



Carbon Price Support – Latest Developments

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Talk Coverage

1- Background

2- How CPS affect:

- Standard Generators (Power Stations)
- Auto-generators (>75% power output used on site)
 - Less than 2MW_e capacity
 - $\geq 2\text{MW}_e$ capacity
- Good Quality CHP (GQCHP)
 - Fully Qualifying
 - $\leq 2\text{MW}_e$ capacity
 - $> 2\text{MW}_e$ capacity
 - Partially Qualifying
 - $\leq 2\text{MW}_e$ capacity
 - $> 2\text{MW}_e$ capacity

3- Examples



Background

- Government sought to introduce a floor price for carbon to **stabilise price signals to investors in low carbon technologies**
- This was implemented by introducing new rates levied upon supplies of the **following taxable commodities to power generators** (including CHP):

CCL

- Natural Gas
- LPG
- Coal

Fuel Duty

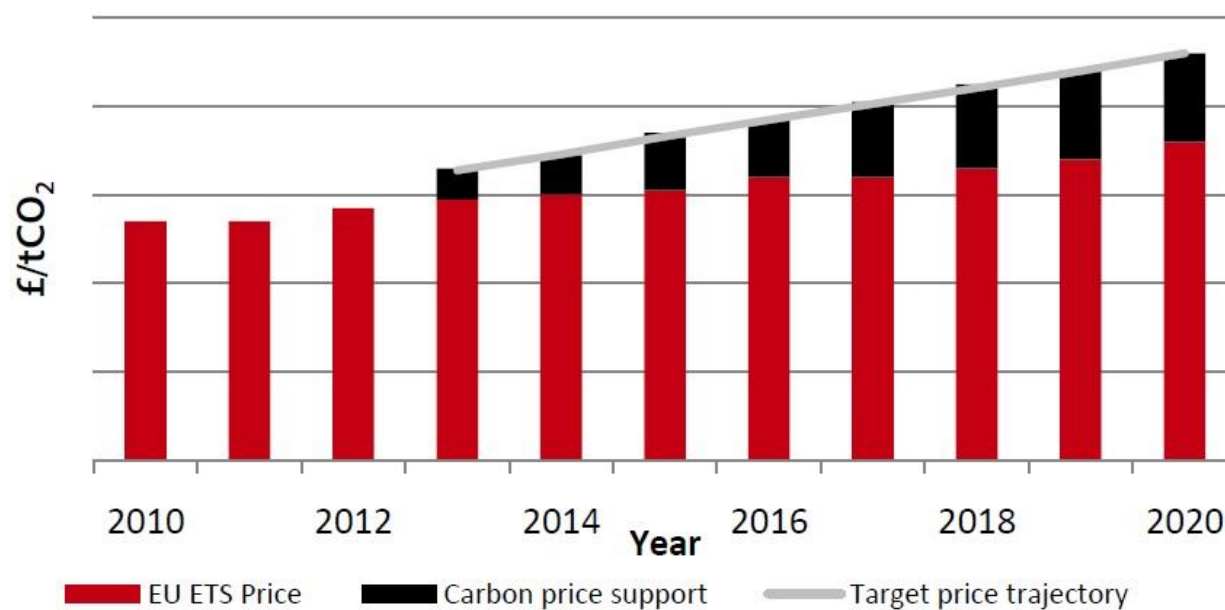
- Fuel oil
- Gas oil
- Bio-blends

- These are known as carbon price support (CPS) rates
- CPS rates came into effect from 1st April 2013



Background

Chart 4.A: Illustration of the carbon price support mechanism



Source: HM Treasury, 2010



CPS Rates

Commodity	Units	2013/14	2014/15	2015/16	2016/17
Natural Gas	£/kWh	0.00091	0.00175	0.00334	0.00331
LPG	£/kg	0.01460	0.02822	0.05307	0.05280
Coal	£/GJ	0.44264	0.81906	1.56860	1.54790
Fuel Oil	£/litre	0.01568	0.03011	0.05730	0.05711
Gas Oil	£/litre	0.01365	0.02642	0.04990	0.04916



Power Stations

Previous Arrangement



- Fuel input exempt from CCL
- Electricity output is subject to CCL (charged on to consumer)

Under CPF Regime

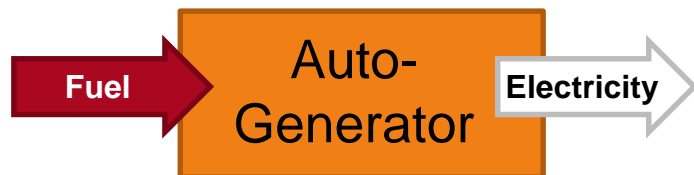


- Fuel input subject to CPS rates
- No change for Electricity output (CCL paid by consumers)
- **Additional costs to generators due to CPS rates can be expected to be passed on to consumers in the form of higher electricity tariffs.**



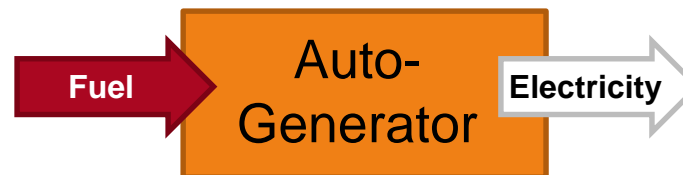
Auto-generators < 2MW_e

Previous Arrangement



- Fuel input subject to 100% CCL
- Electricity output consumed on site exempt from CCL

Under CPF Regime

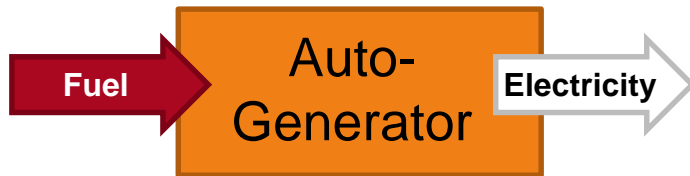


- Exempt from CPS
- No change on CCL (fuel input subject to 100% CCL)



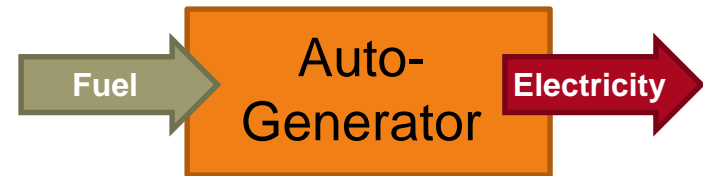
Auto-generators $\geq 2\text{MW}_e$

Previous Arrangement



- Fuel input subject to 100% CCL
- No CCL on Electricity output consumed on site

Under CPF Regime



- No CCL on fuel input
- Fuel input subject to 100% CPS rates
- All electricity output subject to 100% CCL - **same as grid electricity**



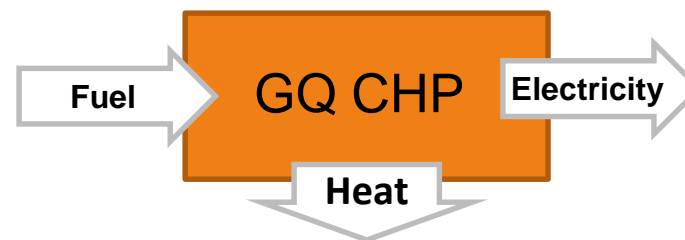
GQCHP – Fully Qualified with Capacity $\leq 2\text{MW}_e$

Previous Arrangement



- Fuel input exempt from CCL
- Electricity output exempt from CCL
- (Heat not subject to CCL)

Under CPF Regime



- Fuel input exempt from CPS
- NO CHANGE to CCL (exempt from CCL on fuel input and electricity output)



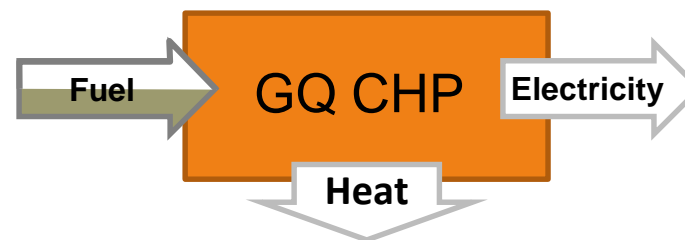
GQCHP – Fully Qualified with Capacity $>2\text{MW}_e$

Previous Arrangement



- Fuel input exempt from CCL
- Electricity output exempt from CCL **where directly supplied**

Under CPF Regime

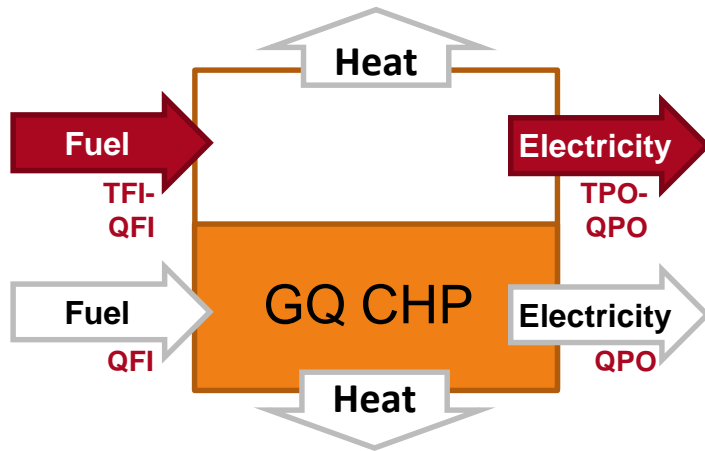


- Fuel input **attributable to electricity generation** subject to CPS
Note: Fuel input used to produce mechanical power is exempt
- Fuel for heat (QHO) exempt from CPS
- No CCL on fuel input
- Electricity output exempt from CCL **where directly supplied**
- **Additional benefit from April 2015.. Exemption on fuel for QPO used on site.**



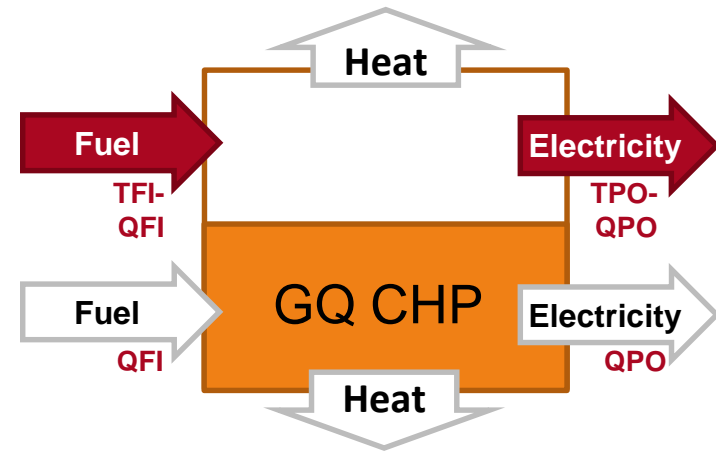
GQCHP – Partially Qualified with Capacity $\leq 2\text{MW}_e$

Previous Arrangement



- Qualifying fuel input (QFI) exempt from CCL
- Fuel input **not QFI** is subject to CCL
- Qualifying power output (QPO) exempt from CCL **if directly supplied**
- Power output **not QPO** subject to CCL

Under CPF Regime

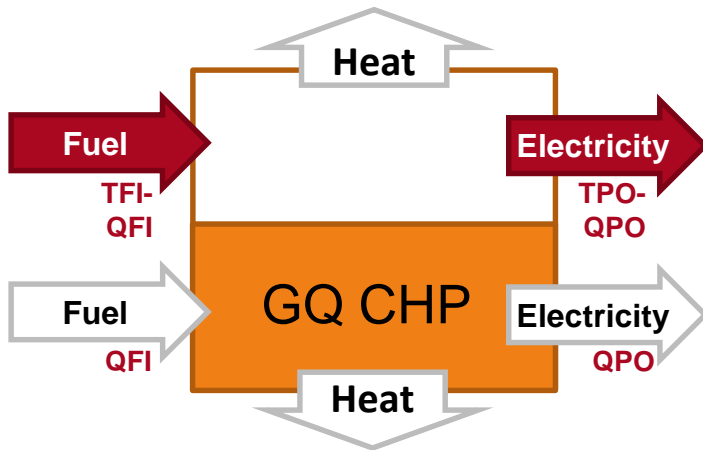


- No CPS
- No change to CCL



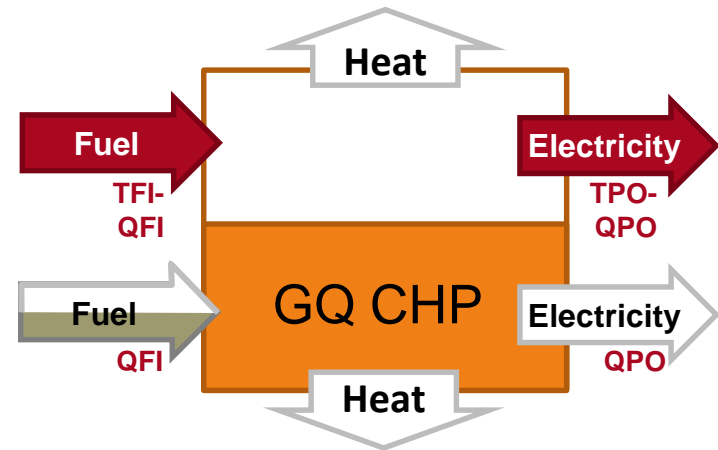
GQCHP – Partially Qualifying with Capacity >2MW_e

Previous Arrangement



- Qualifying fuel input (QFI) exempt from CCL
- Fuel input **not QFI** is subject to CCL
- Qualifying power output (QPO) exempt from CCL **if directly supplied**
- Power output **not QPO** subject to CCL

Under CPF Regime



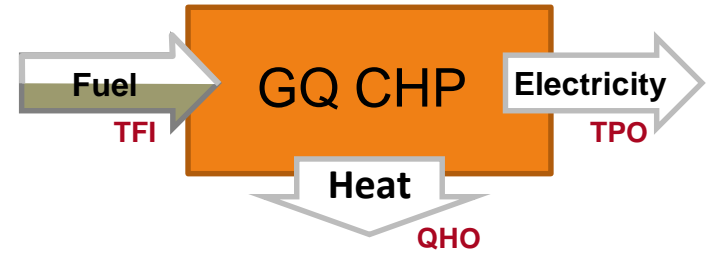
- Qualifying fuel input (QFI) exempt from CCL
- Fuel input (**TFI-QFI**) is subject to CCL
- Qualifying power output (QPO) exempt from CCL **if directly supplied**
- Power output **not QPO** subject to CCL
- Fuel attributable to electricity generation subject CPS= TFI – QHO/81% (**Fuel for heat exempt**)
- **Qualifying power output (QPO) exempt from CPS if directly supplied**



Example 1: Full GQCHP >2MW_e

Fuel input subject to CPS based on the expression:

$$\text{Fuel Input subject to CPS} = \left[\text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) \right] \times \left[1 - \left(\frac{\text{MO}}{\text{TPO}} \right) \right]$$



TFI	-	1,234 GWh
TPO	-	439 GWh
QHO	-	420 GWh
η_p	-	35.6% ✓
QI	-	102.87 ✓

$$\begin{aligned} \text{Fuel Input subject to CPS} &= \text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) \\ &= 1,234 - \left(\frac{420}{81\%} \right) \\ &= 1,234 - 519 \\ &= 715\text{GWh} = \underline{58\% \text{ of TFI}} \end{aligned}$$

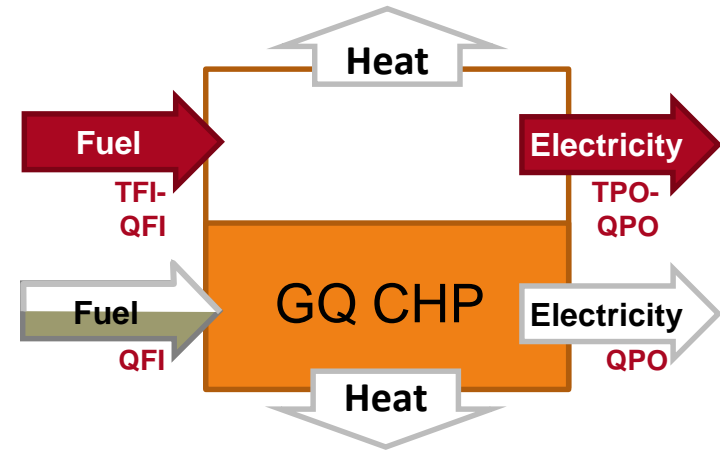
Assuming no fuel used to produce mechanical power (i.e. MO = 0)

42% of TFI is exempt from CPS



Example 2: Partial GQCHP >2MW_e

TFI	-	57 GWh
TPO	-	9.5 GWh
QHO	-	21 GWh
η_p	-	16.6% x
QI	-	73.97 x
QFI	-	48GWh
QPO	-	5.8GWh



$$\text{Fuel Input subject to CPS} = \left[\text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) \right] \times \left[1 - \left(\frac{\text{MO}}{\text{TPO}} \right) \right]$$

$$= 57 - \frac{21}{81\%} = 31 \text{ GWh}$$

54% of Fuel Input will be subject to CPS

The example above assumes no fuel used to produce mechanical power (i.e. MO = 0)

In addition:

- CCL will be levied on non-qualifying fuel (TFI-QFI) = 9.6GWh
- CCL will be levied on non-qualifying power (TPO-QPO) = 3.6GWh

29% of TFI will be subject to neither CPS nor CCL



Advising CPS Liability for GQCHP

CHP QA
DEPARTMENT OF ENERGY & CLIMATE CHANGE

Quality Certification for an existing CHP Scheme
CHPQA Certificate No: [REDACTED]

Scheme: [REDACTED]

DRAFT

CHPQA Scheme Reference No: [REDACTED]

This is to Certify that the Self-Assessment of the above CHP Scheme undertaken by [REDACTED] of Scheme performance during the calendar year: 2012 has been Validated under the Combined Heat and Power Quality Assurance programme and that:

1. The Total Power Capacity of this Scheme is: and the Qualifying Power Capacity is:	690.700 MWe 690.700 MWe
2. The threshold Power Efficiency criterion for this Scheme is: and the Power Efficiency of this Scheme is:	20 % 17.45 %
3. The Qualifying Heat Output from this Scheme is: and the Heat Efficiency of this Scheme is:	543,012 MWh 46.06 %
4. The threshold Quality Index criterion for under Initial Operation is: and the Quality Index of this Scheme is:	95 83.52
5. The Total Fuel Input to this Scheme is: and the Qualifying Fuel Input is:	1,529,218 MWh 1,529,218 MWh
6. The Percentage of Fuel Input Referable to Electricity Generation is:	43.06 %
7. The Percentage of Conventional Fuel is:	100.00 %
8. The Total Power Output from this Scheme is: and the Qualifying Power Output is:	690.700 MWh 690.700 MWh
9. The fuel supply reference(s) (e.g. TRANSCO MPR, gas meter reference nos. and/or other unique ID descriptors) for this Scheme are:	

This certificate is a statement of Scheme performance over the period 01/01/2012 to 31/12/2012 and is valid until 31/12/2013.

Approved by the CHPQA Administrator on behalf of DECC. Date: 26/02/2013.

The CHPQA programme is carried out on behalf of the Department of Energy and Climate Change (DECC), in consultation with the Scottish Executive, The National Assembly for Wales, and the Northern Ireland Department of Enterprise, Trade and Investment.

For the purposes of the Climate Change Levy (General) (Amendment) Regulations 2009 only, the QPQ limit shall be equal to the actual output of the station multiplied by the following ratio: the Qualifying Power Output referred to at item 6 above over the Total Power Output referred to at item 8 above.

6. The Percentage of Fuel Input Referable to Electricity Generation is: 43.06 %
7. The Percentage of Conventional Fuel is: 100.00 %

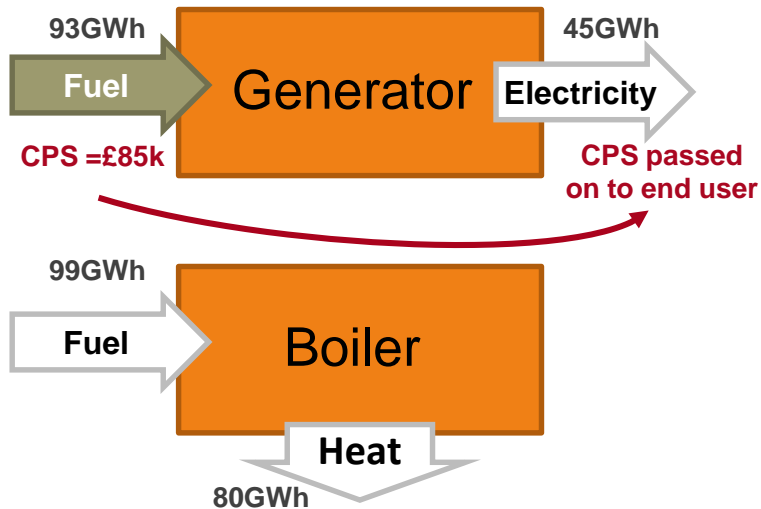
See HMRC Guide to the Carbon Price Floor published in June 2014. This is CCI1/6



Frequently Asked Questions

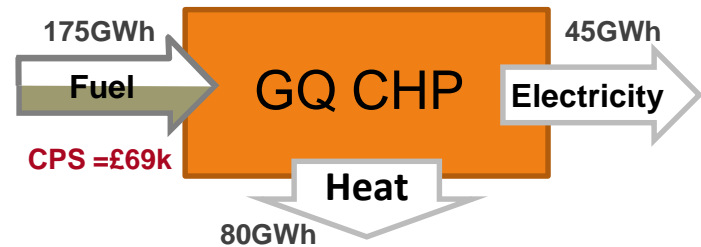
Is the impact of CPS on GQCHP worse than that for separate generation of heat and power?

Separate Generation



CPS liability = £84.6k

Good Quality CHP



$$\text{Fuel subject to CPS} = \text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) = 175 - \frac{80}{81\%} = 76\text{GWh}$$

CPS liability = £69k
based on CPS rate of £0.91/MWh
(2013 rates)





Frequently Asked Questions

What are the benefits of certifying as GQCHP?

- Versus auto-generators:
 - Auto-generators are liable for CPS on 100% of fuel input and CCL on 100% of power output
 - GQCHP are liable for CPS only on fuel referable to the production of electricity. Also exempt from CCL and CPS on qualifying power output (QPO) if used on site.

- Also: upon ceasing to be GQCHP, any auxiliary boilers within the scheme would be subject to CCL on input fuel. Plus, if operating as Auto-generator all fuel will be subject to CPS .



Recent developments

- With effect from 1 April 2015 the government will introduce an exemption from the CPS for fossil fuels that are used in CHPs to generate QPO used onsite.

As announced at Budget 2014,from 1 April 2015 the government will exclude from the carbon price support rates, fossil fuels that are used by CHPs to generate good quality electricity that is self-supplied or supplied under exemption from the requirement to hold a supplier licence. (Finance Bill 2015)

- More details will be available soon but this 'exemption' from CPS is likely to cover all fuel used to generate good quality electricity that is consumed on site.