



How Carbon Price Support has been incorporated into CHPQA

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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

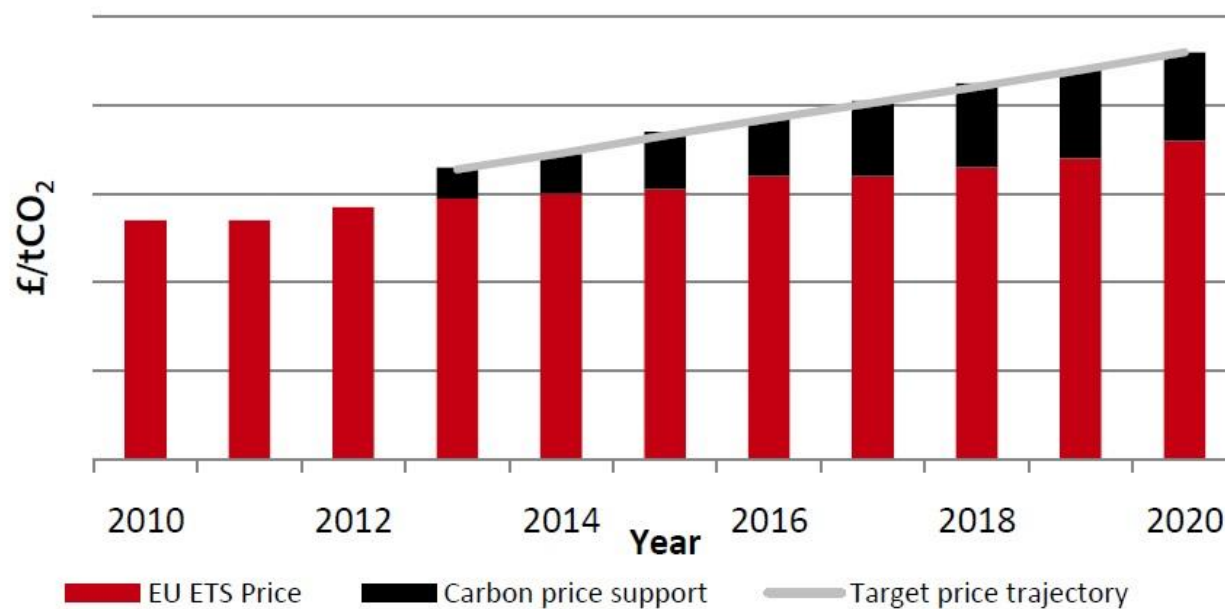
- Fuel oil
- Gas oil
- Bioblends

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



Background

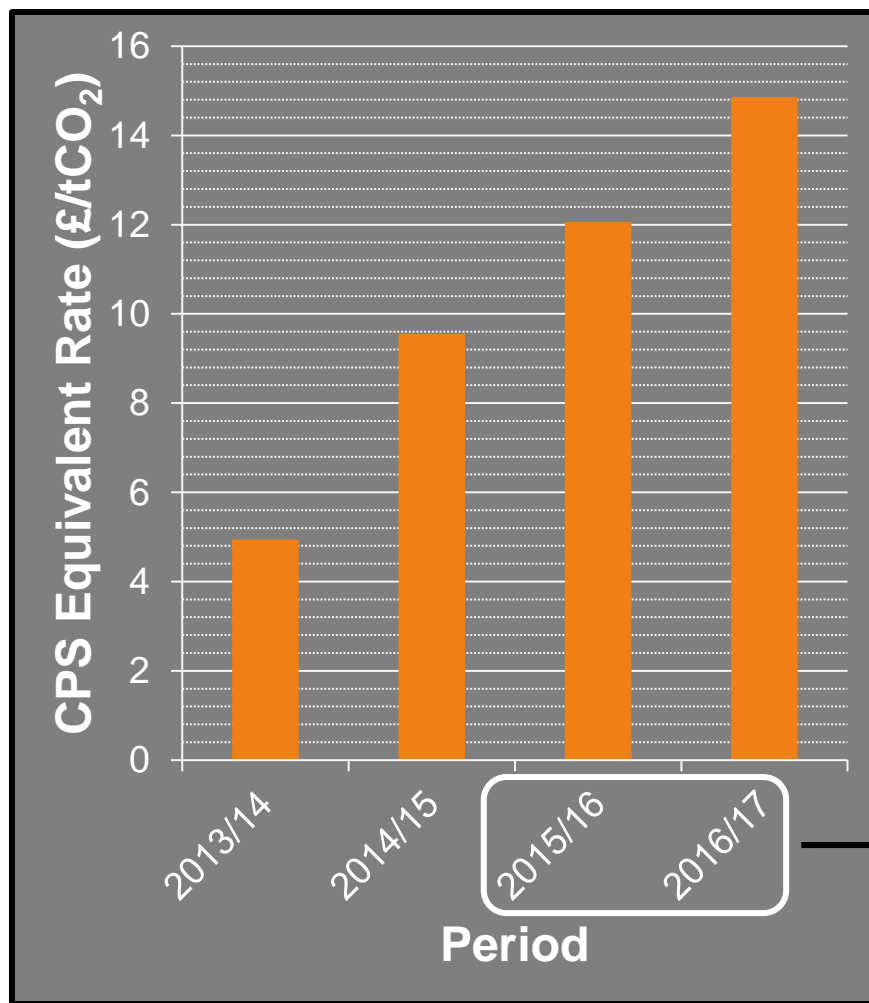
Chart 4.A: Illustration of the carbon price support mechanism



Source: HM Treasury, 2010



CPS Rates



Commodity	Units	2013/14	2014/15	2015/16	2016/17
Natural Gas	£/kWh	0.00091	0.00175	0.00221	0.00272
LPG	£/kg	0.01460	0.02822	0.03564	0.04393
Coal	£/GJ	0.44264	0.85489	1.07962	1.33063
Fuel Oil	£/litre	0.01568	0.03011	0.03803	0.04687
Gas Oil	£/litre	0.01365	0.02642	0.03336	0.04112

Rates for 2015/16 and
2016/17 are Indicative



Talk Coverage

How CPS affect:

- Standard Generators
- 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



Standard Generator

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 less than 2MW_e

Previous Arrangement



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

Under CPF Regime

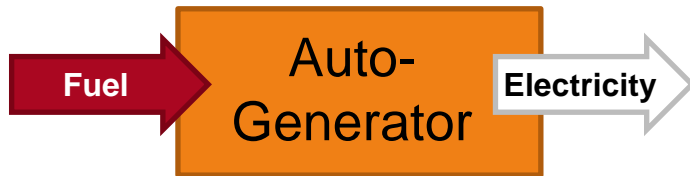


- Exempt from CPS
- No change on CCL (fuel input subject to 100% CCL)



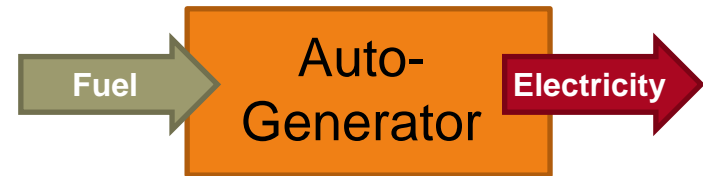
Auto-generators $\geq 2\text{MW}_e$

Previous Arrangement



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

Under CPF Regime

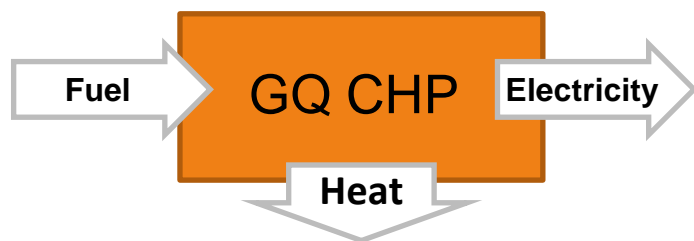


- Fuel input subject to 100% CPS rates - No CCL on fuel input
- All electricity output subject to 100% CCL - **same as grid electricity**



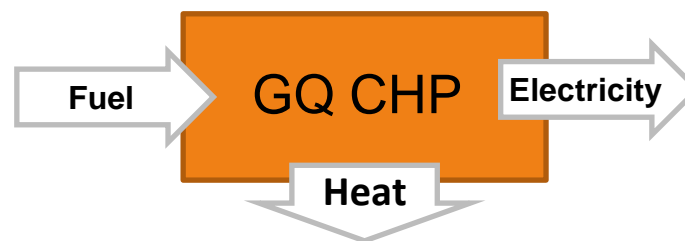
GQCHP – Fully Qualifying with Capacity $\leq 2\text{MW}_e$

Previous Arrangement



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

Under CPF Regime

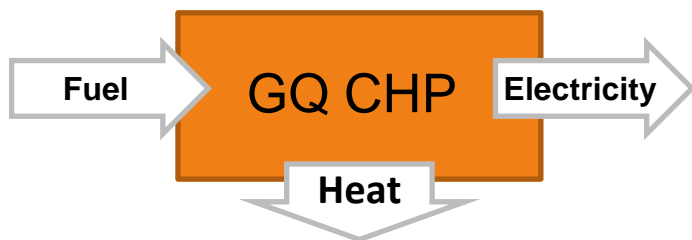


- Fuel input exempt from CPS
- NO CHANGE to CCL (exempt from CCL on fuel input and electricity output)



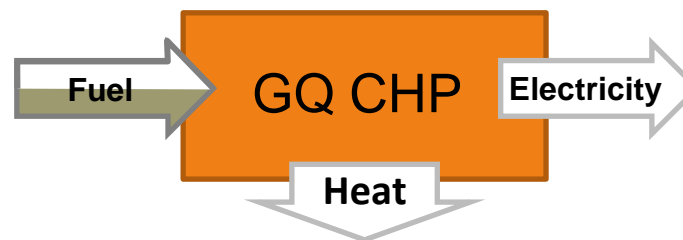
GQCHP – Fully Qualifying with Capacity $>2\text{MW}_e$

Previous Arrangement



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

Under CPF Regime



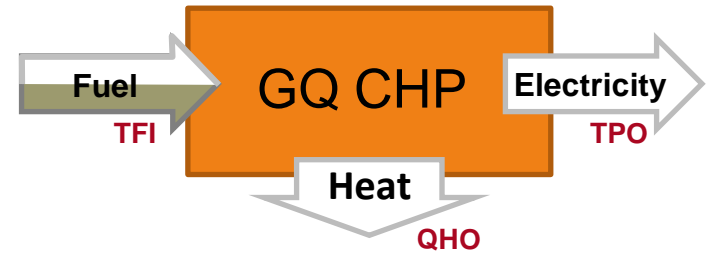
- Fuel input **attributable to electricity generation** subject to CPS
Note: Fuel input used to produce mechanical power is exempt as mechanical power is not an electrical output
- No CCL on fuel input
- Electricity output exempt from CCL **where directly supplied**



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 ✓

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

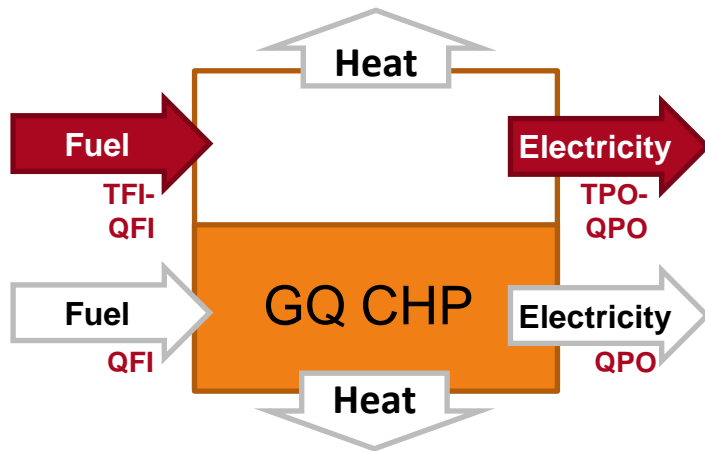
Assuming no fuel used to produce mechanical power (i.e. MO = 0)

42% of TFI is not subject to CPS



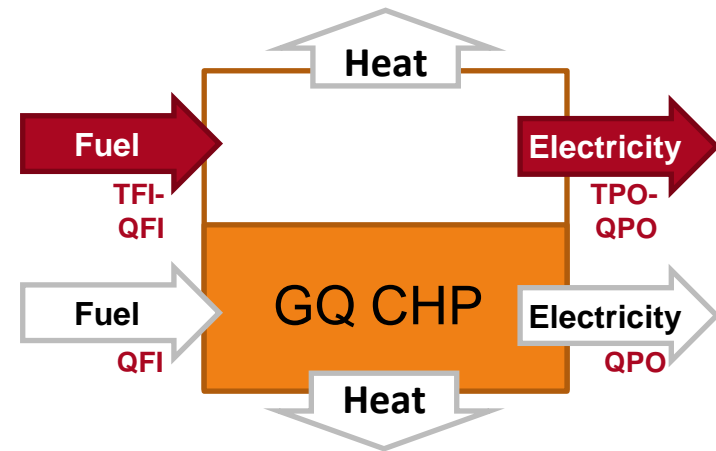
GQCHP – Partially Qualifying with Capacity $\leq 2\text{MW}_e$

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

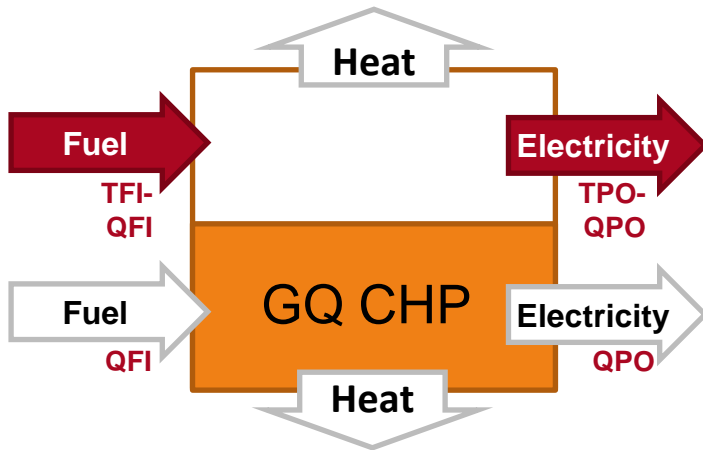


- No CPS
- No change to CCL



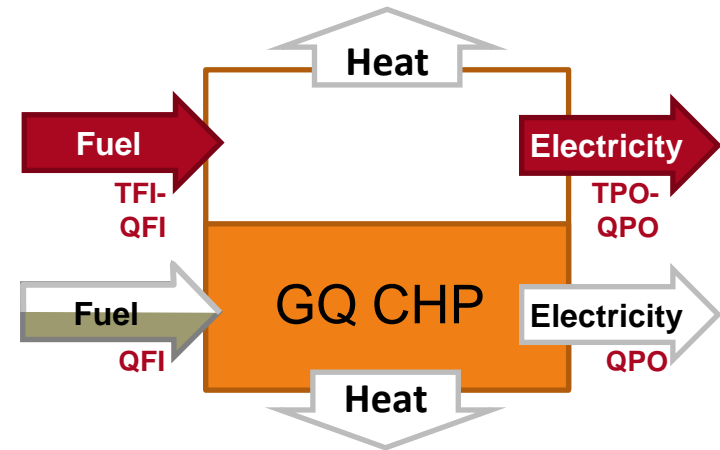
GQCHP – Partially Qualifying with Capacity >2MW_e

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

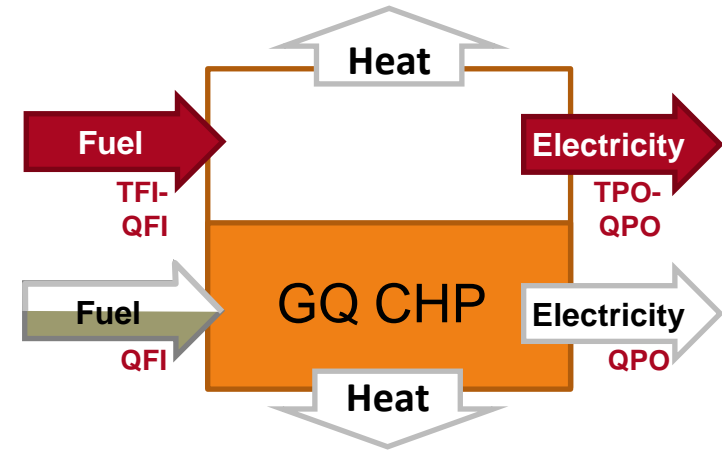


- Qualifying fuel input (QFI) exempt from CCL
- Fuel input **not QFI** is subject to CCL
- Qualifying power output (QPO) exempt from CCL **if directly supplied**
- Power output **not QPO** subject to CCL
- Fuel attributable to electricity generation subject CPS= $\text{TFI} - \text{QHO}/81\%$



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 

*Quality Certification for
an existing CHP Scheme*

CHPQA Certificate No: **PH04/12/0008**

Scheme: **TRANSKOMMER, 2002
TRANSKOMMER 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000**

DRAFT

CHPQA Scheme Reference No: **0000**

This is to Certify that the Self-Assessment of the above CHP Scheme undertaken by
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:	430.70 MWe
and the Qualifying Power Capacity is:	430.70 MWe
2. The threshold Power Efficiency criterion for this Scheme is:	20 %
and the Power Efficiency of this Scheme is:	17.45 %
3. The Qualifying Heat Output from this Scheme is:	1,000,000 MWh
and the Heat Efficiency of this Scheme is:	46.06 %
4. The threshold Quality Index criterion for under Initial Operation is:	95
and the Quality Index of this Scheme is:	83.52
5. The Total Fuel Input to this Scheme is:	1,000,000 MWh
and the Qualifying Fuel Input is:	1,000,000 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:	430.70 MWh
and the Qualifying Power Output is:	430.70 MWh
9. The fuel supply reference(s) (e.g. TRANSCOMPR, 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: 01/01/2013

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 2003 only, the QP 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 %**

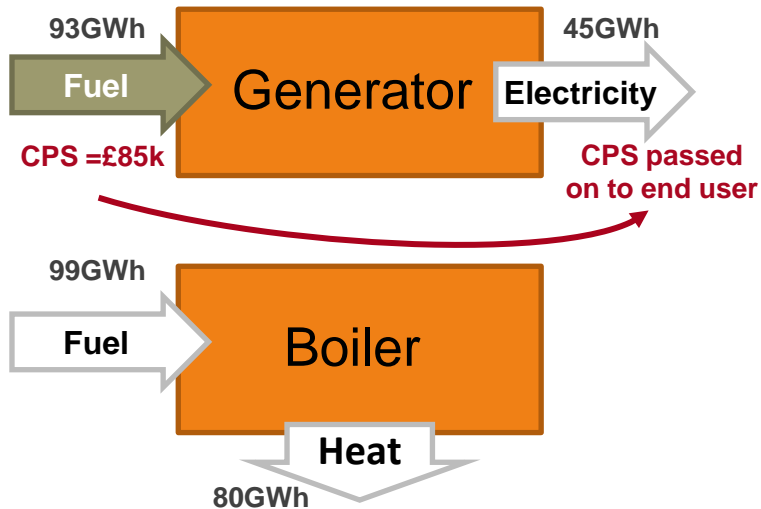
HMRC Published A Guide to
the Carbon Price Floor in July
2013 . This is CCI1/6



Frequently Asked Questions

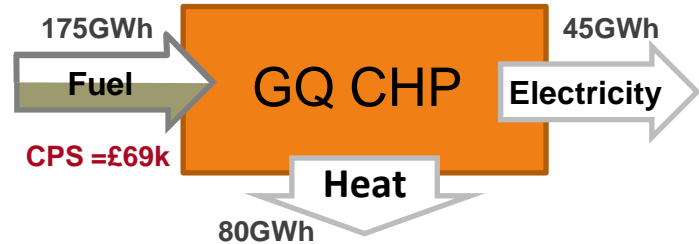
Is the impact of CPS on GQCHP worse than that for separate generation of heat and power?

Separate Generation



CPS liability = £85k

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





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 on qualifying power output if directly supplied.

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