariffs such as Economy 7/10 and dynamic teleswitch (DTS) metered customers.

[2] When we compare the average bills in the CSS and SMI we add VAT to CSS revenue to make them comparable.

- The SMI revenue also does not include other sources of potential revenue such as late payment fees.

Wider monitoring work

2.11. The SMI is part of wider Ofgem work in monitoring energy markets. This includes analysis for our annual State of the Market Report.

2.12. The report puts prices, costs and profits into the wider context of how the market is working. First published in March 2014, the report uses historical data from a range of sources, including the CSS, to assess how well energy markets have been working for consumers.

3. Data and methodology

Chapter Summary

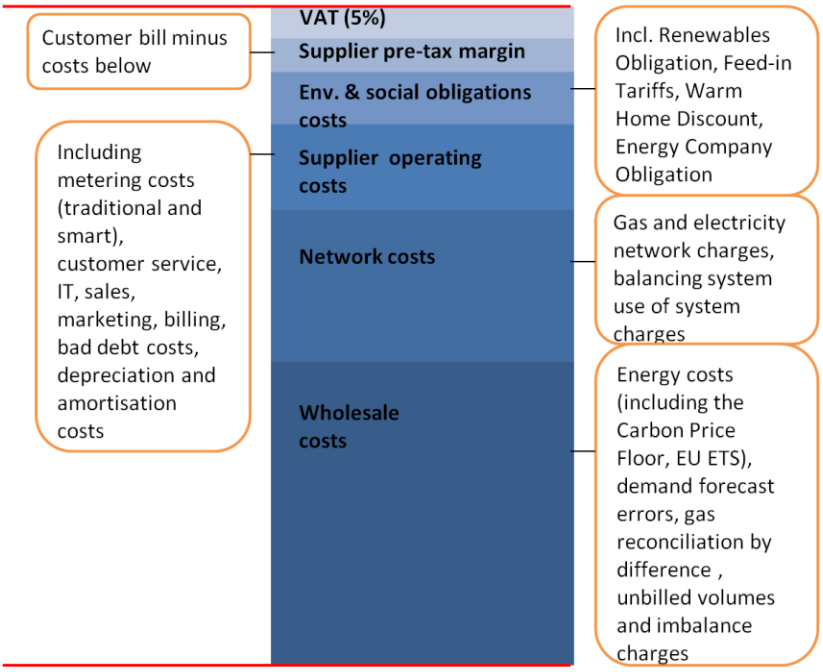
This chapter describes the inputs, methodology and assumptions used to generate the SMI. **Appendix 1 includes a table listing the data sources for each input and assumption where publicly available.** This table will be updated on a regular basis as and when new input data becomes available.

How is the SMI constructed?

3.1. The SMI shows, on a per customer basis, the average revenue (or average customer bill), average supplier costs and the average pre-tax margin for a representative large supplier. The SMI is reported for electricity, gas and dual fuel customers. It should be noted that the dual fuel bill is not simply the sum of gas and electricity bills as dual fuel discounts are taken into consideration.[3]

3.2. Figure 3.1 displays the components of the average customer bill and lists the individual costs included in each.

Figure 3.1: Total cost and margin components of customer bills



[3] Approximately 55% of the large suppliers' customers are dual fuel customers.

3.3. All figures in the SMI estimates are presented in nominal terms. However, we adjust the historical actual data (sourced from the CSS) for inflation.

Domestic consumption and customer numbers

3.4. For the SMI, supplier revenues and costs are estimated based on either average domestic consumption of gas and electricity or, where the costs do not vary with consumption, customer numbers. In summary:

- **Consumption -** We estimate future consumption by applying a demand forecast to the latest average mean weather-corrected consumption values. Please see appendix 1 for the latest data we use in the SMI model. These figures are used throughout the SMI wherever consumption figures are required for cost and bill calculations.
- **Customer numbers -** We use the number of gas, electricity and dual-fuel customers of the large suppliers for the respective SMI calculations.

3.5. The remainder of this chapter describes the inputs, methodology and assumptions that we use for the revenue, cost and pre-tax margin components of the SMI.

Revenue

3.6. The average revenue per customer in the SMI is an estimate of the average annual bill paid by customers in Great Britain. We do not forecast bills, but rather use suppliers' prices available at the time of each update.

Inputs

3.7. The key inputs required to calculate average customer bills include:

- **Annual bills for all tariffs in the market -** including tariffs that are open to new customers and those that are not.
- **Customer numbers for each tariff and payment method.**[4]

Methodology and assumptions

3.8. The annual customer bills across all tariffs are calculated based on annual domestic consumption. We then calculate the average annual customer bill weighted by suppliers' market shares and payment method. Previously, the SMI only included a weighted average of the large suppliers' standard tariffs.

[4] i.e. how customers pay for the energy such as direct debit, standard credit or pre-payment

3.9. We include the following assumptions in calculating annual customer bills:

1. **Tariff weightings** – We weight the average tariff according to the split between the number of customers on a standard tariff and all other tariffs in the market.[5] [6]
2. **Unrestricted meters** – We only include tariffs offered to customers with unrestricted electricity meters. For example, we do not include Economy 7 tariffs or tariffs offered to customers with Dynamic Teleswitch (DTS) meters or similar. There are around 5 million meters in Great Britain which allow for separate recording of off-peak consumption (approximately 18% of all electricity customers).[7]
3. **Recent price changes -** Any publically-announced price changes within the next 12 months are incorporated into the SMI from the point at which they become effective.
4. **Government electricity bill rebate-** the rebate aims to reduce the general cost of environmental and social obligations within customer bills. The final bill value we report in the SMI accounts for this by subtracting the rebate value from our estimated average annual domestic bill.

Costs

3.10. The following subsections describe how we estimate each of the cost components in the SMI.

12-month forward-looking costs

We present a forward-looking 12 month average cost (call it 'SMI cost') for all cost components in the SMI. This represents the best view of likely future costs. For example, we calculate every month the *annualised* cost for a representative large supplier. We then average over the next 12 months these annualised figures to provide an average cost for the next 12-months (ie the 'SMI cost'). This is why some cost changes, such as changes to network costs, are phased in only gradually in the SMI, rather than instantaneously.

For example, the 'SMI cost' in January will be the average of the annualised estimates in the January-December period. Say that we are aware that an announced cost change will take effect in April. The *full* impact of the cost change will only take effect from the April 'SMI cost' onwards, but it will also *partially* impact the January 'SMI cost', since it is an average of the January-December period. So it will be gradually phased in from January to March, until it is fully phased in from April on.

[5] By standard tariffs we mean we mean variable-price tariffs open to all customers across all payment methods and without requiring online signup or account management.
[6] By definition other tariffs include those that require online signup or account management and may qualify for discounts. See appendix 1 for the weighting we currently use.
[7] The state of the market for customers with dynamically teleswitched meters, Ofgem, July 2013

The exception to this rule is for costs where there is an unanticipated and material cost change. When this happens, we ensure that the unanticipated cost change does not affect 'SMI costs' prior to the event so we don't revise history. We do so by making a break in the model at the time of the cost change, and restarting the calculation of 'SMI costs' from then on. An example of this happening is the recent government changes to the Energy Company Obligation (ECO) costs and the government-funded electricity bill rebate.

Wholesale costs

3.11. Wholesale costs refer to the cost of electricity and gas purchased prior to its supply to the customer.

Inputs

3.12. The key inputs required to calculate the wholesale cost component of the bill include:

- **Wholesale price data** - including price data for wholesale gas, peak electricity and baseload electricity.

Methodology and assumptions

3.13. The proportion of a customer's energy bill which is accounted for by wholesale costs varies between suppliers and over time with changing wholesale costs and other costs. Our analysis is based on forward-looking wholesale costs. It estimates the expected cost of supplying energy to a customer for the next 12 months at each point in time, based on pricing information over the buying period. So, the wholesale energy cost is calculated by averaging past prices (over the buying period) for forward electricity and gas products, assuming a constant rate of purchase.

3.14. We include the following assumptions in calculating the wholesale cost of energy within a customer's bill:

1. **Products and Seasonality** - In our central scenario, costs are based on buying seasonal and quarterly products in electricity and gas, respectively. Prices are weighted to take account of seasonal consumption trends (by quarter for gas and by season for electricity). We convert quarterly values into a monthly series by taking a straight line average between quarterly points.

2. **Purchasing strategy -** Suppliers operate a range of purchasing and hedging strategies, including different products, purchasing energy internally and on

long-term contracts. By using market-based prices to estimate wholesale costs, we are pricing energy at the price which firms are able to sell the energy on the wholesale market.[8] [9] In our central scenario, wholesale costs are modelled using an 18-month hedging strategy, assuming a uniform volume of the required electricity and/or gas is purchased on each trading day. It also assumes that all of the required gas and electricity has been purchased before the delivery period begins. Purchasing begins 18 months before energy is to be delivered to the customer. Please see Appendix 2 for a worked example on how we calculate the wholesale cost of energy for the next 12 months.

Purchasing strategy analysis

Wholesale prices can be volatile. Suppliers therefore buy much of their energy requirement over a period of time to reduce the effect of large changes in wholesale prices. This practice is known as hedging, and it is characterised by (i) a portfolio of products used to hedge, (ii) the point in time when firms start to buy energy ahead of delivery time (eg 12, 18, 24 months in advance), and (iii) the point in time when firms stop buying energy ahead of delivery time (eg 12 months, 6 months, day before). Wholesale prices on any given day are therefore not a good indicator of suppliers' wholesale costs, nor are short-term products such as within-day or day-ahead products.

Hedging helps suppliers to smooth their costs and provides suppliers with more certainty over future costs. This allows firms to manage risk against large increases in the spot price of energy. As a result, the price they can charge customers is less volatile than if they did not hedge. Hedging strategies vary from supplier to supplier according to their business objectives. Suppliers may also change their hedging strategies over time in reaction to market conditions or for other business reasons.

The chart overleaf depicts the costs to suppliers of adopting hedging strategies over 12, 18 and 24 months for electricity. These hedging strategies were designed based on information collected in the Energy Supply Probe in 2008 and are intended to represent the industry as a whole rather than any particular firm.

Figure 3.2 : Electricity hedging strategies

[8] Formally this is known as an opportunity cost methodology.
[9] The actual weighted average cost of electricity and gas could be different from this if companies purchase energy internally from their upstream generation business at a price different from the prevailing market price.

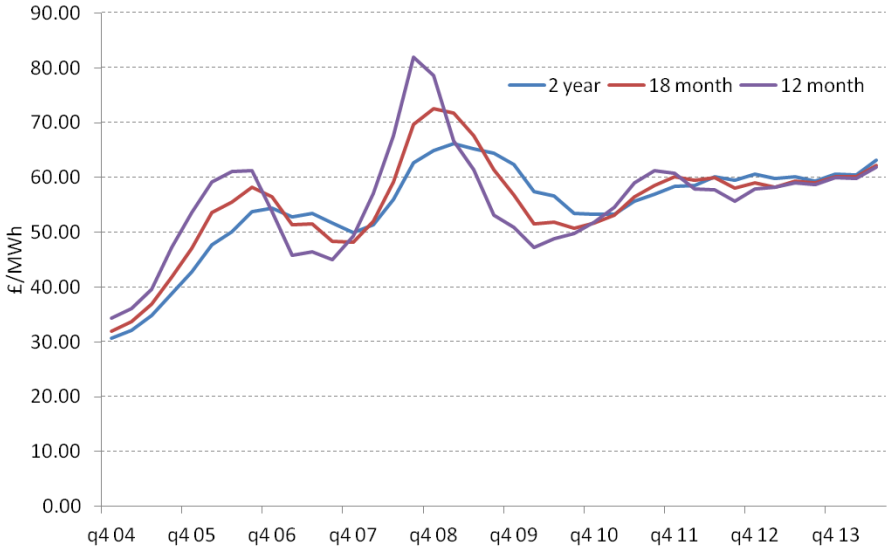


Figure 3.2 shows that wholesale electricity costs can vary significantly based on the hedging strategy employed. The 12-month hedging strategy is more volatile than the other two strategies. Prices in 2007 were lower with this strategy than the alternative options. However, prices were much higher in 2008 and part of 2009, in reaction to rising wholesale costs.

The 24-month strategy is much more stable, but in times of falling prices can often be the most expensive strategy to use. This method is much slower to pick up price changes, which at times of rising bills can be positive, but will be slow to react to falling wholesale prices.

The method employed in our estimate is the 18-month strategy, which is less volatile than the 12-month strategy. Based on our work for the Probe, we feel this is the most appropriate hedging strategy to use. However, it is important to note that hedging strategies may vary between suppliers and suppliers may change their strategies over time in reaction to market conditions.

The analysis would show a similar pattern for gas.

3. **Carbon Cost -** the costs of the Carbon Price Floor and the EU Emissions Trading Scheme are borne by generators and are therefore already reflected within wholesale prices. We therefore do not separate these costs out within the SMI.

4. **Losses (electricity only) –** within the wholesale cost model we assume that a proportion of purchased energy is lost though energy transportation via the transmission and distribution network.

5. **Imbalance costs (electricity only) –** we include within the wholesale cost *category* (ie not within the gas/electricity cost) the costs suppliers pay if they consume more or less electricity than they have contracted for.[10]
6. **Shaping costs (electricity only) –** in calculating wholesale costs we assume that 70% of electricity consumed is baseload and that 30% is peak load.
7. **Gas Reconciliation by Difference cost (gas only)** – supplier costs as a result of reconciling the difference between actual and deemed measurements of gas allocated to Small Supply Points (SSPs). The estimates we use account for inflation.[11] These costs are included within the wholesale costs *category*, not within the gas/electricity cost.
8. **Demand forecast error (gas only) –** cost of buying additional gas required to meet unexpectedly high customer demand (eg caused by a cold spell), and/or the cost of selling back to the wholesale market surplus gas at lower prices than originally purchased, caused by unexpectedly low customer demand (eg caused by warm weather). These costs are included within the wholesale costs *category*, not within the gas/electricity cost.
9. **Unbilled volumes** – cost that arises because suppliers receive less revenue than the volumes they supply, and therefore buy in the wholesale market. This cost can arise for a variety of reasons, including theft from tampered meters or un-metered sites, data imperfections and inefficiencies in the settlement process which are not captured by reconciliation by difference (RbD). The estimates we use account for inflation. These costs are included within the wholesale costs *category*, not within the gas/electricity cost.

Network costs

3.15. Network costs refer to the cost of building, maintaining and operating the energy network and system infrastructure to deliver energy to the customer.[12]

Inputs

3.16. The key inputs required to calculate the network cost component of the bill include:[13]

- **Gas network load factors** – load factors by local distribution zone (LDZ).[14]

[10] Also known as cash-out costs.
[11] Specifically accounting for the RPI measure of inflation. Wherever stated from here on, we account for inflation where our estimates are based on historical data that is more than a year old.
[12] Please note that these only refer to the network charges charged to the supplier and hence the customer. They do not include the upstream charges for Generators. We assume that these are implicit in the price of energy.
[13] Please note that we do not use internal allowed revenue estimates to inform the network costs component of the SMI. This is because we want to use publically available information where possible.

- **Gas network charges** – capacity and commodity distribution and transmission use of system charges. We use indicative charges and then final charges when they become available.
- **Electricity network charges** – standing and unit rate charge for distribution charges and transmission energy consumption tariff. We use indicative charges and then final charges when they become available.
- **Balancing System use of System charges (electricity only)** – this covers the cost of services used to balance the system and internal system operator operating costs.

Methodology and assumptions

3.17. We use the following methodology to calculate the gas network cost component of the customer bill:

- We first calculate the peak daily load (kWh) by dividing annual consumption by the load factor and 365 to get the daily figure.
- For transmission charges we multiply the peak daily load by commodity and capacity prices. We then sum these charges for each LDZ and use an average to arrive at the total transmission charge for each LDZ. We use the average of these charges in the SMI as the gas transmission cost component.
- Using distribution charging information, we use the same approach outlined above to calculate the gas distribution cost component.
- Our forward-looking costs are based on the latest charging information updated for inflation using RPI forecasts.

3.18. We use the following methodology to calculate the electricity network cost component of the customer bill:

- For transmission charges we first calculate the proportion of annual consumption for which transmission charges apply. This is the proportion of annual consumption at peak after having been adjusted for losses in both the distribution and transmission system.[15] We then multiply this figure by the transmission energy consumption tariff (p/kWh) to arrive at the annual transmission charge for each electricity network region. We then take the average of these figures as the electricity transmission cost component for the SMI.
- To calculate distribution charges we multiply the unit rate by annual consumption and add the annual standing charge to arrive at a total annual charge for each electricity network region. We then take an average of these figures to use as the electricity distribution cost component within the SMI.

[14] A load factor refers to the ratio of average demand to the peak load on the network.
[15] The distribution Loss Adjustment Factor (LAF) varies by Electricity network region. See appendix 1 for source.

- When calculating the average figures across each electricity network region we use a weighted average based on the number of domestic meter points in each region.
- Our forward-looking costs are based on the latest charging information updated for inflation using RPI forecasts.

3.19. For Balancing System use of System charges (BSUoS) we use the latest annual £/MWh BSUoS charge data and calculate a per customer figure based on annual domestic electricity consumption.

Supplier operating costs

3.20. Supplier operating costs refer to the day-to-day expenses related to running an energy supply business. This includes the cost of metering.

Inputs

3.21. The key inputs required to calculate the supplier operating cost component of the bill include:

- **Operating costs** – these costs include customer service, staffing, IT, sales and marketing, billing, metering costs (including traditional and smart metering) and bad debt costs.
- **Depreciation and amortisation** – costs incurred by suppliers relating to the declining value of assets.

Methodology and assumptions

3.22. We use supplier operating cost information obtained from the latest CSS (accounting for inflation). We produce weighted average operating costs for electricity and gas based on the market shares of the large suppliers (on a customer numbers basis) to represent the operating costs of a representative supplier. This is consistent with our method of calculating the average retail bill.

3.23. In the future, we expect that smart meter costs and benefits will be reflected in suppliers' operating costs. We have uplifted SMI operating costs for 2013, which are based on 2012 CSS data, to reflect the estimated costs of the early stages of the smart meter roll-out, as these costs begin to be incurred in 2013. Our smart meter cost estimates are derived from DECC's smart meter Impact Assessment (IA). For a given year, we take DECC's estimated, annuitised cost[16] and from this subtract its estimated, annualised[17] supplier benefit. We do not account for DECC's estimated, annualised consumer benefit as this effect will be reflected indirectly via reduced

[16] Where the upfront cost is apportioned in regular periods over the lifetime of the measure.
[17] Where costs (or benefits) are reported in the year that they arise.

consumption which we account for in our consumption forecasts.[18] The resulting figure is an estimate of the net cost to suppliers, per average household, of smart meters in a given year.

3.24. To improve the alignment between the SMI and the CSS we now include depreciation and amortisation cost estimates within the SMI. We calculate a weighted average of these costs from the CSS (accounting for inflation) across the large suppliers weighted by market share (on a customer number basis), similar to operating costs.

Environmental and social obligations costs

3.25. These costs refer to the costs incurred by suppliers in meeting government environmental and social policy obligations that are recovered from energy customers.

Inputs

3.26. The key inputs required to calculate the environmental and social obligations costs component of the bill include:

- **Renewable Obligation Certificates (ROCs)** – buy-out price and the ROC requirement for Great Britain.
- **Feed in Tariffs (FiTs)** – total annual cost and the proportion of installations by domestic customers.
- **Energy Companies Obligation (ECO) –** total annual cost of the scheme.
- **Warm Home Discount (WHD) -** total annual cost of the scheme.
- **Contracts for Difference (CfDs) –** annual scheme cost for early CfDs, total system consumption and eligibility criteria.

Methodology and assumptions

3.27. To calculate the cost of ROCs as a proportion of the customer bill we multiply the buy-out price (£/ROC) by the percentage ROC requirement and annual electricity consumption in MWh per customer.

3.28. To calculate the cost of FiTs we multiply the total annual cost of the scheme by the proportion of installations by domestic customers. We then divide this cost by the total number of domestic electricity customers of the large energy suppliers to arrive at a per customer cost.

[18] In order to estimate DECC's annualised supplier benefit (only an annual total benefit figure is published in the IA), we scale DECC's total benefit estimate in a given year by the ratio of supplier benefits to total benefits. This ratio is calculated based on data provided in table 5-1, page 75, of the DECC IA ("business benefits" divided by "total benefits").

3.29. To calculate the cost of ECO as a proportion of the customer bill, we divide the total annual average cost of the scheme by the number of gas and electricity customers of the large energy suppliers.

3.30. To calculate the cost of WHD as a proportion of the customer bill, we divide the total cost of the scheme by the number of gas and electricity customers of the large energy suppliers.

3.31. To estimate the cost of CfDs as a proportion of the customer bill, we estimate a £/MWh cost and multiply by domestic annual electricity consumption to estimate the annual cost. We estimate the £/MWh figure by dividing the projected expenditure under early CfDs as stated by government by total electricity volumes for those customers that are eligible to pay for the cost of CfDs.[19]

3.32. Within this cost category we also include the electricity bill rebate announced by government (see revenue section above).

3.33. We adjust for inflation to estimate future nominal cost estimates and prices for each environmental scheme.

VAT

3.34. Gas and electricity supply for domestic use qualifies for the reduced rate of VAT. Therefore we assume that VAT amounts to 5% of the average customer bill.

Supplier pre-tax margin

3.35. The pre-tax net margin is calculated as the difference between the average customer bill and the sum of all SMI costs. In accounting terms the net margin figure we report is closest to Earnings before Interest and Taxes (EBIT).

3.36. Net margin figures are prone to fluctuations and can vary significantly in a 12-month period. This is due to a number of factors, including changes in suppliers' prices, wholesale prices or environmental costs. For this reason the SMI reports a rolling average figure. The advantage of this method is that it reflects general trends in the pre-tax net margin, but smoothes out volatile fluctuations in the figure that can be seen when looking at data for a specific date.

3.37. The rolling average figure used in the SMI takes the average of the pre-tax net margin figure over a 13-month period. For any given month, the rolling average figure is calculated based on the average of the previous 6 months, the current month and the following 6 months.

[19] Some energy intensive companies qualify for an exemption from a proportion of the costs of CfDs. See Annex 1 for sources.

Appendix 1 – Data sources

The following table lists all the data inputs (where applicable and publicly available) for the SMI and data sources.

SMI Component	Indicator	Input	Source	Last updated in the SMI
Consumption figures	Annual Consumption per customer	Average annual gas consumption: 14,800 kWh (2013 figures) Rounded to the nearest 100 kWh. Forecast: 14,700kWh (2014), 14,600 kWh (2015). Rounded to the nearest 100 kWh. Average annual electricity consumption: 3,800 kWh (2013 figures) Rounded to the nearest 100 kWh. Forecast: 3,800 (2014), 3,800 (2015) Rounded to the nearest 100 kWh.	Gas domestic consumption figure: Energy consumption in the UK, DECC (table 3.07) Based on adjusting DECC's 2013 estimate with an index of the gone green scenario reported in National Grid's Future Energy scenarios. (Figure 108) Electricity domestic consumption figure: *Special feature – Revisions to DECC domestic energy bill estimates,* DECC, March 2014 (table 2) Energy consumption in the UK, DECC (table 3.07) Digest of UK Energy Statistics, DECC (table 5.2) Based on adjusting DECC's 2013 estimate with an index of the gone green scenario reported in National Grid's Future Energy scenarios. (Figure 54)	August 2014
Customer numbers	Number of gas, electricity and dual fuel customers for	Elec: 27m Gas: 21m Dual Fuel: 17m	Datamonitor (available through subscription)	March 2014

	the large suppliers			
Customer bill	Annual bill for each tariff	-	Tariff data: http://www.energylinx.co.uk/ (available through subscription)	April 2015
	Proportion of customers by standard and non-standard tariffs	Elec: 64% standard tariff 36% non-standard Gas: 62% standard tariff 38% non-standard	Tables 2.4.2 and 2.5.2 https://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-price-stastics	April 2015
	Proportion of consumers by payment method	Gas: 57.30% direct debit, 27.67% standard credit, 15.03% prepayment Elec and dual fuel: 55.96% direct debit, 27.34% standard credit and 16.70% prepayment	Tables 2.4.2 and 2.5.2 https://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-price-stastics	April 2015
Wholesale costs	Wholesale price data	-	ICIS Heren (available through subscription) We use quarterly gas prices and seasonal electricity prices.	April 2015
	Gas consumption assumptions	Q1: 39% of annual consumption Q2: 18% of annual consumption Q3: 11% of annual consumption Q4: 32% of annual	These are 5-year averages using data from DECC - spreadsheet: "Natural gas supply and consumption (ET 4.1)" *https://www.gov.uk/government/publications/gas-section-4-energy-trends*	March 2014

		consumption		
	Demand forecast error (Gas only)	-	Ofgem request for information	March 2014
	Gas Reconciliation by Difference (RbD) cost	-	Ofgem request for information	March 2014
	Elec. Shaping cost assumption	70% baseload/ 30% peakload split	Internal estimate based on stakeholder feedback	
	Elec. consumption assumption	Summer: 46% of annual consumption Winter: 54% of annual consumption	These are 5-year averages using data from DECC – see spreadsheet: "Supply and consumption of electricity (ET 5.2)" https://www.gov.uk/government/publications/electricity-section-5-energy-trends	March 2014
	Electricity losses	8%	Proportion of electricity lost via transportation: *Digest of UK Energy Statistics 2013*, DECC	March 2014
	Supplier electricity imbalance costs	0.15 £/MWh (net imbalance cost after RCRC)	*EBSCR- Draft Policy Decision Impact Assessment*, Ofgem, July 2013 (Please see figure 7 page 24)	March 2014
	Unbilled volumes	-	Internal estimate based on reconciling latest CSS average revenue and the corresponding SMI revenue. We assume that the residual between the two is an estimate of unbilled volumes after accounting for VAT, the Warm Home Discount and the proportion of CSS revenue attributable to unrestricted meter tariffs (Eg Economy 7 and DTS)	August 2014
Network and system balancing costs	Gas network charges	-	**Distribution** Charging statements: Joint Office of Gas	February 2015

			Transporters Load factors: http://www.gasgovernance.co.uk/sites/default/files/Annual%20Load%20Factors%20and%20WAR%20Bands%202014_2015.pdf **Transmission** NTS TO Exit Capacity Charges: http://www2.nationalgrid.com/UK/Industry-information/System-charges/Gas-transmission/Charging-Statements/ NTS (SO) Entry and Exit Commodity Charges : http://www2.nationalgrid.com/UK/Industry-information/System-charges/Gas-transmission/Charging-Statements/ Transmission Load factors (same as distribution)	October 2014 March 2015
	Electricity network charges	-	**Distribution** DUoS standing charge £/day are found on the "Annex 1 LV & HV Charges" tabs: http://www.energynetworks.org/electricity/regulation/duos-charges/distribution-use-of-system-charges/distribution-use-of-system-final-charges-2014.html DUoS Unit Rate are also found on the " Annex 1 LV & HV Charges" tabs:	February 2015

			http://www.energynetworks.org/electricity/regulation/duos-charges/distribution-use-of-system-charges/distribution-use-of-system-final-charges-2014.html **Transmission** Energy Consumption Tariff (p/kWh) are found on page 17: http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=32409 Distribution LAF (%) can be found on the "Annex 5 LLFs" tabs in the table called "Generic Demand and Generation LLFs", in the column "Period 1" and row "Low Voltage Network": http://www.energynetworks.org/electricity/regulation/duos-charges/distribution-use-of-system-charges/distribution-use-of-system-final-charges-2014.html	February 2015
	Balancing System use of System charges (BSUoS)	£1.58 per Mwh (2015/16)	BSUoS £/MWh actual and forecast: *National Grid monthly balancing services summary*	February 2015
Supplier costs	Supplier operating costs	-	Latest Consolidated Segmental Statements: Ofgem website	August 2014
	Smart metering costs	-	*Smart meter roll-out for the domestic and small and medium non-domestic sectors (GB)*, DECC, Jan 2014	March 2014
	Depreciation and	-	Latest Consolidated Segmental Statements: Ofgem website	August 2014

	amortisation			
Environmental and social costs	Renewable Obligation Certificates (ROCs). Cost relates to Great Britain.	Buy-out price for 2014-15 is £43.30 per ROC ROC requirement: 0.244 ROCs per MWh (2014/15) 0.290 ROCs per MWh (2015/16)	Buy-out price (£/ROC): The Renewables Obligation ROC requirement: *Calculating the level of the Renewable Obligation 2014-15*, DECC. *Calculating the level of the Renewable Obligation 2014-16*, DECC.	September 2014
	Feed in Tariffs (FiTs)	Total scheme cost: £506.5m (2012/13), £643m (2013/14), £805m (2014/15), ~£860m Domestic share of domestic electricity consumption: ~1/3	2012/13: Feed-in Tariff Annual Report 2013/14 and 2014/15: Ofgem E-Serve estimate 2015/16: EMR Final Delivery Plan (adjusted to today's prices) DUKES: Electricity supply and consumption	July 2014
	Energy Company Obligation (ECO)	1 Apr'14- 31 Mar'15 (delivery costs in period) : £787m 1 Apr'15- 31 Mar'16 (delivery costs in period) : £787m Please see the input archive for previous inputs.	The Future of the Energy Company Obligation: Final Impact Assessment, DECC, July 2014 (Table 14) Please note that we have chosen to use the average central scenario costs for the purposes of the SMI. DECC present costs as a range in the IA.	July 2014

	Warm Home Discount (WHD)	Scheme year 3: £300m Scheme year 4: £310m 2015/16: £320m	*Warm Home Discount: Guidance for Licensed Electricity Suppliers and Licensed Gas Suppliers, Ofgem, May 2011* *Spending round 2013, HM Treasury, June 2013*	July 2014
	Contracts for Difference (CfDs)	Early CfDs (11/12 prices) 2015/16: £30m 2016/17: £280m Eligible volumes: ~ 300TWh	*2014 Annual Energy Statement, DECC, Otober 2014* (table 2) Electricity Intensive Industries – Relief from the Indirect costs of renewables	January 2015
	Government funded rebate	Annual rebate: £12 per customer	*Government action to help hardworking people with energy bills, DECC, December 2013* This comes into effect in the SMI model from January 2014.	March 2014
Value added Tax (VAT)	-	5%	HMRC, rates of VAT on different goods and services: http://www.hmrc.gov.uk/vat/forms-rates/rates/goods-services.htm	March 2014
Inflation	-	Latest RPI figures RPI forecasts	ONS. The historic data (sourced from the CSS) are adjusted for inflation. The estimates (SMI data) are in nominal terms. Forecasts for the UK Economy, Office for Budget Responsibility	August 2014 March 2015

Appendix 2 – Wholesale cost methodology

Introduction

I. The SMI model estimates the costs to energy suppliers of acquiring gas and electricity on wholesale markets. Our central estimates are based on the assumption that companies employ an 18-month hedging strategy in order to spread the risk of acquiring energy at different prices. Below we set out our methodology for estimating these costs separately for gas and electricity.

II. To ease understanding throughout our explanation, we assume that the date is 30th September 2013 and this estimate of wholesale costs is to be used for the October 2013 SMI update. As such, it represents the average wholesale cost of energy that a customer could expect to pay as part of the total annual bill in the year between October 2013 and September 2014.

Wholesale cost of gas

III. As mentioned above, we assume that energy companies employ an 18-month hedging strategy. In order to model the wholesale cost of gas for the next 12 months (October 2013 to September 2014), we undertake the following two steps:

1. Estimate the average price for quarterly gas products for the next 12 months – so the price of gas for delivery in Q4 2013, Q1 2014, Q2 2014 and Q4 2013.

2. Calculate a weighted average gas price for the next 12 months by multiplying the average price in each quarter by each quarter's share of annual consumption (see assumptions under wholesale cost component).

<u>Estimate the average gas price for the next four quarters</u>

IV. Average gas prices for the next four quarters are estimated based on historic data. As we are assuming an 18-month hedging strategy, average prices are estimated using data as far back as 18 months in the past. Figure A.1 below illustrates how average gas prices are estimated for the next four quarters. In summary:

- Average gas price for delivery in Q4 2013 – calculated based on the average price of gas in the previous 379 trading days up to 30th September 2013.
- Average gas price for delivery in Q1 2014 – calculated based on the average price of gas in the previous 316 trading days up to 30th September 2013.
- Average gas price for delivery in Q2 2014 – calculated based on the average price of gas in the previous 253 trading days up to 30th September 2013.
- Average gas price for delivery in Q3 2014 – calculated based on the average price of gas in the previous 190 trading days up to 30th September 2013.

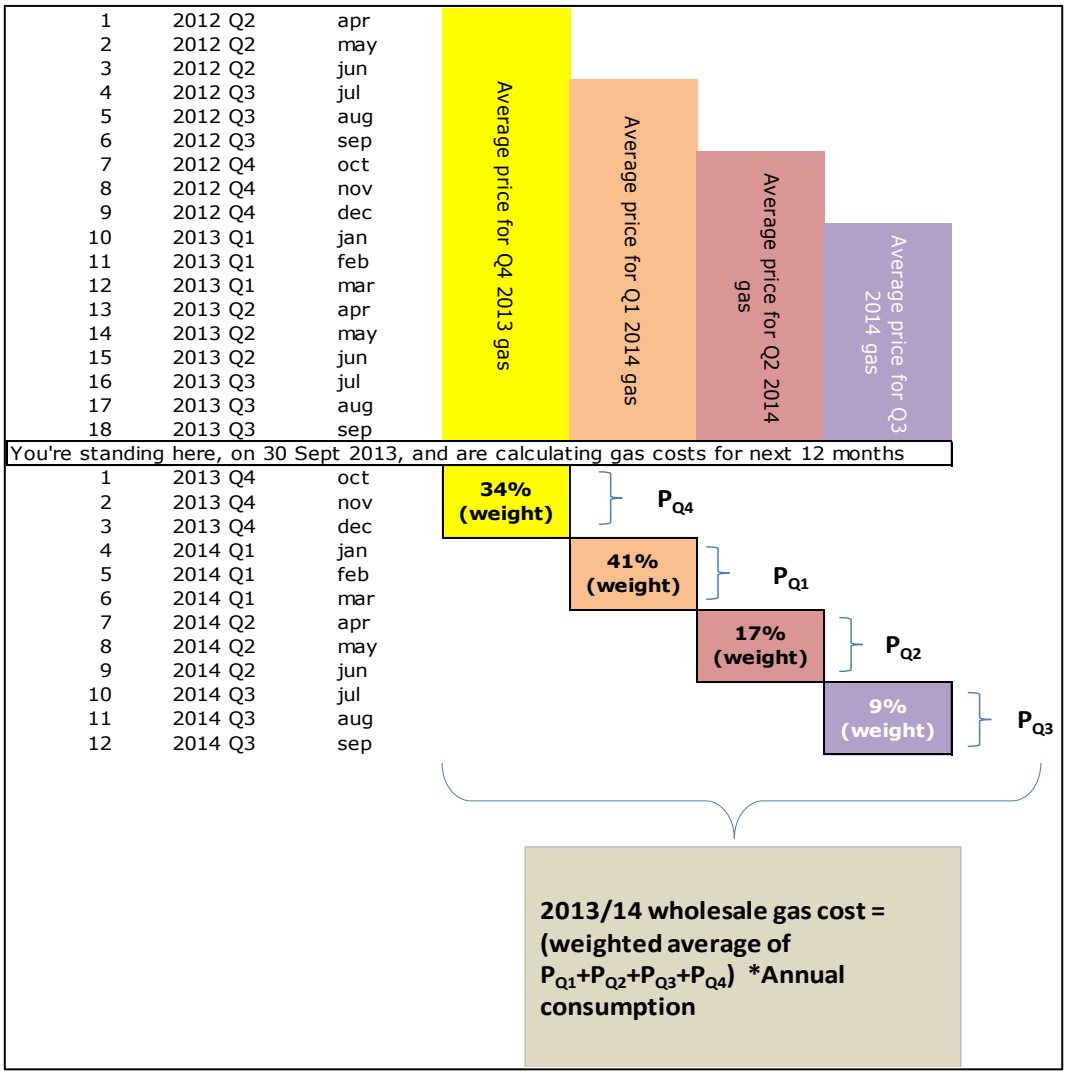
<u>Calculate weighted average gas price for the next 12 months</u>

V. Our estimates of average gas prices in each quarter are then weighted by the share of annual consumption that has historically tended to occur in that quarter. As above, this step in our calculation is illustrated in Figure 1 below. In summary:

- The average gas price for Q4 2013 (P_{Q4}) is multiplied by 34%
- The average gas price for Q1 2014 (P_{Q1}) is multiplied by 41%
- The average gas price for Q2 2014 (P_{Q2}) is multiplied by 17%
- The average gas price for Q3 2014 (P_{Q3}) is multiplied by 9%.

VI. These four figures are summed to give the weighted average price of gas for the next 12 months. Finally, this single figure is multiplied by the average annual domestic consumption of gas that we use throughout the SMI model. The result is our estimate of the wholesale cost of gas for the October 2013 SMI.

Figure A.1 – estimating the wholesale cost of gas



Wholesale cost of electricity

VII. Our calculation for estimating the wholesale cost of electricity is based on a similar method to the one we use for estimating the wholesale cost of gas. The main

difference is that there are two electricity prices - the peakload and the baseload price.

VIII. As with gas, we assume that energy companies employ an 18-month hedging strategy for our central estimate. In order to model the wholesale cost of electricity for the next 12 months (October 2013 to September 2014), we:

1. Estimate the average seasonal peakload and baseload prices for the next 12 months, divided into two six month periods - winter 2013/14 (October to March) and summer 2014 (April to September).

2. Calculate a weighted average peakload and baseload price for the next 12 months by multiplying the average price in each season by each season's share of annual consumption.

3. Calculate a final average wholesale electricity price for delivering electricity for the next 12 months by multiplying the average baseload and peakload price by the respective share of annual consumption (see assumptions under wholesale cost component).

Estimate the average baseload and peakload electricity price for the next two seasons

IX. Average electricity prices for the two seasons are estimated based on historic data. As we assuming an 18-month hedging strategy in our central estimate, average prices are estimated using data as far back as 18 months in the past. Figure A.2 below illustrates how average electricity prices are estimated for the next two seasons. In summary:

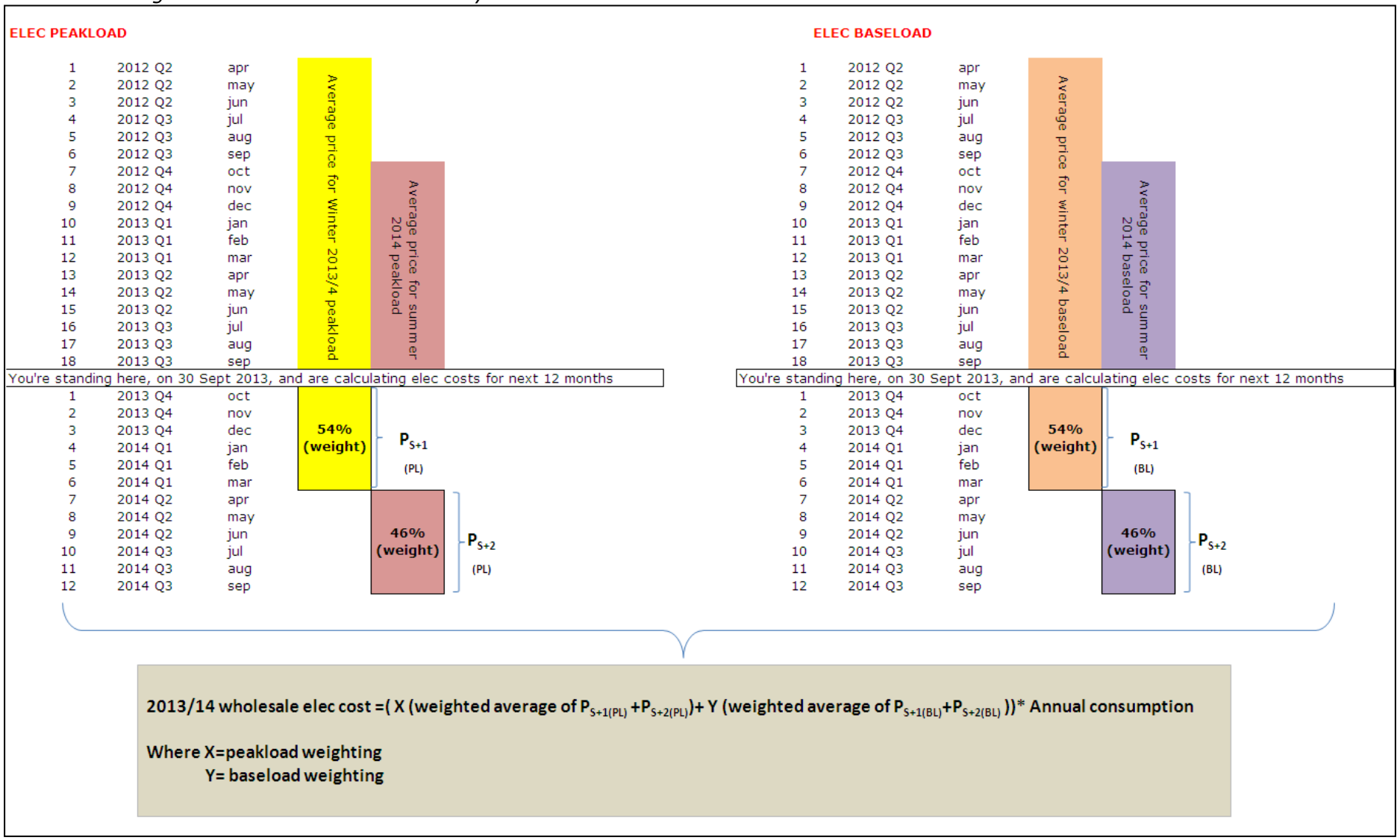
- Average peakload electricity price for winter 2013/14 delivery - calculated based on the average price of peakload electricity in the previous 379 trading days to 30th September 2013.

- Average peakload electricity price for summer 2014 delivery - calculated based on the average price of peakload electricity in the previous 253 trading days to 30th September 2013.

- Average baseload electricity price for winter 2013/14 delivery - calculated based on the average price of baseload electricity in the previous 379 trading days to 30th September 2013.

- Average baseload electricity price for summer 2014 delivery - calculated based on the average price of baseload electricity in the previous 253 trading days to 30th September 2013.

Figure A.2 – estimating the wholesale cost of electricity



Calculate weighted average electricity price for the next 12 months

X. Our estimates of average baseload and peakload electricity prices in each season are then weighted by the share of annual consumption that will occur in that season. This step in our calculation is illustrated in the Figure above. In summary, for both baseload (BL) and peakload (PL) prices:

- The average electricity price for winter 2013/14 (P_{S+1}) is multiplied by 54%
- The average electricity price for summer 2014 (P_{S+2}) is multiplied by 46%

XI. These figures are summed to give the weighted average price of baseload and peakload electricity for the next 12 months. An overall average price is then calculated by weighting baseload and peakload average prices using the following weights:

- Baseload: 70% of annual consumption
- Peakload:30% of annual consumption

XII. Finally, this single figure is multiplied by the expected average annual domestic consumption of electricity that we use throughout the SMI model. The result is our estimate of the wholesale cost of electricity for the October 2013 SMI.

Appendix 3 – Glossary

B

Balancing Services use of System Charges (BSuoS)

Balancing Services Use of System (BSUoS) charges relate to the costs of the day-to-day operation of the transmission system. These costs primarily relate to the balancing of Britain's electricity system and include the costs of constraining generation.

C

Carbon Price Floor

The Carbon Price Floor is a government measure designed to provide an incentive to invest in low-carbon power generation by providing greater support and certainty to the carbon price in the UK's electricity generation sector. The price floor came into effect in April 2013.

Consolidated Segmental Statements (CSS)

Since 2009 we have required large suppliers to publish annual statements showing separately the revenues, costs and profits from their generation and supply activities. We also ensure that these statements are independently reviewed and consistent with the companies' audited accounts.

E

Energy Companies Obligation (ECO)

ECO is an energy efficiency programme that places legal obligations on the larger energy suppliers to deliver energy efficiency measures to domestic energy consumers.

European Union Emission Trading Scheme (EU ETS)

A cap and trade scheme in which EU Member State Governments are required to set emissions limits for all installations in their country covered by the scheme. It is an administrative approach used to reduce the cost of pollution control by providing economic incentives for achieving reductions in the emissions of greenhouse gases.

F

Feed-in Tariffs (FiT)

The FIT scheme is a government programme designed to promote the uptake of a range of small-scale renewable and low-carbon electricity generation technologies. The scheme requires certain Licensed Electricity Suppliers to pay fixed tariffs to small renewable and Combined Heat and Power (CHP) generators for electricity generated and electricity exported to the National Grid.

I

Imbalance charges

Charges that suppliers pay based on the difference between a party's contracted position and metered position measured on a half-hourly basis.

L

Load Factor

The ratio of average demand to the peak load on the network.

R

Reconciliation by Difference (RbD)

Supplier costs as a result of reconciling the difference between actual and deemed measurements of gas allocated to Small Supply Points (SSPs).

Renewables Obligation

The Renewables Obligation requires licensed electricity suppliers in the United Kingdom to source an increasing proportion of electricity from renewable sources.

W

Warm Home Discount

The WHD is a one-off discount on winter electricity bills for vulnerable customers. The scheme will run each winter until 2014/15.