



Incentives & Policies Relevant to Conventional GQCHP

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Fiscal Measures for GQCHP

- CCL Exemption (on fuel input and electricity output where directly supplied)
- Carbon Price Support (CPS) exemption
- Business Rates Exemption (embedded schemes)
- Hydrocarbon Oil Duty Relief
- ~~Enhanced Capital Allowance (ECA) – scheme now closed~~
- 1ROC/MWh of electricity from EfW CHP, 2 ROCs/MWh from dedicated biomass CHP (April 2009)
- Specific RHI tariff for biomass fuelled GQCHP
- CHP specific CfDs applicable to biomass and waste fuelled CHP, replaced RO for all new projects from 1/4/2017.



Talk Coverage

Conventional CHP Incentives

- CCL Exemption (on fuel input and electricity output where directly supplied)
- Carbon Price Support (CPS) exemption on
 - Fuel for QHO
 - Fuel for QPO used on site
- Energy Bill Relief Scheme (EBRS) / CHP Policy



Climate Change Levy (CCL)

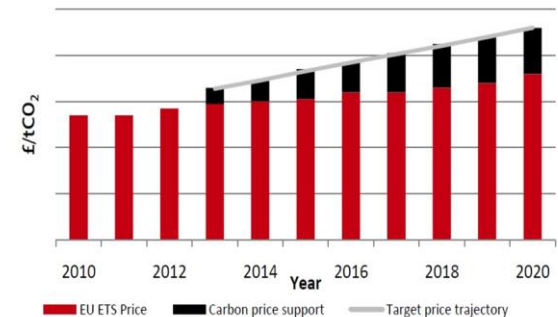
- The main rates of CCL are charged on energy supplied to end users
- Carbon Price Support (CPS) rates are paid by consumers. When a deemed taxable self-supply of fossil fuels is made for use in electricity generation.



CCL: 'Main' and 'CPS' rates

- Main Rate of CCL was introduced in 2001 ... the reason for developing CHPQA
- GQCHP is exempt from the main rates of CCL on fuel that qualify as Good Quality CHP fuel (QFI) and on Good Quality CHP electricity(QPO) that is used on site or directly supplied
- In 2013 the Government introduced the Carbon Price Support (CPS), to stabilise price signals to investors in low carbon technologies,
- CPS applied to fuel for electricity generation only.
- GQCHP certified by CHPQA is exempt from CPS rates on:-
 - the fuel that is referable to Qualifying Heat Output (QHO).
 - and fuel referable to Qualifying Power Output (QPO) used on-site or supplied under exemption from a supplier licence..... Direct Supply!!!

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



Source: HM Treasury, 2010

For the UK power sector, the government introduced the Carbon Price Support (CPS) to supplement the Carbon price, requiring UK power generators to pay a minimum carbon tax, which is referred to as the Carbon Price Floor (CPF).



Main rates of CCL

Electricity remains constant

Taxable commodity	Rate from 1 April 2018	Rate from 1 April 2019	Rate from 1 April 2020	Rate from 1 April 2021	Rate from 1 April 2022	Rate from 1 April 2023	Rate from 1 April 2024
Electricity (£/KWh)	0.00583	0.00847	0.00811	0.00775	0.00775	0.00775	0.00775
Natural gas (£/KWh)	0.00203	0.00339	0.00406	0.00465	0.00568	0.00672	0.00775
LPG (£/kg)	0.01304	0.02175	0.02175	0.02175	0.02175	0.02175	0.02175
other taxable commodity (£/kg)	0.01591	0.02653	0.03174	0.03640	0.04449	0.05258	0.06064

- CCL on Elec remained constant over 2022 to 2024
- CCL on Elec decreased by 4.4% over 2021-2024
- CCL on Gas increased by 66.7% over 2021-2024
- This means the CCL exemption for GQCHP has increased over time

22.2% increase

18.3% increase

15.3% increase



CPS Rates of CCL

Commodity	Units	1 April 2015 – 31 March 2016	1 April 2016 – 31 March 2025
Natural Gas	£/kWh	0.00334	0.00331
LPG	£/kg	0.05307	0.05280
Coal	£/GJ	1.56860	1.54790
Fuel Oil	£/litre	0.05730	0.05711
Gas Oil	£/litre	0.04990	0.04916

Equivalent
to £0.0095
/KWh of
electricity

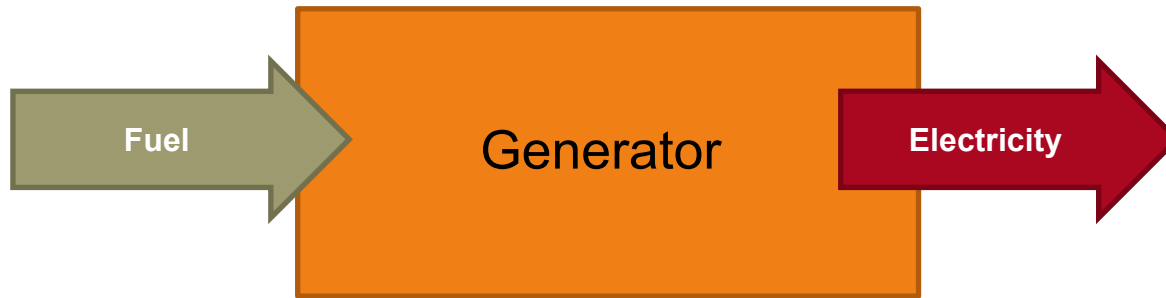
➤ **CPS Rates extended to March 2025**



Standard Rate of CCL and CPS roles



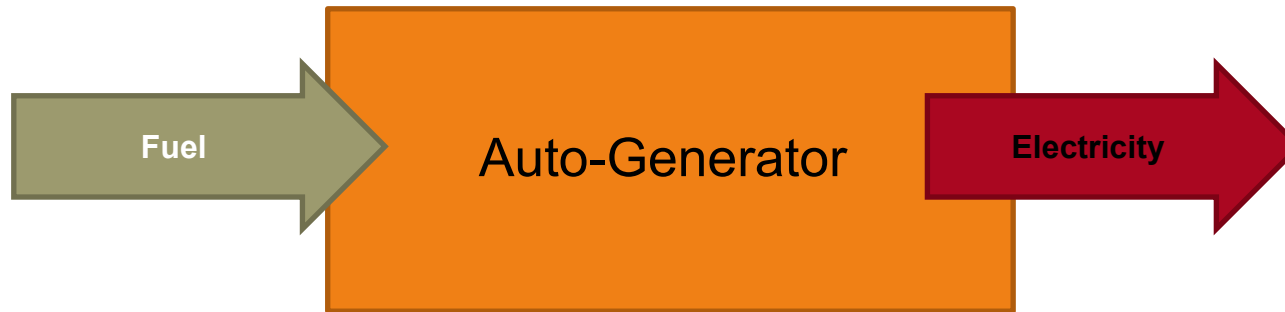
Power Stations



- Fuel input subject to CPS rates
- No CCL on Fuel input but all Electricity output is subject to CCL (CCL paid by consumers)
- **CPS paid by Generators on all conventional fuels used for generating electricity.**



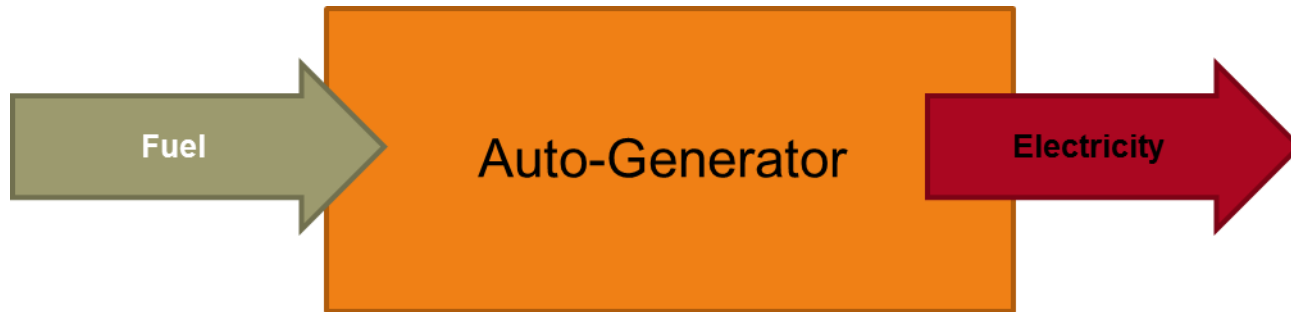
Auto-generators $< 2\text{MW}_e$



- Exempt from CPS
- fuel input subject to 100% CCL,
- electricity consumed on site exempt from CCL



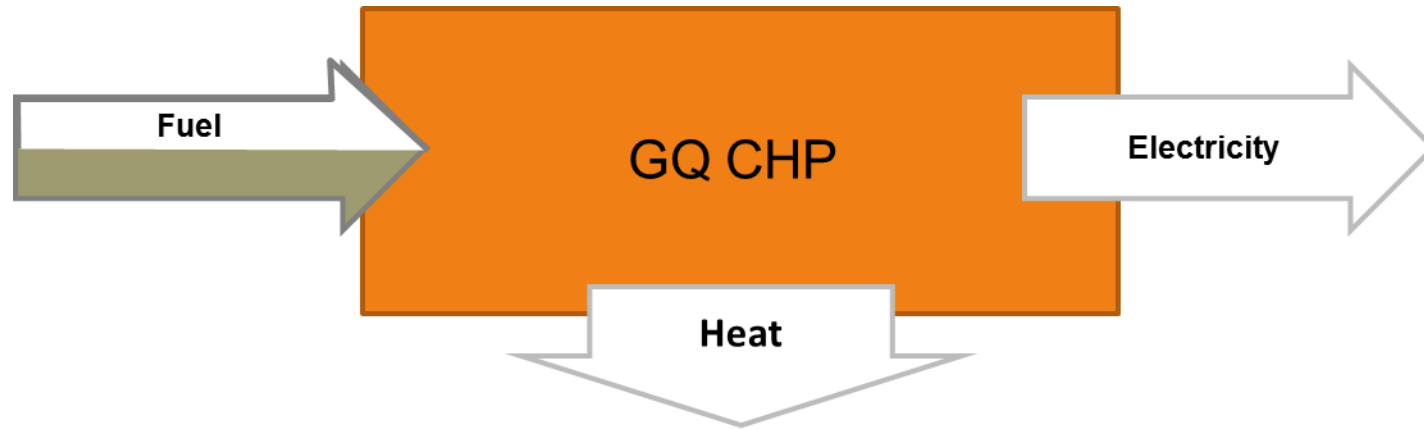
Auto-generators $\geq 2\text{MW}_e$



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



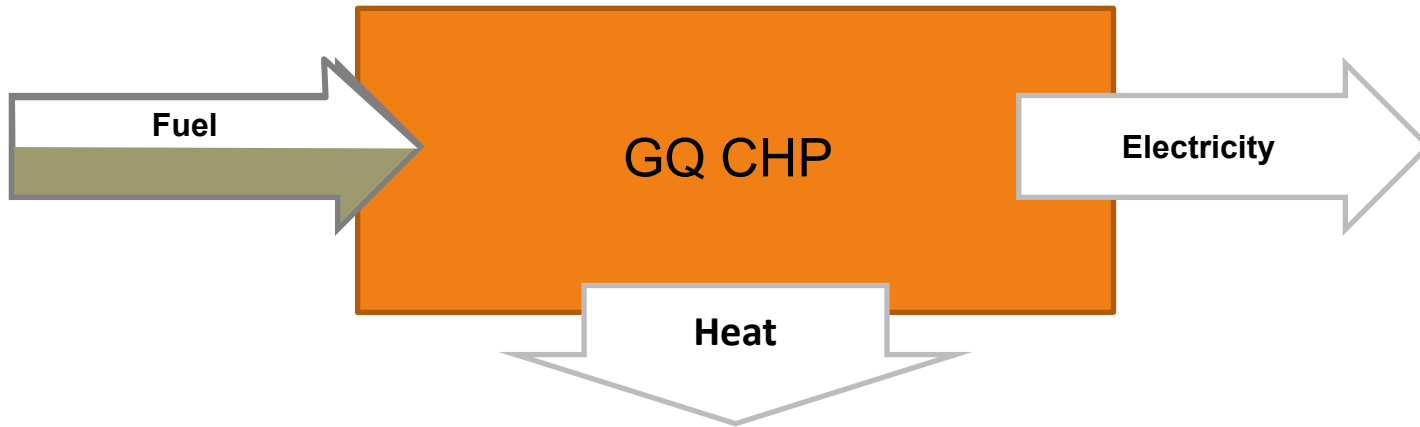
GQCHP – Fully Qualified with Capacity $\leq 2\text{MW}_e$



- Fuel input exempt from CPS
- Fuel input exempt from CCL
- Electricity output (Direct Supply) exempt from CCL



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

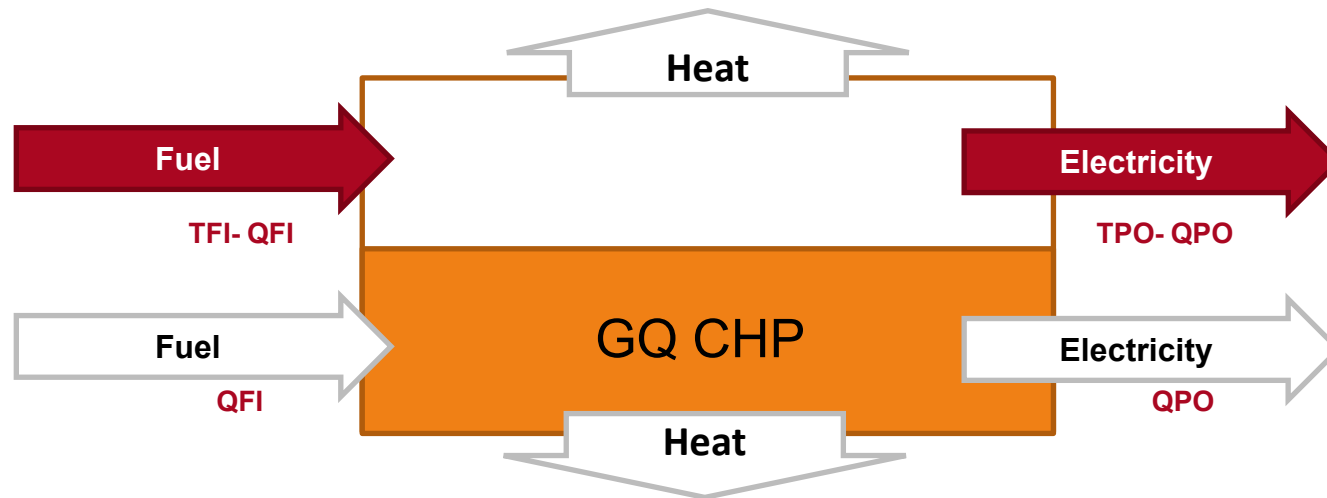


- Fuel input exempt from CCL
- Electricity output (Direct supply) exempt from CCL
- Fuel for heat (QHO) not liable to CPS rates
- Fuel input referable to electricity generation used on site not liable to CPS rates (from April 2015)

**In this case No CCL or CPS Liability if no
Electricity Export**



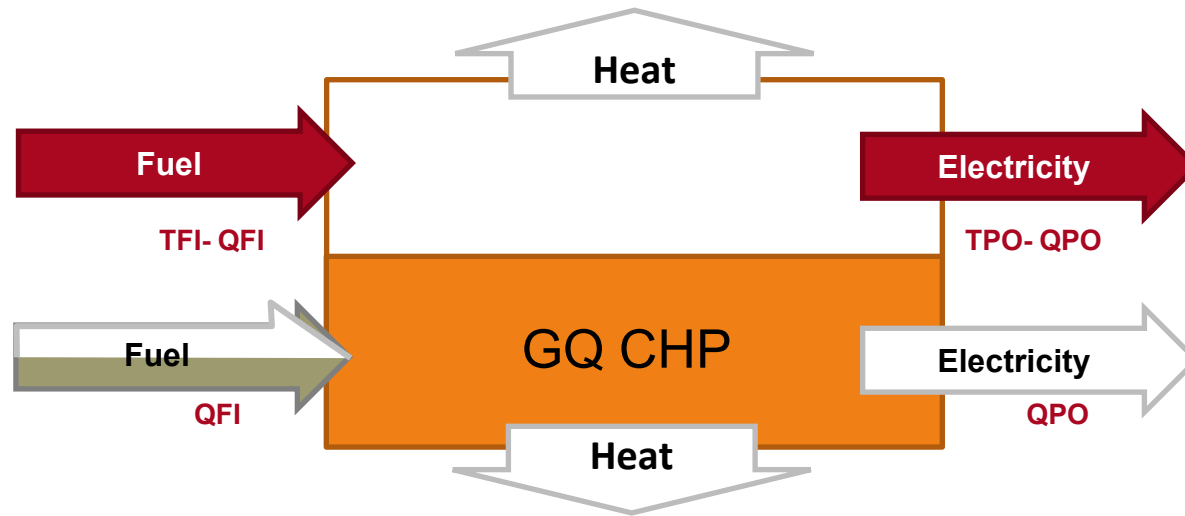
GQCHP – Partially Qualified with Capacity $\leq 2\text{MW}_e$



- Fuel input exempt from CPS
- Qualifying fuel input (QFI) exempt from CCL
- Qualifying power output (QPO) exempt from CCL where directly supplied



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



- Qualifying fuel input (QFI) exempt from CCL
- Qualifying power output (QPO) exempt from CCL **if directly supplied**
- Fuel for heat (QHO) not liable to CPS rates
- Fuel attributable to QPO **used on site** is not liable to CPS rates.

(Electricity used on site means....if it is self-supplied, private wires, or supplied to a consumer by an exempt unlicensed electricity supplier)



Advising CPS Liability for GQCHP



Quality Certification for an existing CHP Scheme

CHPQA (
Scheme: CHPQA SITE Z GEMINI BUILDING HARWELL OXFORD OX11 0QR	6. The Percentage of Fuel Input Referable to Electricity Generation is:	56.22 %
	7. The Percentage of Conventional Fuel is:	1.31 %

CHPQA Scheme Reference No: 8760 Z

This is to Certify that the Self-Assessment of the above CHP Scheme undertaken by TEST USER of Scheme performance during the calendar year: 2016 has been Validated under the Combined Heat and Power Quality Assurance programme and that:

- | | |
|---|-------------|
| 1. The Total Power Capacity of this Scheme is: | 50,000 MWe |
| and the Qualifying Power Capacity is: | 50,000 MWe |
| 2. The threshold Power Efficiency criterion for this Scheme is: | 20 % |
| and the Power Efficiency of this Scheme is: | 25.85 % |
| 3. The Qualifying Heat Output from this Scheme is: | 135,461 MWh |
| and the Heat Efficiency of this Scheme is: | 35.46 % |
| 4. The threshold Quality Index criterion for under Annual Operation is: | 100 |
| and the Quality Index of this Scheme is: | 97.75 |
| 5. The Total Fuel Input to this Scheme is: | 382,033 MWh |
| and the Qualifying Fuel Input is: | 382,033 MWh |
| 6. The Percentage of Fuel Input Referable to Electricity Generation is: | 56.22 % |
| 7. The Percentage of Conventional Fuel is: | 1.31 % |
| 8. The Total Power Output from this Scheme is: | 98,764 MWh |
| and the Qualifying Power Output is: | 89,049 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: | |

See HMRC Excise Notice CCL1/6:
a guide to carbon price floor
(updated 20 April 2016)

This certificate is a statement of Scheme performance over the period 01/01/2016 to 31/12/2016 and is valid until 31/12/2017.

Approved by the CHPQA Administrator on behalf of BEIS. Date: 14th November 2017

The CHPQA programme is carried out on behalf of the Department for Business, Energy & Industrial Strategy, the Scottish and Welsh Governments, and the Northern Ireland Department for the Economy.

For the purpose of the Climate Change Levy (General) (Assessment) Regulations 2003 only, the QPO limit shall be equal to the actual output of the station multiplied by the following ratio: the Qualifying Power Output referred to in item 8 above over the Total Power Output referred to in item 8 above.



CPS liability Calculation

- Fuel referable to the production of electricity is determined by:

$$Q = \left(TFI - \frac{QHO}{\eta_{h,ref}} \right) \times \left(1 - \frac{MO}{TPO} \right)$$

- Percentage of fuel input referable to Electricity Generation is given on the CHPQA certificate
- For fuel input referable to non-GQ CHP electricity it was decided not to incorporate this into the CHPQA certificate (**See HMRC document CCL1/6 - a guide to carbon price floor**)
- Fuels referable to the production of non-qualifying electricity use the following formula:

Fuel Subject to CPS,
$$R = Q \times \left(1 - \frac{ES}{TPO - MO} \right)$$

Where:

Q = Fuel for Electricity

ES = Electricity used on site ($\leq QPO$)

MO = Mechanical Power

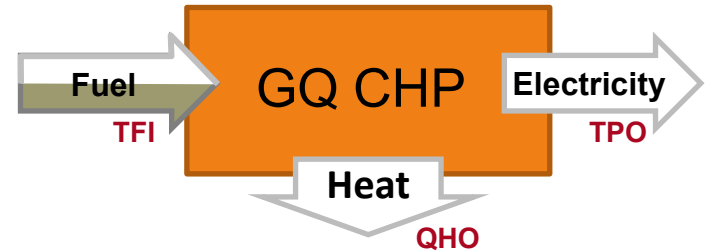
$\eta_{h,ref}$ = Reference boiler efficiency (81%)



Example 1: Full GQCHP >2MWe

Fuel input referable to electricity production:

$$Q = \left[TFI - \left(\frac{QHO}{81\%} \right) \right] \times \left[1 - \left(\frac{MO}{TPO} \right) \right]$$



TPC	-	150 MWe
TFI	-	1,234 GWh
TPO	-	439 GWh
QHO	-	420 GWh
η_p	-	35.6% ✓
QI	-	102.87 ✓
MO	-	0
10% of electricity exported		

Fuel Subject to CPS:

$$R = Q \times \left[1 - \left(\frac{ES}{TPO - MO} \right) \right]$$

CCL exemption worth **£8.29M**, based on Gas CCL rate of **£6.72/MWh**

$$R = 715 \times \left\{ 1 - \left(\frac{439 \times 0.9}{439 - 0} \right) \right\}$$

$$R = 71.5 \text{ GWh}$$

$$R/TFI = 71.5/1,234 = \underline{5.8\%}$$

$$\text{Fuel for electricity, } Q = TFI - \left(\frac{QHO}{81\%} \right)$$

$$= 1,234 - \left(\frac{420}{81\%} \right)$$

$$= 715 \text{ GWh} = \underline{58\% \text{ of TFI}}$$

This means 94.2% of TFI is exempt from CPS, worth in the order of **£3.85 M pa**, based on CPS rate of £3.31/MWh of Gas



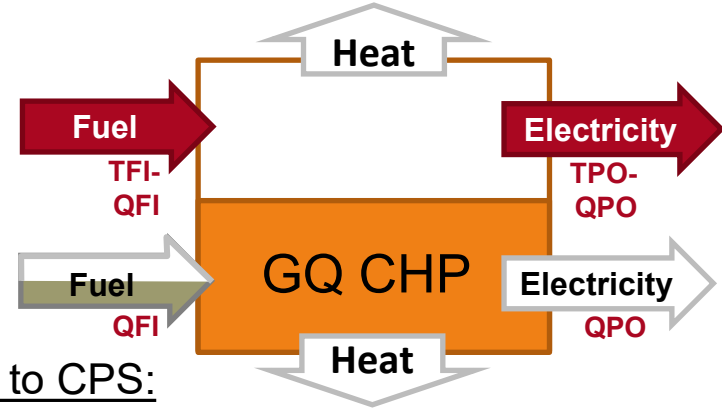
Example 2: Partial GQCHP >2MWe

Fuel input referable to electricity production:

$$Q = \left[TFI - \left(\frac{QHO}{81\%} \right) \right] \times \left[1 - \left(\frac{MO}{TPO} \right) \right]$$

TPC	-	7.2 MWe
TFI	-	57 GWh
TPO	-	9.5 GWh
QHO	-	21 GWh
η_p	-	16.6% ✗
QI	-	73.97 ✗
QFI	-	48 GWh
QPO	-	5.8 GWh
All QPO used on site		

Fuel Subject to CPS:



$$R = Q \times \left[1 - \left(\frac{ES}{TPO - MO} \right) \right]$$

$$R = 31 \times \left\{ 1 - \left(\frac{5.8}{9.5 - 0} \right) \right\}$$

$$R = 12.1 \text{ GWh}$$

$$R/TFI = 12.1/57 = \underline{21.2\%}$$

$$\begin{aligned} \text{Fuel for electricity, } Q &= 57 - \left(\frac{21}{81\%} \right) \\ &= 31 \text{ GWh} = \underline{54.4\% \text{ of TFI}} \end{aligned}$$

CCL exemption worth £372K, based on Gas CCL rate of £7.75/MWh

This means 78.8% of TFI is exempt from CPS, worth in the order of £149 k pa based on CPS rate of £3.31/MWh of gas



Total CCL and CPS exemption value (2020)

- CCL exemption on Qualifying fuel and Electricity is worth in the order £250 million per year
- CPS exemption on Fuel for heat is worth in the order £110 million per year.
- The value of CPS exemption on Fuel for QPO used on site is the order of £70 million.

Total value of CCL and CPS exemption for CHP schemes certified by CHPQA is the order of £430 million/year



Quality Certification for an existing CHP Scheme

CHPQA Certificate No: P01234567

Scheme: **Energy Centre**
ENERGY LTD
DUNNALONG ROAD
TOWN
COUNTYSHIRE
AB12 3CD

CHPQA Scheme Reference No: **8760X**

This is to Certify that the Self-Assessment of the above CHP Scheme undertaken by **RESPONSIBLE PERSON** of Scheme performance during the calendar year: **2018** has been Validated under the Combined Heat and Power Quality Assurance programme and that:

- | | |
|---|--------------------|
| 1. The Total Power Capacity of this Scheme is: | 3.605 MWe |
| and the Qualifying Power Capacity is: | 3.605 MWe |
| 2. The threshold Power Efficiency criterion for this Scheme is: | 20 % |
| and the Power Efficiency of this Scheme is: | 24.25 % |
| 3. The Qualifying Heat Output from this Scheme is: | 55,046 MWh |
| and the Heat Efficiency of this Scheme is: | 43.77 % |
| 4. The threshold Quality Index criterion for under Annual Operation is: | 100 |
| and the Quality Index of this Scheme is: | 97.62 |
| 5. The Total Fuel Input to this Scheme is: | 125,183 MWh |
| and the Qualifying Fuel Input is: | 125,183 MWh |
| 6. The Percentage of Fuel Input Referable to Electricity Generation is: | 45.71 % |
| 7. The Percentage of Conventional Fuel is: | 100.00 % |
| 8. The Total Power Output from this Scheme is: | 30,353 MWh |
| and the Qualifying Power Output is: | 28,896 MWh |
| 7. The fuel supply reference(s) (e.g. TRANSCO/MPR gas meter reference nos. and/or other unique ID descriptors) for this Scheme are:
[01234567890] | |

ECA & Stat

ECA & RHI

CPS

Full, Partial

CCL

CPS

CCL & CPS

This certificate is a statement of Scheme performance over the period 01/01/2018 to 31/12/2018 and is valid until 31/12/2019.

Approved by the CHPQA Administrator on behalf of BEIS. Date: 31 March 2019

The CHPQA programme is carried out on behalf of the Department for Business, Energy & Industrial Strategy, the Scottish and Welsh Governments, and the Northern Ireland Department for the Economy.

For the purposes of the Climate Change Levy (General) (Amendment) Regulations 2003 only, the QPO limit shall be equal to the actual output of the station multiplied by the following ratio: the Qualifying Power Output referred to at item 8 above over the Total Power Output referred to at item 8 above.



What to do after receiving CHPQA certificate?

- **Need to reconcile any differences on CCL and CPS**

- **Reconciliation on Gas:**
 - Complete PP10 – Online Form
 - This will automatically work out the total % relief to use on the Form PP11
 - Fill PP11 (Climate Change Levy Supplier Certificate) and send it to your Gas supplier
 - For details see CCL1/2 - Combined Heat & Power Schemes
[Excise Notice CCL1/2: combined heat and power schemes](#)

- If over claimed CCL benefit, you must declare and pay the underpaid CCL to HMRC
- If under claimed CCL benefit, you must notify HMRC and request tax credits or reduce payment the following year



What to do after receiving CHPQA certificate?

➤ Reconciliation on Electricity:

- Once received the CHPQA certificate you will need to reconcile any difference on exempt Electricity
- Exemption for QPO used on Site or Direct Supply

(Direct Supply.. self-supplied, private wires, or supplied to a consumer by an exempt unlicensed electricity supplier)

- Disregard electricity supplies to a Utility or for Domestic or Charity
- If no change to QPO/TPO there will be no Action required
- If performance decreased leading to reduction in QPO/TPO, you will need to inform HMRC and adjust for the difference in the following year
- If performance is improved leading to increase in the QPO/TPO, you will be entitled to request tax Credit by using

CCL 200X tax Credit Claim



What to do after receiving CHPQA certificate?

➤ Reconciliation on CPS:

- Submit your return in the same way for both the main [Climate Change Levy rates](#) and the [Carbon Price Support rates](#).
- Complete Form CCL100 – can download from HMRC website
- Send your completed return to:

HMRC TAPS & CCL
BX9 1XL

➤ Other supporting documents:

- CCL1/2 - Combined Heat & Power Schemes

[Excise Notice CCL1/2: combined heat and power schemes](#)

- CCL1/6 – A Guide to Carbon Price Floor

[Excise Notice CCL1/6: a guide to carbon price floor](#)



CHP Consultations – Call to Evidence

- Consultation seeking views on updating CHP policy support in light of decarbonisation¹.
- Closed on 20th December 2021.
- Builds upon “route to 2050” CHP consultation published last year (which is now closed)².

Combined Heat and Power: pathway to decarbonisation

Call for evidence

Closing date 20th December 2021

1- <https://www.gov.uk/government/consultations/combined-heat-and-power-pathway-to-decarbonisation-call-for-evidence>

2- <https://www.gov.uk/government/consultations/combined-heat-and-power-chp-the-route-to-2050-call-for-evidence>



CHPQA Additionality Review

- This Study reviewed:
 - CHPQA Programme's implementation,
 - net social benefits delivered by CHPQA certified schemes and
 - the ratio of these benefits to public money spent (i.e. incentives conferred by CHPQA).
- RPs were surveyed and interviewed by our team to gather evidence on
 - how decisions to invest in CHP were made,
 - the alternative investments options considered at the time and
 - to understand the extent to which the CHPQA policy package was material in driving the decision to invest in CHP.



CHPQA Additionality Review

- The evidence collected through **the survey and interviews**, coupled with the **available CHPQA performance data**, was reviewed and analysed, to answer the following questions:
 - **Firstly**, has the CHPQA policy package delivered social value for public money in the past?
 - **Second**, does the CHPQA policy package produce social value for public money at present?
 - **Thirdly**, will the CHPQA policy package, in its exact current form, deliver social value for public money spent in the future, especially against a background of a decarbonising energy system.
 - **And finally**, does the CHPQA programme continue to be effective in the delivery of these policies, driving improvements in CHP energy efficiency and decarbonisation.
- **The results from this study will be published by BEIS as part of the overall consultation due early next year**



Energy Bill Relief Scheme (EBRS) / CHP Policy



Energy Bill Relief Scheme (EBRS) Calculation for GQCHP

➤ Gas referable to the production of useful heat (QHO) = $\left(\frac{QHO}{\eta_{h,ref}}\right)$

➤ Gas referable to the production of electricity is determined by:

$$Q = \left(TFI - \frac{QHO}{\eta_{h,ref}}\right)$$

➤ Gas referable to the production of exported electricity (non-qualifying electricity):

$$\text{Fuel for exported electricity (not eligible for EBRS)} = Q \times \left(1 - \frac{ES}{TPO}\right)$$

Where:

QHO = Qualified Heat output (metered heat)

TFI = Total Fuel input (total Gas consumed)

TPO = Total power output (total generated electricity + any mechanical power)

Q = Fuel for power output (Electricity generated)

ES = Electricity used on site

$\eta_{h,ref}$ = Reference boiler efficiency (81%), based on GCV



Energy Bill Relief Scheme: for non-domestic customers

- The government will provide a discount on your gas and electricity unit prices.
- To calculate your discount, the difference between estimated **wholesale** portion of the unit price you would be paying this winter and the baseline '**government supported price**
- For all non-domestic energy users in Great Britain this "Government Supported Price" has been set at:
 - £211/MWh for electricity
 - £75/MWh for gas
- Wholesale costs in England, Scotland and Wales for this winter are currently expected to be around:
 - £600/MWh for electricity
 - £180/MWh for gas

Subject to a 'maximum discount' (£345/MWh for electricity and £91/MWh for gas).
<https://www.gov.uk/guidance/energy-bill-relief-scheme-help-for-businesses-and-other>

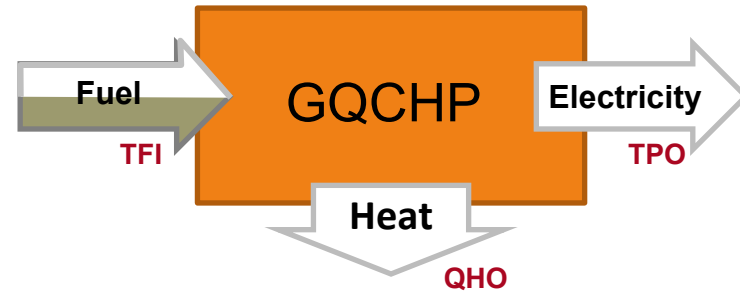


Example Of Certified CHP



TFI	-	110 GWh
TPO	-	37 GWh
QHO	-	35 GWh

10% of electricity exported



1- Gas for QHO (metered useful heat):

$$\text{Fuel for Heat} = \left(\frac{\text{QHO}}{81\%} \right) = 35 / 0.81 = 43.21 \text{ GWh}$$

2- Gas input referable to electricity production:

$$Q = \left[\text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) \right]$$

$$\begin{aligned} \text{Fuel for electricity, } Q &= \text{TFI} - \left(\frac{\text{QHO}}{81\%} \right) \\ &= 110 - 43.21 \\ &= 66.79 \text{ GWh} = 60.72\% \end{aligned}$$

3- Gas for exported Electricity:

$$R = Q \times \left[1 - \left(\frac{\text{ES}}{\text{TPO}} \right) \right]$$

$$R = 66.79 \times \left\{ 1 - \left(\frac{37 \times 0.9}{37} \right) \right\}$$

$$R = 6.68 \text{ GWh}$$

$$R/\text{TFI} = 6.68/110 = \underline{6.1\%}$$

This means 93.9% of the consumed Gas (TFI) qualifies for EBRS, worth about £4.7 million based on £91/MWh for 6 months



Example 2: Partial GQCHP >2MWe

Fuel input referable to electricity production:

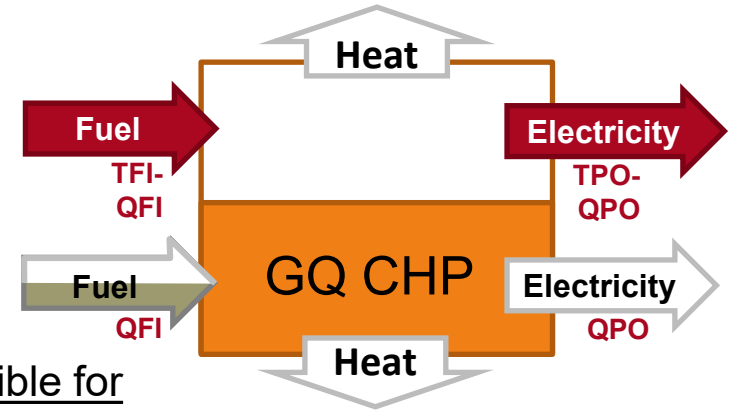
$$Q = \left[TFI - \left(\frac{QHO}{81\%} \right) \right] \times \left[1 - \left(\frac{MO}{TPO} \right) \right]$$

TPC	-	7.2 MWe
TFI	-	57 GWh
TPO	-	9.5 GWh
QHO	-	21 GWh
η_p	-	16.6% ✗
QI	-	73.97 ✗
QFI	-	48 GWh
QPO	-	5.8 GWh

All QPO used on site the rest is exported

$$\text{Fuel for electricity, } Q = 57 - \left(\frac{21}{81\%} \right)$$

$$= 31 \text{ GWh} = \underline{54.4\% \text{ of TFI}}$$



Fuel not eligible for

$$R = Q \times \left[1 - \left(\frac{ES}{TPO - MO} \right) \right]$$

$$R = 31 \times \left\{ 1 - \left(\frac{5.8}{9.5 - 0} \right) \right\}$$

$$R = 12.1 \text{ GWh}$$

$$R/TFI = 12.1/57 = 21.2\%$$

This means 78.8% of TFI is qualifies for EBRS worth in the order of **£2.6 million** based on discount of **£91/MWh** for gas for 6 months



FEEDBACK

Feedback Questionnaire Relating to CHPQA Seminars and Workshops 2022

We would appreciate a few minutes of your time to complete this questionnaire. Please tick the boxes that relate to your views (☑). By completing the form, you are giving consent for this information to be used by BEIS and CHPQA to understand and seek to improve this event.

1. You/Your Company

Name Job Title

Organisation

Date(s) of event(s) attended

2. What were your main objectives in attending this event?

To find out about CHPQA as you are considering applying

To find out about developments in CHPQA for your next submission

To find out how to obtain the financial incentives available through CHPQA certification

Other (please state):

3. Were your objectives met?

Yes No

If not, please explain why

4. The Presentations - How useful were they?

	Very Useful	Useful	Somewhat Useful	Not at all Useful
Module 1:				
CHPQA - Principles and procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CHPQA Electronic submissions - What's involved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CHPQA Metering Requirements, Uncertainty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Module 2:				
Review of incentives/policies – Conventional CHP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Review of incentives/policies – Renewable CHP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feedback on Gas CHP policy review and call for evidence - BEIS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any additional comments?

.....

5. Are you registered with the CHPQA programme?

Yes No

If not, please explain your interest in CHPQA

6. Are there any other topics you would like covered in future events?

.....



To summarise...

To obtain any of the fiscal benefits available for GQCHP the Scheme must be certified by CHPQA and must have a valid Certificate

Submission any time from 1 Jan 2023

Thank You