UK Energy Policy and Regulation and what it means for the sports and leisure sector

Introduction

We have got used to the fact that energy costs will continue to increase. This is due to declining natural resources and increasing demand as global population levels and standards of living increase.

The dramatic fall in oil prices in early 2015 is thought to be a temporary blip. Although from time to time new sources of fossil fuels, such as shale gas, become available we cannot get away from the fact that these resources are finite and will sooner or later be exhausted.

At the same time, there is a confusing mass of government energy policy measures, including taxes, incentives, regulations and market mechanisms that, at least in the short-term, add to the prices we pay for energy. It is not necessary, however, for sports and leisure sector operators to know all the details of these. What is important is to appreciate that there are practical measures that can be taken to reduce energy costs, which can be categorised as follows:

1. Energy efficiency – using less energy to achieve the same outcomes by reducing waste and investing in more efficient equipment.
2. Generating electricity locally and more efficiently.
3. Taking advantage of available financial incentives for 1 and 2.
4. Buying energy more intelligently.

This briefing note provides:

- An overview of the context that is driving UK government energy policy;
- An indication of the expected impact of government policy measures on energy prices;
- Discussion on what the sport and leisure sector can do to mitigate the impact of rising energy prices; and
- Straightforward summary explanations of the main government policy measures that affect the costs of energy now and into the foreseeable future.

A glossary of terms shown in *red italics* is included at the end of this note.

Energy policy drivers

Our society relies on energy use for its day to day functioning. If we were to experience regular power cuts, businesses and services would struggle to function. A particular issue is dealing with peaks in consumption. Consider how you would operate a leisure centre if you had no power for lighting, ventilation, pumps and fans, etc. between, for example, 4:00pm and 8:00pm?

Security of energy supply is a real issue in the UK:

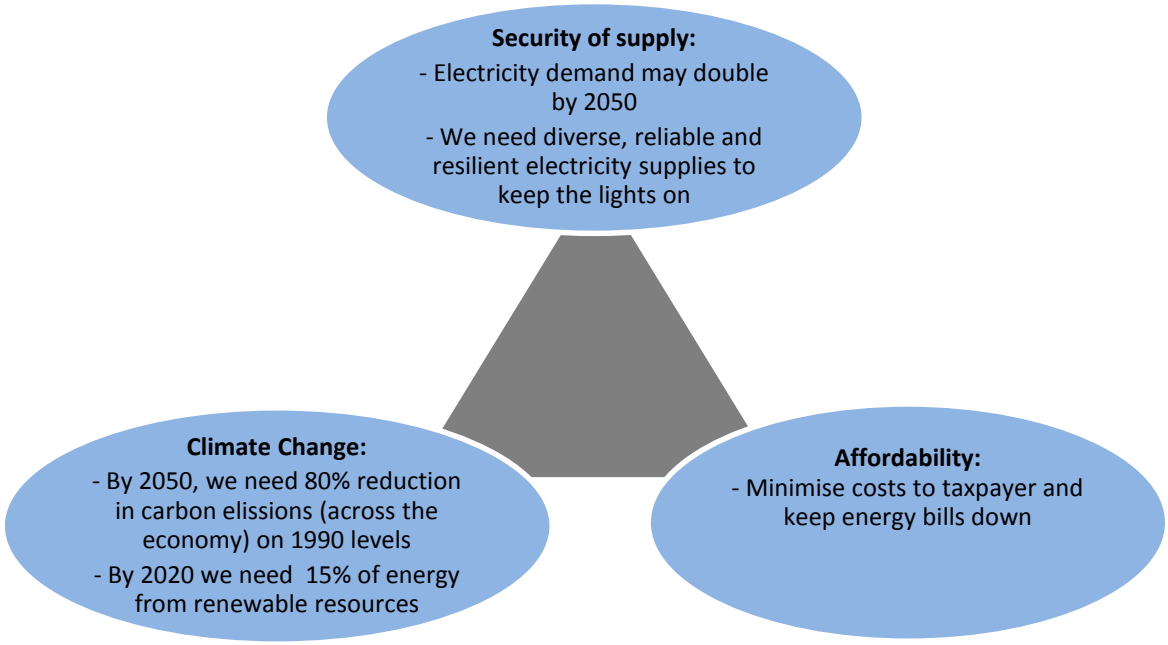
- Around a fifth of UK electricity generating capacity is due to close over the next ten years;
- Demand for electricity is expected to double by 2050;
- The UK is increasingly dependent on imported oil and gas.

It is estimated that around £100 billion of investment is required in the UK's electricity infrastructure between now and 2020. This includes both power generation (from large power stations to smaller generators) and transmission and distribution assets (the wires that deliver the electricity to end-users). To reduce our dependence on imported fuels means diversifying the types of generation that we employ, implying increased proportions of renewable (wind, solar, wave and tidal, etc.) and nuclear power. All of these alternatives to fossil fuel fired power stations have their issues, not least of which are their relative costs.

At the same time, as a consequence of *carbon dioxide (CO_2)* emissions from burning fossil fuels we are changing the global climate, which has the potential for catastrophic consequences. Mitigation of climate change remains a pressing priority. The EU has adopted a target of cutting greenhouse gases by 40% by 2030 compared with 1990 levels and aims to produce 27% of its energy from renewable sources by the same date. The UK has set four *carbon budgets* in law, covering the period from 2008 to 2027, and has committed to halving UK emissions relative to 1990 during the fourth carbon budget period of 2023 to 2027.

The UK (and the world) faces what has been termed by the World Energy Council as the 'energy trilemma', a phrase that describes the tension between ensuring secure energy supplies in the face of rising demand, whilst reducing CO_2 emissions, and at the same time keeping prices affordable. This is illustrated in the diagram below.

The Energy Trilemma



Source: Electricity Market Reform: Policy Overview, DECC, Nov 2012 (*https://www.gov.uk/government/publications/electricity-market-reform-policy-overview--2*)

What will be the impact on energy prices you have to pay?

Given that the estimate that around £100 billion of investment is required in the UK's electricity infrastructure between now and 2020, and that the money for that investment has to come from energy users it seems highly likely that energy prices will increase as a consequence. However, without this there are likely to be significant wider costs for the UK in operating an aging and inadequate energy infrastructure. Despite recent falls in oil prices, the need to fund this investment and the long term reliance on dwindling fossil fuels is very likely to result in more and more expensive energy. Furthermore, energy and carbon taxes such as the Climate Change Levy and the CRC Energy Efficiency Scheme, and financial support mechanisms for renewable energy generation all continue to add to energy costs. The various government measures are summarised later in this note, but first let us consider the impacts on energy prices that the sports and leisure sector may face.

Since at least 2010 DECC has published annually its report *Estimated impacts of energy and climate change policies on energy prices and bills.* The following tables for medium-sized business users[1] (CRC participants) and small business users[2] have been taken from the latest edition, published in November 2014[3]. A further source of analysis is the work undertaken by the Committee on Climate Change, published as the report *Energy prices and bills - impacts of meeting carbon budgets, December 2014[4].*

Estimated average impact of government policies on gas and electricity bills paid by medium-sized business users – CRC participants

Real 2014 prices, £	2014	2020	2030[78] (See footnote)
Average **gas bill** without policies	420,000	460,000	550,000
Average **gas bill** with policies	480,000	450,000	560,000
Impact of policies on average **gas bill**	60,000 15%	-10,000 -1%	10,000 2%
Average **electricity bill** without policies	820,000	900,000	1,020,000
Average **electricity bill** with policies	1,100,000	1,350,000	1,620,000
Impact of policies on average **electricity bill**	290,000 35%	450,000 50%	600,000 59%
Average energy bill without policies	**1,240,000**	**1,360,000**	**1,570,000**
Average energy bill with policies	**1,580,000**	**1,800,000**	**2,180,000**
Impact of policies on average energy (gas plus electricity) bill	**350,000** **28%**	**450,000** **33%**	**610,000** **39%**

Source: DECC 2014. Numbers may not sum due to rounding. Figures rounded to the nearest £10,000.

78: the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

[1] Medium-sized business users are defined by annual consumption between 2,778 and 27,777 MWh of gas and between 2,000 and 19,999 MWh of electricity

[2] Small-sized business users are defined by annual consumption between 278 and 2,777 MWh of gas and between 20 and 499 MWh of electricity

[3] https://www.gov.uk/government/publications/estimated-impacts-of-energy-and-climate-change-policies-on-energy-prices-and-bills-2014

[4] http://www.theccc.org.uk/publication/energy-prices-and-bills-impacts-of-meeting-carbon-budgets-2014/

Estimated average impact of policies on gas and electricity bills paid by small-sized business users

Real 2014 prices, £	2014	2020	2030[82] (See footnote)
Average **gas bill** without policies	49,000	52,000	62,000
Average **gas bill** with policies	52,000	55,000	64,000
Impact of policies on average **gas bill**	3,000 6%	3,000 5%	3,000 4%
Average **electricity bill** without policies	22,000	24,000	27,000
Average **electricity bill** with policies	27,000	34,000	41,000
Impact of policies on average **electricity bill**	5,000 21%	10,000 40%	14,000 50%
Average energy bill without policies	**71,000**	**77,000**	**89,000**
Average energy bill with policies	**79,000**	**89,000**	**105,000**
Impact of policies on average energy (gas plus electricity) bill	**8,000** **11%**	**13,000** **16%**	**16,000** **18%**

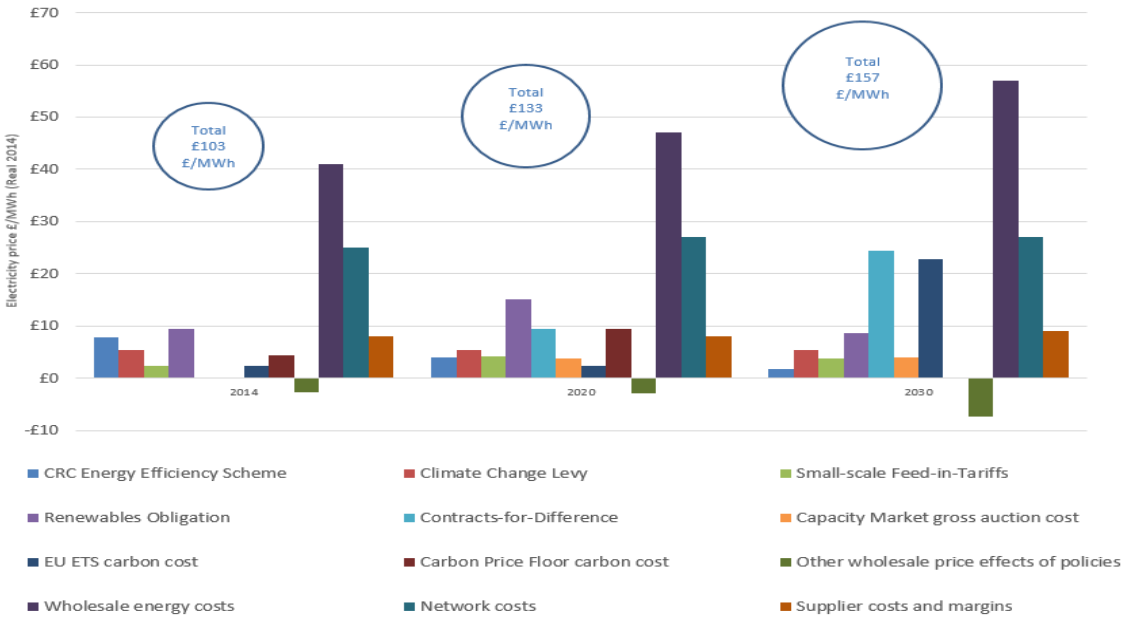
Source: DECC 2014. Figures may not sum due to rounding.

82: the analysis does not include any new energy efficiency policies or extensions to current energy efficiency policies that may be required to meet the 4th Carbon Budget (2023-27) and beyond.

For medium sized users, these DECC figures suggest an increase in electricity bills in real terms of around 15% by 2020 due to additional or strengthened policies compared with 2014, and 29% by 2030.

The DECC analysis also provides breakdowns by policy and other effects. Examples are shown in the following chart for electricity prices for medium sized businesses in 2020 and 2030, and the table below for medium sized business total average energy bills in 2020.

Estimated average impact of energy and climate change policies on electricity prices in £/MWh paid by medium-sized businesses in the CRC to 2030



Source: Data from *Estimated impacts of energy and climate change policies on energy prices and bills, supplementary tables, DECC, November 2014*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384408/Prices_and_Bills_Annex.xlsx

Some commentators believe that as well as a general increase in electricity prices, the *capacity market* will push suppliers towards greater use of *time of day tariffs*, where the unit price is dependent on the time of usage, and in particular will mean higher unit prices at times of peak demand.

Estimated average impact of energy and climate change policies on energy bills paid by medium-sized businesses in the CRC in 2020

Real 2014 prices	2020		
	Gas	Electricity	Dual Fuel
1) Bill before policies	**£456,000**	**£900,000**	**£1,357,000**
2) Bill impact of energy efficiency savings[152]	-£69,000	-£66,000	-£135,000
Of which:			
CRC Energy Efficiency Scheme	*-£69,000*	*-£4,000*	*-£72,000*
Products Policy	*£1,000*	*-£62,000*	*-£61,000*
Private Rental Sector Regulations	*-£1,000*	*£0*	*-£1,000*
3) Bill impact of price effects[153]	£65,000	£519,000	£584,000
Of which:			
CRC Energy Efficiency Scheme	*£40,000*	*£41,000*	*£81,000*
Climate Change Levy	*£24,000*	*£55,000*	*£79,000*
Small-scale Feed-in-Tariffs	-	*£43,000*	*£43,000*
Renewables Obligation	-	*£154,000*	*£154,000*
Contracts-for-Difference	-	*£97,000*	*£97,000*
Capacity Market gross auction cost	-	*£39,000*	*£39,000*
EU Emissions Trading System carbon cost	-	*£24,000*	*£24,000*
Carbon Price Floor carbon cost	-	*£97,000*	*£97,000*
Other wholesale price effects of policies	-	*-£30,000*	*-£30,000*
4) Estimated impact of policies, £ (2 + 3)	**-£4,000**	**£453,000**	**£449,000**
Estimated impact of policies, % (4/1)	**-1%**	**50%**	**33%**
Bill after policies (1 + 4)	**£452,000**	**£1,354,000**	**£1,806,000**
Of which:			
Wholesale energy costs	£223,000 (49%)	£477,000 (35%)	£701,000 (39%)
Network costs	£92,000 (20%)	£275,000 (20%)	£368,000 (20%)
Supplier costs and margin	£72,000 (16%)	£82,000 (6%)	£154,000 (9%)
Energy and climate change policies	£65,000 (14%)	£519,000 (38%)	£584,000 (32%)

Source: DECC 2014. Figures rounded to the nearest £1,000 except where impacts are below £500. Figures may not sum due to rounding.

What can the sports and leisure sector do?

For reasons of industrial competitiveness, there are a number of concessions or exemptions from the impact of government policy measures that are available to energy intensive industries. **These are not available to the sports and leisure sector, and it is extremely unlikely that government would agree to any such concessions.**

Instead, the sector should work to take best advantage of the incentives and opportunities that are available and appropriate. It is not yet clear whether there will be opportunities for the sector arising from EMR, but it is worth keeping abreast of developments in the capacity market, particularly with the Electricity Demand Reduction (EDR) pilot. Contracts for Difference are aimed at larger scale generating stations than are likely to be appropriate for facilities in the sector. For renewable energy scheme support operators in the sector should look to the Feed in Tariff (FIT) regime and the Renewable Heat Incentive (RHI).

The first step for any sports or leisure facility operator is to ensure that they have a thorough understanding of how, why, when and in what quantities energy is used on site. This is best achieved through a combination of energy data monitoring and analysis plus physical surveys of plant and equipment (often referred to as energy audits).

This is the rationale behind the government's new *Energy Savings Opportunity Scheme (ESOS)*, which is a mandatory energy assessment scheme for qualifying organisations in the UK. Assessments must be carried out every 4 years and comprise audits of the energy used by buildings, industrial processes and transport to identify cost-effective energy saving measures[5]. Irrespective of whether your organisation falls under ESOS, practicing sound energy management simply makes good sense. Having an understanding of energy use will enable a facility operator and/or professional advisors to:

- Identify where and why energy use is being poorly managed as a result of peoples' behaviour and improperly set controls. Experience shows that good ongoing and embedded energy management practices can typically save organisations 10-20% of their energy bills with little or no capital investment.
- Identify and assess opportunities for capital investment that will reduce energy consumption whilst maintaining the necessary services, i.e. improve energy efficiency.
- Consider the opportunities for on-site power generation particularly through combined heat and power plant, but also renewables generation such as solar photovoltaics. Power generation at times of peak demand could be particularly beneficial if the site's electricity tariff has high unit prices at these times (see below). Where CHP is already used, the plant's control philosophy will need to be reviewed and possibly adjusted.
- Buy energy more intelligently, taking into account patterns of usage rather than just total annual or monthly consumption.

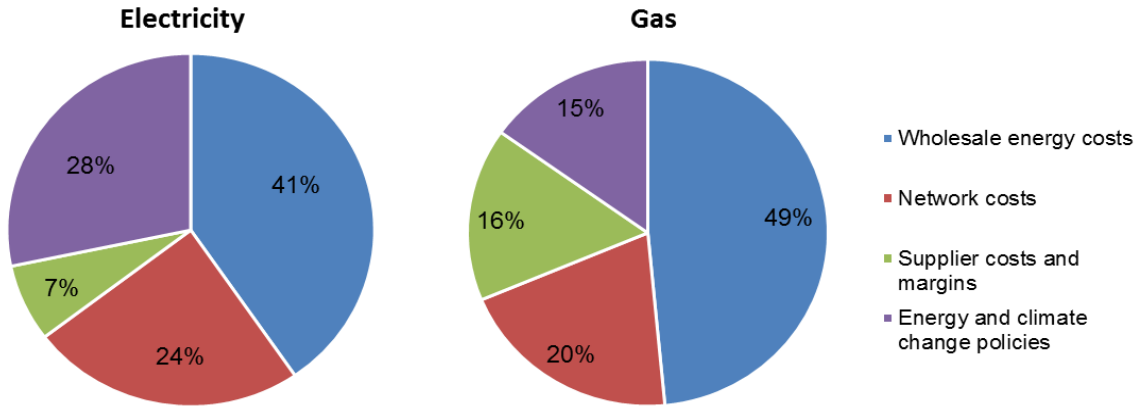
Energy Procurement [6]

Securing energy contracts can be done through a number of ways: directly; through public or private buying groups; or through private sector brokers. Historically, like many sectors, sports and leisure sector lacks the expertise to manage the supply chain when it comes to buying energy so often reliance on third party expertise is sought.

However, the relationship with third parties can be managed much better if those in the sector acquire some fundamental knowledge of energy costs in order to be more informed customers. This starts with an understanding of what we pay for in our energy bills. Here is rough a breakdown:

[5] https://www.gov.uk/energy-savings-opportunity-scheme-esos

[6] This section on energy procurement was kindly provided by Pulse Business Energy (http://pulsebusinessenergy.co.uk/)



Source: Data from *Estimated impacts of energy and climate change policies on energy prices and bills, supplementary tables, DECC, November 2014*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384408/Prices_and_Bills_Annex.xlsx

Fundamentally, when we sign our energy contracts for gas or electricity the timing of the purchasing decision only affects the wholesale costs (shown as blue). These vary day to day depending on the wholesale market. So access to simple historical wholesale graphs from the third parties can assist in the decision when securing energy deals, as the wholesale energy costs can be placed in historical context to see if they offer value.

Also, a fundamental misconception is that by fixing prices for 1, 2 or 3 year terms you can achieve the lowest cost. Although long term rates can be attractive, it is incorrect to assume that this offers the lowest cost. It does offer more "cost certainty" but not "lower costs", and the difference between the two should be appreciated. To achieve lower or the lowest wholesale energy costs, users might consider flexible procurement strategies that buy the energy closer to the period of consumption over a sustained period of time. The dynamics of the UK wholesale market mean that it is likely that prices will be cheaper during these periods. However, this approach does forgo "cost certainty", i.e. the comfort of knowing what your unit rates will be each month/quarter. There can be significant upsides financially, particularly in relation to gas contracts where 80% of the costs are made up of the wholesale energy costs.

A significant proportion of the cost of electricity are network costs (shown in red in the charts). These are mainly the local and national costs of transporting the electricity to the consumer from the power station, i.e. the costs of using the electricity transmission and distribution networks. Again, these costs can also be mitigated through a better understanding of these charges.

A large proportion of network costs are calculated by how much electricity is used between 4pm and 7pm Monday to Friday (or "Peak Time"), as this is the busiest time for the industry. By asking the supplier not to include these "transport costs" in the unit rate and charge them on what is known as a "pass through" basis, these costs can be made transparent and the user can see the proportion of network costs they pay for each day, week or month etc. Any measures to reduce energy usage during these times or switch to alternate energy sources can then immediately reduce network costs. This is known as Demand Management and is a practice currently well-known and used in other sectors, although it can be more difficult for the sports and leisure sector due to service requirements. At the very least, the industry should be auditing their premises to see whether Demand Management strategies can be implemented through, for example, the selective control of equipment and careful management without compromising services.

In conclusion, a better understanding of the fundamental cost elements of energy bills and fundamental procurement options will help the sector to make better procurement decisions, either directly or when managing the supply chain.

Summary of Government Policies and Regulations

Energy and Carbon Taxes

The Climate Change Levy

Introduced in April 2001, the Climate Change Levy (CCL) is simply a tax paid by non-domestic energy consumers on each unit of energy purchased. As well as domestic consumers, the CCL does not apply to transport fuels, renewable fuels, or to energy purchased by registered charities for non-commercial activities.

The current main rates of CCL are shown in the table below. CCL is charged directly via energy bills with the suppliers acting as tax collector, in much the same way that VAT is collected. It is expected that rates will continue to increase annually by inflation.

Climate Change Levy (CCL), main rates

Commodity	Rate from 1/4/14	Rate from 1/4/15
Electricity, p/kWh	0.541	0.554
Gas, p/kWh	0.188	0.193
LPG, p/kg	1.210	1.240
Solid fuels, p/kg	1.476	1.512

Registered *Good Quality Combined Heat and Power (CHP)* plant does not attract the CCL on its fuel inputs or on the electricity generated. This is of direct relevance to the sports and leisure sector since CHP is a suitable energy efficient technology for many leisure facilities, especially those with swimming pools.

Certain 'energy-intensive' sectors of industry are eligible for Climate Change Agreements (CCAs) that give signatories reduced rates of CCL for adopting energy efficiency targets.

Non-industrial sectors such as sports and leisure do not qualify for CCAs and it is extremely unlikely that this position will change.

Originally the Climate Change Levy did not apply to fuel supplied to large power stations, but did apply to CHP, small generators and stand-by generators. This is still the case in respect of the main rates of CCL, but in April 2013 an additional set of rates was introduced that tax the fossil fuels that are used to generate electricity where the generating station has a capacity of 2*MW* or more. These are known as the *Carbon Price Support (CPS)* rates of CCL. The CPS rates were introduced by government to support the price of carbon in the UK electricity generation market in response to the low price of carbon in the *European Union Emissions Trading System (EU-ETS),* which undermines the functioning of that system.

Other than under unusual circumstances, neither the EU-ETS[7] nor CPS rates of CCL[8] directly affect the energy bills of sports and leisure centre operators. However, these add costs to electricity generation, which the final customers ultimately pay.

[7] The EU-ETS would only apply to a sports or leisure facility that operated total combustion plant (boilers or power generation) greater than 20MW thermal input, though there is now a small emitter and hospital opt-out scheme for Phase 3 of EU-ETS.

[8] From April 2015 the CPS will not generally be applied to Good Quality CHP plant.

The CRC Energy Efficiency Scheme

The Carbon Reduction Commitment (CRC) Energy Efficiency Scheme is a UK government scheme that is designed to improve energy efficiency and cut CO_2 emissions in private and public sector organisations that are high energy users, though does not cover emissions falling under the EU-ETS or CCAs.

The CRC commenced in April 2010 and operates in phases lasting 5 years. Organisations that qualify for participation in a CRC phase are those that consume at least 6,000 MWh of *settled half-hourly metered electricity* in the qualification year for that phase. Phase 2 runs from 1 April 2014 to 31 March 2019.

Participating organisations must annually report their electricity and natural gas consumption (excluding transport) to the Environment Agency, which is converted into the equivalent amount of carbon dioxide emissions, measured in tonnes (tCO_2). The participant must purchase and surrender sufficient *CRC allowances* to cover that amount of carbon dioxide. Although within a phase it is possible to buy allowances from any participant who may have surplus to sell, allowances are originally created and sold by government to participants. The allowances therefore represent a charge by government on participants for emitting carbon dioxide as a consequence of their energy use. The current allowance prices (£/tCO_2) and the equivalent costs in pence per kilowatt hour of energy purchased are shown in the table below. It is anticipated that allowance prices will be increased annually by inflation.

CRC allowance prices (2014/15)

Sale type	Allowance price,
Forecast sale	£15.60 per tCO_2
Buy to comply sale	£16.40 per tCO_2

Approx. equivalent to:	(assuming £16 per tCO_2)
Electricity	0.768 p/kWh
Gas	0.294 p/kWh

Incentives for Renewable Energy

There are currently three government incentive schemes designed to help stimulate the uptake of renewable sources of energy. These are:

- The Renewables Obligation (RO)
- Feed-in Tariffs (FITs)
- The Renewable Heat Incentive (RHI)

These are each briefly described below.

The Renewables Obligation

The Renewables Obligation (RO) has been the main support mechanism for renewable electricity projects in the UK. Smaller scale generation is mainly supported through the Feed-in Tariffs (FITs).

The RO came into effect in 2002 in England and Wales, and Scotland, followed by Northern Ireland in 2005. It places an obligation on UK electricity suppliers to source an increasing proportion of the electricity they supply from renewable sources.

Renewables Obligation Certificates (ROCs) are green certificates issued to operators of accredited renewable generating stations for the eligible renewable electricity they generate. Operators can trade ROCs with other parties. ROCs are ultimately used by suppliers to demonstrate that they have met their obligation.

Where suppliers do not present a sufficient number of ROCs to meet their obligation, they must pay an equivalent amount into a buy-out fund. Ultimately the costs of the scheme are passed on to consumers by the energy suppliers.

Feed-in Tariffs

The Feed-in Tariff (FIT) scheme is designed to promote the uptake of a range of small-scale renewable and low-carbon electricity generation technologies through providing specified tariff payment rates for both generation and export of electricity from those technologies. The tariff rates are set by government to encourage deployment of the technologies.

The FIT scheme is available to generators through licensed electricity suppliers. Such suppliers with more than 250,000 domestic customers are required to make tariff payments on electricity from eligible technologies. The costs of the scheme are passed on to consumers by the energy suppliers, but consumers of all sizes can benefit through participation.

The Renewable Heat Incentive

The Renewable Heat Incentive (RHI) pays participants of the scheme that generate and use renewable energy to heat their buildings.

The non-domestic RHI scheme has been open to commercial, industrial, public sector, not for profit and heat networks since November 2011. The scheme is designed to bridge the gap between the cost of fossil fuel heat installations and renewable heat alternatives through financial support for owners. Payment rates are set by government and are on the basis of kWh of renewable heat generated and put to beneficial use. The costs of the scheme are covered by the government from general taxation.

Electricity Market Reform (EMR)

One of the UK government's principal initiatives to address the trilemma is Electricity Market Reform (EMR). EMR is a package of measures that were described in *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*[9], published in July 2011. EMR is the government's response to encourage the necessary investment in the UK's electricity system. It is designed to provide sufficient security of supply and low-carbon power generation at acceptable costs to consumers and the tax payer. EMR is one of the measures included in the Energy Act 2013[10], and is probably the most important.

The main EMR provisions are:

- The introduction of a system of Contracts for Difference (CfD) for incentivising investment in low-carbon power generation.
- The creation of a Capacity Market to ensure security of electricity supply at times of peak demand.

Contracts for Difference (CfD)

The CfD system is intended to provide a stable and predictable incentive for those investing in low carbon power generation. For renewable generation, the CfD is intended to replace the *Renewables Obligation (RO)*, the current mechanism for supporting large-scale renewable electricity.

[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48129/2176-emr-white-paper.pdf
[10] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266867/Energy_Bill_Summary_Policy_Brief_RA.pdf

The RO functions effectively as a premium payment to generators, paid on renewable electricity output, above the wholesale price.

Contracts for Difference are long-term contracts between an eligible 'low carbon' generator and the CfD counter-party (Low Carbon Contracts Company), which is wholly owned by government. The CfD system works by stabilising revenues for 'low carbon' generators at a fixed price level known as the Strike Price. Strike Prices are set by Government to attract a given level of investment in a particular technology. The CfD is an agreement to pay the difference between the Strike Price and the 'Reference Price', which is a measure of the average market price for electricity at a particular point. Generators will receive revenue from selling their electricity into the market as usual. However, when the market reference price is below the strike price they will also receive a top-up payment for the additional amount. Conversely if the reference price is above the strike price, the generator must pay back the difference.

The Capacity Market

The *Capacity Market* is being introduced to reduce the risk to the security of supply at times of system stress, such as during cold, still periods where demand is high and wind generation is low. Put simply, the Capacity Market is intended to reduce the risk of electricity supply at any point being less than demand by encouraging the availability of capacity at the right time and investment in capacity over time.

The system works by establishing a competitive market that sets a price for *capacity*. Capacity providers can be on the supply or demand side of the equation such that electricity system supply is increased or demand on the system is reduced. Capacity providers can bid into auctions for providing capacity four years ahead of delivery. Successful bidders are awarded 'capacity agreements' which provide a steady payment for capacity in return for a commitment to deliver energy when required, or face a penalty. The capacity market works alongside the electricity market where generators sell electricity to suppliers for particular periods of time.

The costs of the capacity market, both for the capacity payments and for administration of the market will be funded via charges levied on licenced electricity suppliers, and so ultimately will be paid by energy consumers.

The capacity market may provide financial opportunities for the aggregation of smaller generators (e.g. on-site CHP plant), but whether this will be a practical prospect is yet to be seen.

Smaller organisations, perhaps through aggregation, may also be able to participate in the capacity market through Electricity Demand Reduction (EDR). The Department for Energy and Climate Change (DECC) is currently running a pilot EDR scheme[11] to test whether projects that deliver lasting electricity savings (in *kW*) at peak times, for example by replacing old light bulbs with LEDs or improving motors and pumps, could in the future compete with generation, demand side response (DSR) and storage in the capacity market.

As part of this pilot, organisations that registered for the pilot, and whose projects qualified, have been invited to take part in a competitive auction in January 2015. Participants bid in kW savings from their projects with the lower bids being successful up to the total budget available in the auction. The results of the auction can be found at https://www.gov.uk/electricity-demand-reduction-pilot.

[11] https://www.gov.uk/electricity-demand-reduction-pilot

Glossary of Terms

Capacity
Capacity is a measure of the amount of electricity generation connected to the electricity network and available to produce electricity at any particular time. Capacity is usually measured in units of *kilowatts*, *megawatts* or *gigawatts*. The capacity margin is defined as the excess of installed generation over demand. It is sometimes referred to as reserve margin. In market terms, a reduction in demand is sometimes considered as an increase in capacity.

Capacity margin
The excess of installed generation capacity over demand. It is sometimes referred to as reserve margin.

Capacity market (capacity mechanism)
Policy instrument designed to help ensure security of supply by providing a more secure *capacity margin* than that which would be determined by the market without intervention.

Carbon budget
An amount of carbon dioxide (equivalent) that a country, company, or organisation has agreed is the largest it will produce in a particular period of time.

Carbon Dioxide (CO_2)
Carbon dioxide is produced when carboniferous fuels are burnt. It is the principal greenhouse gas responsible for climate change.

Carbon Price Support (CPS)
The carbon price support is a tax on fossil fuels used in the generation of electricity. This was achieved through changes to the existing Climate Change Levy (CCL) regime in the case of gas, solid fuels and liquefied petroleum gas (LPG) used in electricity generation. These changes include the setting up of the new carbon price support (CPS) rates of CCL.

Combined Heat and Power (CHP)
The simultaneous generation of usable heat and power (usually electricity) in a single process, thereby leading to reductions in the amount of wasted heat.

'Good Quality' Combined Heat and Power (CHP)
Whether a CHP installation is considered wholly or partially to be 'good quality' is determined under the CHP Quality Assurance programme (CHPQA)[12]. This is a government initiative providing a practical, determinate method for assessing all types and sizes of Combined Heat & Power (CHP) schemes throughout the UK.

By assessing CHP schemes on the basis of their energy efficiency and environmental performance, CHPQA ensures that the associated fiscal benefits are in line with environmental performance. Depending on the particular installation, these benefits include: Renewable Obligation Certificates, Renewable Heat Incentive, Carbon Price Support relief, Climate Change Levy exemption, Enhanced Capital Allowances and preferential Business Rates.

Distribution Network (or System)
The system of electric lines that carry electricity from the high voltage transmission grid and distribute it over low voltage networks to industrial, commercial, and domestic users.

Energy Savings Opportunity Scheme (ESOS)
ESOS is a mandatory energy assessment scheme for organisations in the UK that meet the qualification criteria. ESOS is the UK's implementation of a requirement of the EU Energy Efficiency Directive (Article 8). Organisations that qualify for ESOS must carry out ESOS assessments every 4 years. These assessments are audits of the energy used by their buildings, industrial processes and transport to identify cost-effective energy saving measures.

[12] https://www.gov.uk/combined-heat-power-quality-assurance-programme

European Union Emissions Trading System (EU-ETS)
The EU ETS works on the 'cap and trade' principle. A 'cap', or limit, is set on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. The cap is reduced over time so that total emissions fall.

Within the cap, companies receive or buy emission allowances which they can trade with one another as needed. They can also buy limited amounts of international credits from emission-saving projects around the world. The limit on the total number of allowances available ensures that they have a value.

After each year a company must surrender enough allowances to cover all its emissions, otherwise heavy fines are imposed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. The flexibility that trading brings ensures that emissions are cut where it costs

Generator
This term is used either to denote equipment that generates electricity or the person/organisation that owns/operates such equipment.

Generation
This term is used either to denote equipment that generates electricity (generation plant), usually in a general sense, or the amount of electricity produced.

Gigawatt (GW)
The gigawatt is equal to one billion watts (i.e. 1 gigawatt = 1,000,000,000 watts). The watt (symbol: W) is a derived unit of power in the International System of Units. Power is the rate at which energy is generated or used and hence is measured in units (e.g. GW) that represent “energy transferred per unit time”.

Kilowatt (kW)
The kilowatt is equal to one thousand watts (i.e. 1 kilowatt = 1,000 watts). The watt (symbol: W) is a derived unit of power in the International System of Units. Power is the rate at which energy is generated or used and hence is measured in units (e.g. kW) that represent “energy transferred per unit time”.

Megawatt (MW)
The megawatt is equal to one million watts (i.e. 1 megawatt = 1,000,000 watts). The watt (symbol: W) is a derived unit of power in the International System of Units. Power is the rate at which energy is generated or used and hence is measured in units (e.g. MW) that represent “energy transferred per unit time”.

Peak demand, peak load
These two terms are used interchangeably to denote the maximum power requirement of a system at a given time, or the amount of power required to supply customers at times when need is greatest. They can refer either to the load at a given moment (e.g. a specific time of day) or to averaged load over a given period of time (e.g. a specific day or hour of the day).

Time of day tariff
An energy tariff where the unit price paid depends on the time when it is consumed. The simplest form is the day/night tariff where the price is lower at night; more complex time of day tariffs will typically charge higher rates during specific periods of high demand, such as between 16:00 and 20:00.

Transmission Network (or System)
The system of high voltage electric lines providing for the bulk transfer of electricity across Great Britain.

