



# Incentives & Policies Relevant to Conventional GQCHP

Mahmoud Abu-Ebid  
CHPQA Programme Director

December 2020



# 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~~
- 1 ROC/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



# Climate Change Levy (CCL)

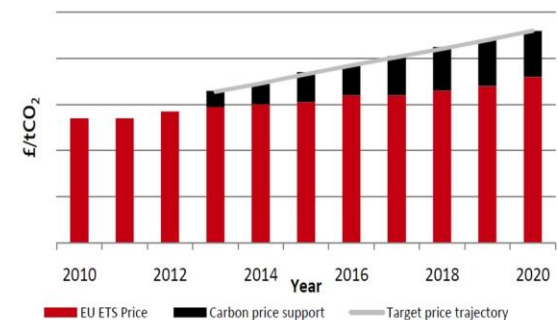
- The main rates of CCL are charged on energy supplied to end users
- Carbon Price Support (CPS) rates are paid by consumers. When a deemed taxable self-supply of fossil fuels is made for use in electricity generation.



# 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).
- Effective from 1 April 2015, the exemption was extended to 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

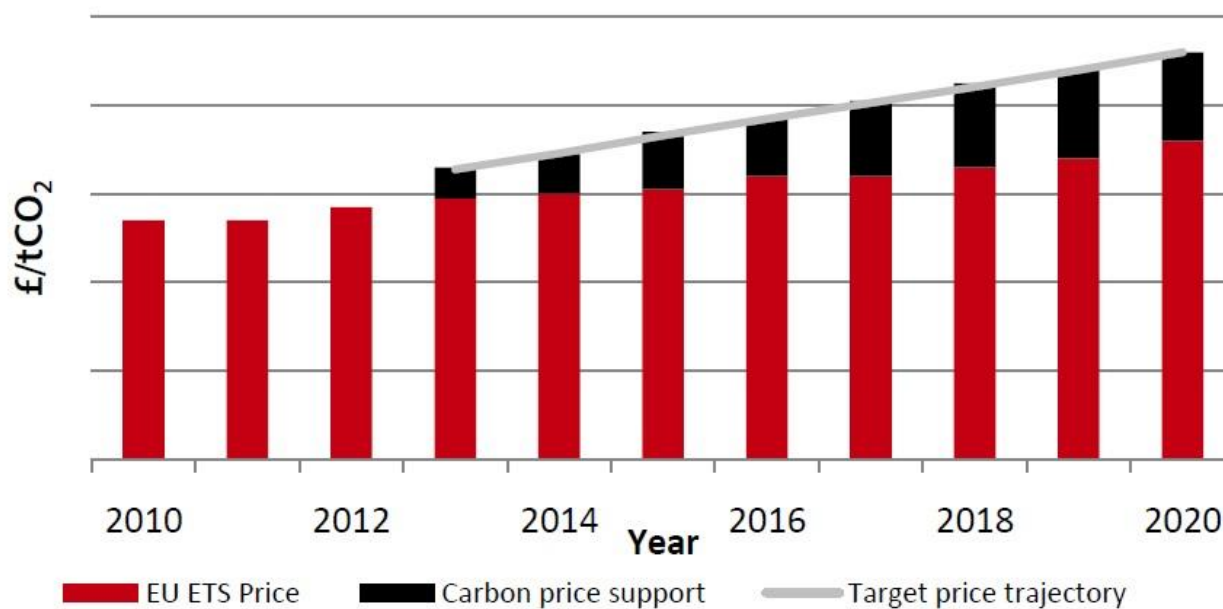


Source: HM Treasury, 2010



# Background

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



Source: HM Treasury, 2010



## Main rates of CCL

Taxable commodity	Rate from 1 April 2016	Rate from 1 April 2017	Rate from 1 April 2018	Rate from 1 April 2019
Electricity (£/KWh)	0.00559	0.00568	0.00583	<b>0.00847</b>
Natural gas (£/KWh)	0.00195	0.00198	0.00203	<b>0.00339</b>
LPG (£/kg)	0.01251	0.01272	0.01304	<b>0.02175</b>
Any other taxable commodity (£/kg)	0.01526	0.01551	0.01591	<b>0.02653</b>

67%  
increase

45%  
increase

- The new rates of CCL apply from 1 April 2019
- Increased by 67% for N. Gas and 45% for Electricity
- This is likely to have a positive impact on operating CHP exempt from CCL
- Also likely to improve the Business case for new CHP installations



# Climate Change Levy-Budget 2018

- In 2018 Budget report HMT stated... *The Government's commitment to rebalance the main rates paid for gas and electricity, so planning*
  - To **lower the electricity** rate in 2020-21 and 2021-22
  - To **increase the N. Gas** rate in 2020-21 and 2021-22 so it reaches 60% of the electricity main rate by 2021-22 (Electricity =£7.75/MWh and N. Gas =£4.65/MWh)
- Other fuels, such as coal, will continue to align with the gas rate.
- The discount rates for sectors with **Climate Change Agreements (CCA)** have changed (up from 90% to 93% for Electricity and from 65% to 78% for fuel) to reflect the change in CCL main rates.





## Main rates of CCL

Taxable commodity	Rate from 1 April 2017	Rate from 1 April 2018	Rate from 1 April 2019	Rate from 1 April 2020	Rate from 1 April 2021
Electricity (£/KWh)	0.00568	0.00583	0.00847	<b>0.00811</b>	<b>0.00775</b>
Natural gas (£/KWh)	0.00198	0.00203	0.00339	<b>0.00406</b>	<b>0.00465</b>
LPG (£/kg)	0.01272	0.01304	0.02175	<b>0.02175</b>	<b>0.02175</b>
Any other taxable commodity (£/kg)	0.01551	0.01591	0.02653	<b>0.03174</b>	<b>0.03640</b>

4.3% decrease

4.4% decrease

19.8% increase

14.5% increase

- The new rates of CCL apply from 1 April 2020
- CCL on Gas Increased by 20% in 2020 and 14.5% in 2021
- CCL on Elec Decrease by 4.3% in 2020 and 4.4% in 2021
- Now CCL on Gas=60% of CCL on Elec



# CPS Rates of CCL

Capped  
until 2021

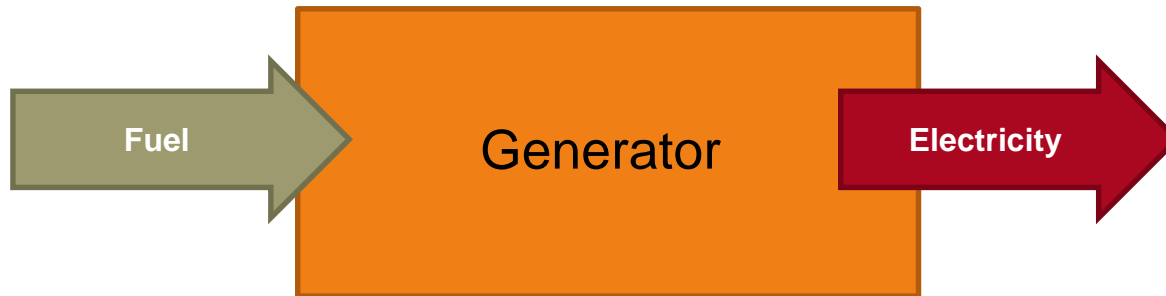
Commodity	Units	1 April 2015 – 31 March 2016	1 April 2016 – 31 March 2021
Natural Gas	£/kWh	0.00334	0.00331
LPG	£/kg	0.05307	0.05280
Coal	£/GJ	1.56860	1.54790
Fuel Oil	£/litre	0.05730	0.05711
Gas Oil	£/litre	0.04990	0.04916

Equivalent  
to £0.0095  
/KWh of  
electricity

➤ The CPS rates do not apply in Northern Ireland



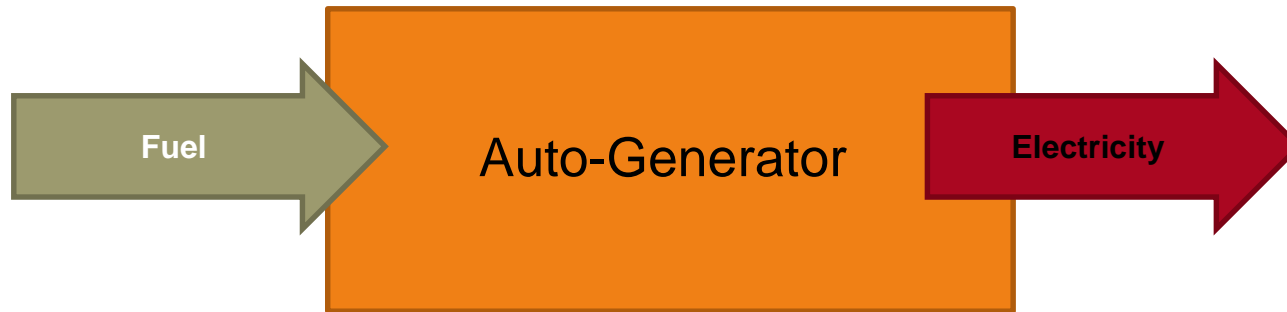
# Power Stations



- 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.



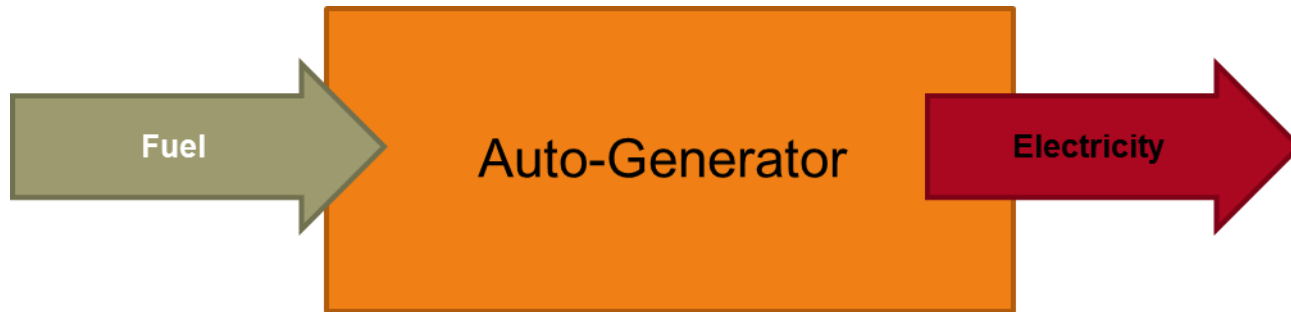
## Auto-generators $< 2\text{MW}_e$



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



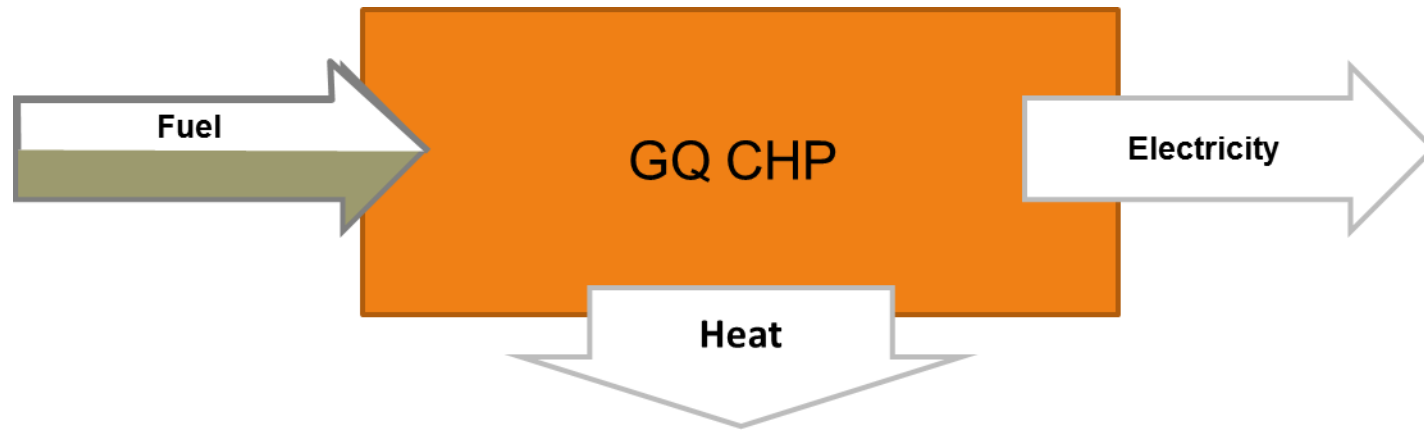
## Auto-generators $\geq 2\text{MW}_e$



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



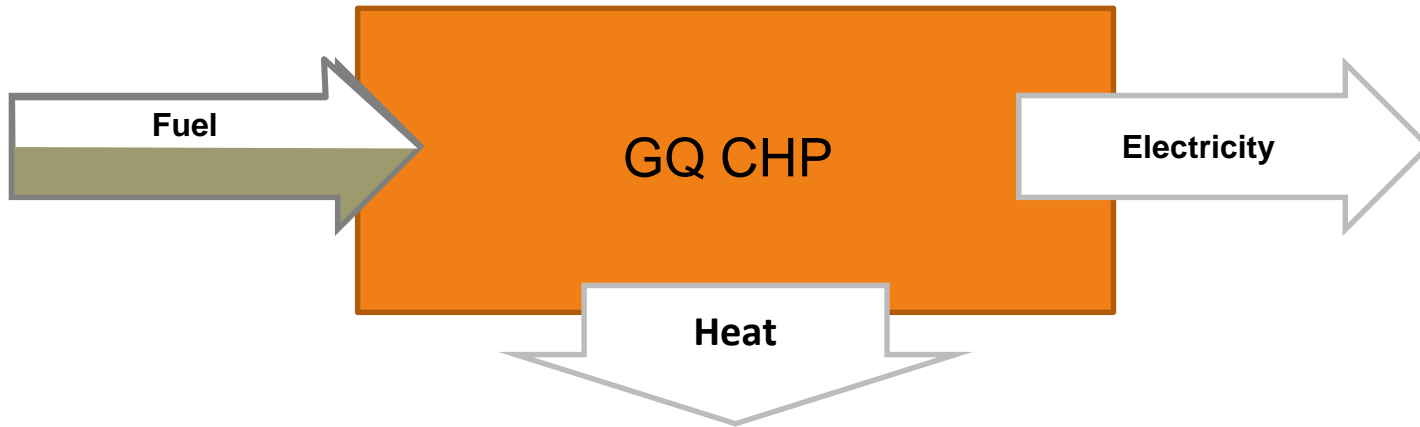
## GQCHP – Fully Qualified with Capacity $\leq 2\text{MW}_e$



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



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

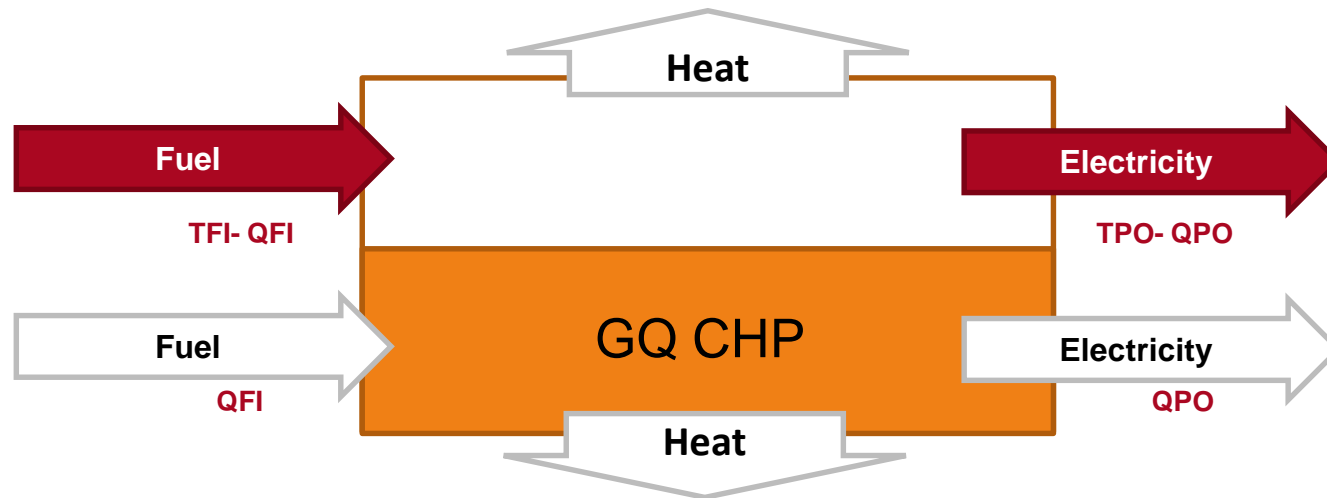


- Fuel input exempt from CCL
- Electricity output (Direct supply) exempt from CCL
- Fuel for heat (QHO) not liable to CPS rates
- Fuel input referable to electricity generation used on site not liable to CPS rates (from April 2015)

**In this case No CCL or CPS Liability**



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

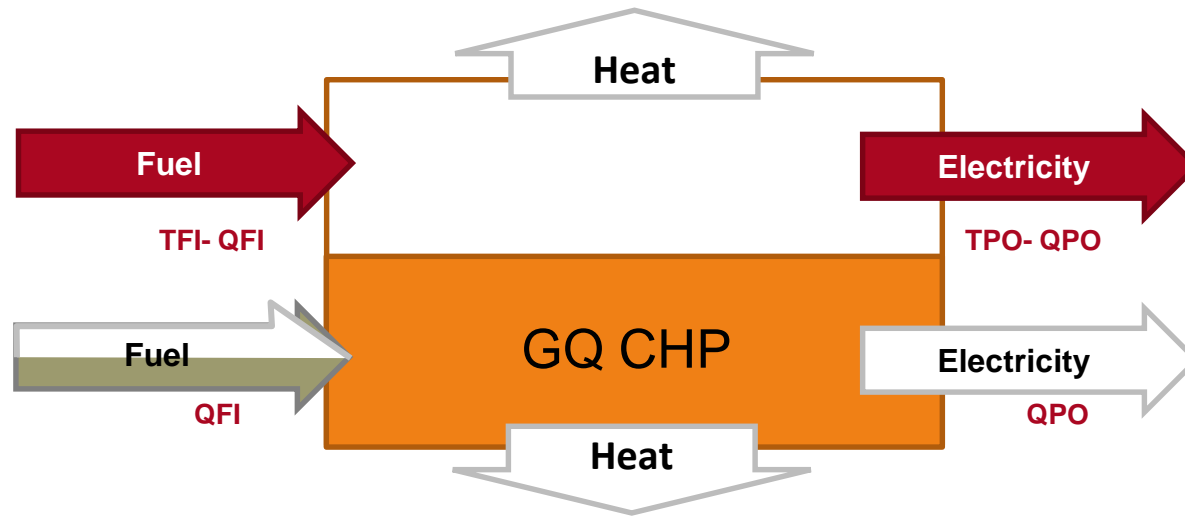


- Fuel input exempt from CPS
- Qualifying fuel input (QFI) exempt from CCL
- Qualifying power output (QPO) exempt from CCL where directly supplied





## 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 MW <sub>e</sub>
and the Qualifying Power Capacity is:	50,000 MW <sub>e</sub>
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 MW <sub>e</sub>
and the Qualifying Power Output is:	89,049 MW <sub>e</sub>
9. The fuel supply reference(s) (e.g. TRANSCO/MFR 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

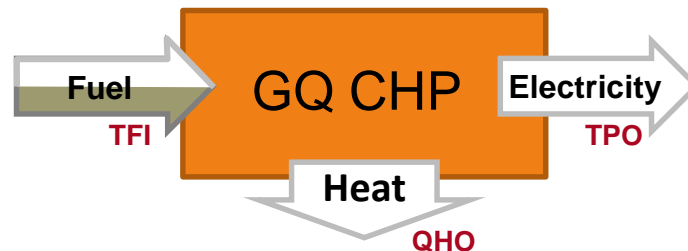
$\eta_{h,ref}$  = Reference boiler efficiency (81%)



# Example 1: Full GQCHP >2MW<sub>e</sub>

Fuel input referable to electricity production:

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



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

Fuel Subject to CPS:

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

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

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

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

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

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

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

CCL  
exemption  
worth **£5.7M**,  
based on  
**£4.65/MWh**

This means 94.2% of TFI is exempt from CPS,  
worth in the order of **£3.9M pa**, based on CPS  
rate of £3.34/MWh of Gas



# Example 2: Partial GQCHP >2MWe

Fuel input referable to electricity production:

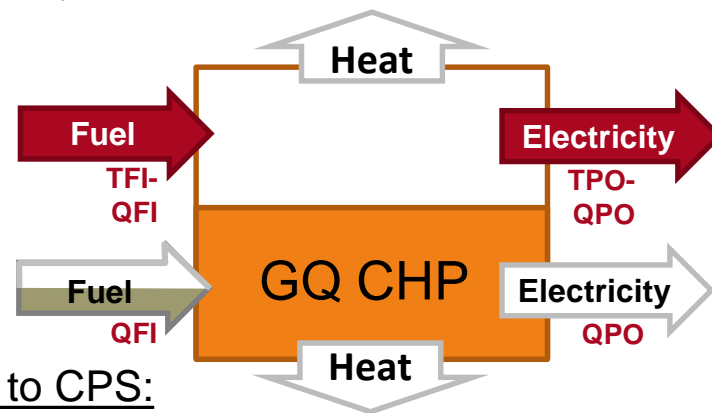
$$Q = \left[ TFI - \left( \frac{QHO}{81\%} \right) \right] \times \left[ 1 - \left( \frac{MO}{TPO} \right) \right]$$

TPC	-	7.2 MWe
TFI	-	57 GWh
TPO	-	9.5 GWh
QHO	-	21 GWh
$\eta_p$	-	16.6% ✗
QI	-	73.97 ✗
<b>QFI</b>	-	<b>48 GWh</b>
<b>QPO</b>	-	<b>5.8 GWh</b>
All QPO used on site		

CCL exemption worth £223K, based on £4.65/MWh

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

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



Fuel Subject to CPS:

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

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

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

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

This means 78.8% of TFI is exempt from CPS, worth in the order of £150k pa based on CPS rate of £3.34/MWh of gas



# Total CCL and CPS exemption value (2019)

- CCL exemption on Qualifying fuel and Electricity is worth in the order £230 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 £410 million/year**



## Quality Certification for an existing CHP Scheme

CHPQA Certificate No: P01234567

Scheme: **Energy Centre**  
**ENERGY LTD**  
**DUNNALONG ROAD**  
**TOWN**  
**COUNTRYSHIRE**  
**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:  | <b>3.605</b> MWe   |
| and the <b>Qualifying Power Capacity</b> is:  | <b>3.605</b> MWe   |
| 2. The threshold Power Efficiency criterion for this Scheme is:   | <b>20</b> %        |
| and the <b>Power Efficiency</b> of this Scheme is:  | <b>24.25</b> %     |
| 3. The Qualifying Heat Output from this Scheme is:  | <b>55,046</b> MWh  |
| and the <b>Heat Efficiency</b> of this Scheme is:   | <b>43.77</b> %     |
| 4. The threshold Quality Index criterion for under <b>Annual Operation</b> is:  | <b>100</b>         |
| and the <b>Quality Index</b> of this Scheme is:   | <b>97.62</b>       |
| 5. The Total Fuel Input to this Scheme is:  | <b>125,183</b> MWh |
| and the <b>Qualifying Fuel Input</b> is:  | <b>125,183</b> MWh |
| 6. The Percentage of <b>Fuel Input Referable to Electricity Generation</b> is:  | <b>45.71</b> %     |
| 7. The Percentage of <b>Conventional Fuel</b> is:   | <b>100.00</b> %    |
| 8. The Total Power Output from this Scheme is:  | <b>30,353</b> MWh  |
| and the <b>Qualifying Power Output</b> is:  | <b>28,896</b> 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: |                    |
| <b>[01234567890]</b>  |                    |

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.



# £1bn Public Sector Decarbonisation Scheme (PSDS)

- In September 2020, a new funding stream is being managed by Salix, the Public Sector Decarbonisation Scheme (PSDS).
- Salix Finance provides loans to the Public Sector to install energy efficient technologies.
- The PSDS provides grants for energy efficiency and heat decarbonisation in the public sector and central government.

<https://www.salixfinance.co.uk/PSDS>





# 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 2021**

**Thank You**