



Overview and Interactions of Fiscal Benefits for GQCHP

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Fiscal Measures and GQCHP

- CCL Exemption (on fuel input and electricity output where directly supplied)
- Business Rates Exemption (embedded schemes)
- Hydrocarbon Oil Duty Relief
- Enhanced Capital Allowance Clarification only
- 1ROC/MWh of electricity from EfW CHP, 2 ROCs/MWh from dedicated biomass CHP (April 2009)
- Carbon Price Support (CPS) exemption
- 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

Fiscal benefits to GQCHP

- > ECA: Clarification only
- CCL: 'Main' and 'CPS' rates
- > RO, RHI and CfD,





CHP Enhanced Capital Allowance (ECA)





CHP Enhanced Capital Allowance (ECA) Eligibility

When to apply:

- Application to the CHPQA programme should be made once certain detailed information is available for the Self-Assessment, when final design details are available
- Claimants will not need to have the Certificate before buying equipment but will need it by the time their tax return is submitted for the year in which expenditure is incurred.

> How to apply:

 Completing F3 form and make sure you tick the correct box for requesting an Energy Efficiency certificate.





CHP Qualifying Equipment for ECA

- All equipment within the CHP Scheme boundary.
- > Details are given in the CHP Technology list

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/583663/CHPQA_ECA_Note.pdf

- For EfW CHP some additional equipment outside the CHP boundary can also qualify – only if using SRF
- the maximum portion of Qualifying Expenditure eligible for ECA is based CHPqpc/CHPtpc)





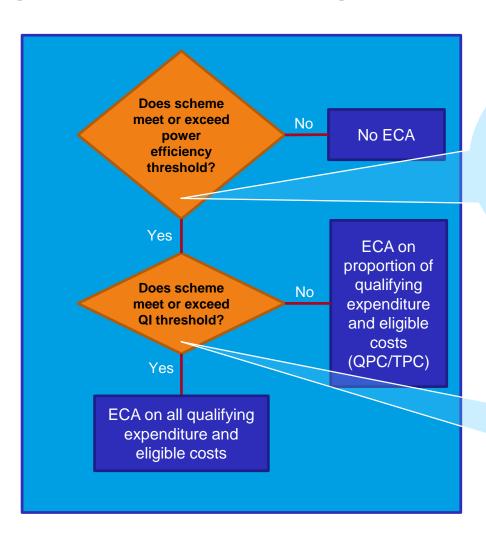
CHP Enhanced Capital Allowance (ECA) Eligibility

- CHP scheme operators need to demonstrate that they comply with the following eligibility criteria:
 - Main intended business to provide heat and power for <u>clearly identified users on site or to known third</u> <u>parties</u>, and not to generate power for sale to or via unspecified third parties.
 - Not available for companies <u>whose core business is</u> <u>electricity production</u>.





Calculation of ECA value to a CHP Scheme



Power Efficiency Threshold

- 20% for conventional fuels
- 10% for wholly biomass or solid/liquid waste
- Between 20% and 10% for partly biomass or solid/liquid waste (dependent on fuel mix)

Quality Index (QI) Threshold

• ≥105 under MaxHeat conditions





ECA: Non-compliance

Certificate will be revoked:

- ▶ If the <u>original design has changed</u> after certification and a new EE certificate has not been obtained from CHPQA, or
- If no heat customer(s) present at time of commissioning (i.e. not operating as CHP)

If certificate is revoked, applicant will have to contact HMRC to return any claimed benefits





CHP Enhanced Capital Allowance (ECA) Eligibility

Number of schemes received EE Certificate

These schemes shouldn't claim ECA if claiming RHI.

Fuel Type	2016	2017	2018	2019
Conventional	62	33	27	26
Renewable	13	5	4	
Grand Total	75	38	31	26



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
- GQCHP is exempt from the main rates of CCL on fuel and on electricity <u>used on site or directly supplied</u>
- ➤ To stabilise price signals to investors in low carbon technologies the Government introduced the Carbon Price Support (CPS) in 2013,
- CPS applied to <u>fuel for electricity generation only</u>.
- GQCHP certified by CHPQA is exempt from CPS rates on the fuel that is <u>referable to Qualifying Heat Output (QHO)</u>.
- ➤ Effective from 1 April 2015, the exemption was extended to <u>fuel</u> <u>referable to Qualifying Power Output (QPO)</u> used on-site or supplied under exemption from a supplier licence.





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	0.00847
Natural gas (£/KWh)	0.00195	0.00198	0.00203	0.00339
LPG (£/kg)	0.01251	0.01272	0.01304	0.02175
Any other taxable commodity (£/kg)	0.01526	0.01551	0.01591	0.02653



CPS Rates of CCL

	/
Capped until 2020	•
7	



Equivalent	
to £0.0095	
/KWh of	
electricity	

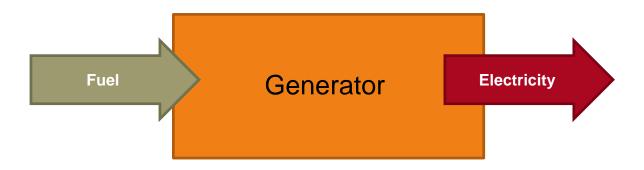
Commodity	Units	1 April 2015-31 March 2016	1 April 1016-31 March 2019
Natural Gas	£/kWh	0.00334	0.00331
LPG	£/kg	0.05307	0.05280
Coal	£/GJ	1.56860	1.54790
Fuel Oil	£/litre	0.05730	0.05711
Gas Oil	£/litre	0.04990	0.04916

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 < 2MW_e



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





Auto-generators ≥2MW_e

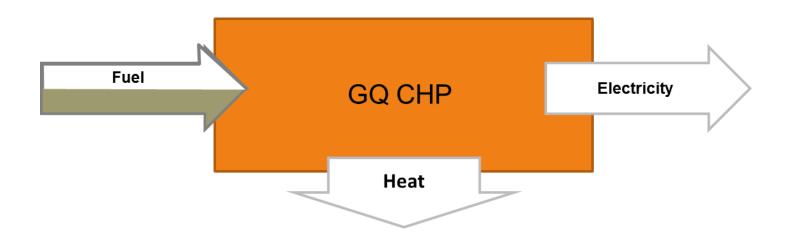


- Fuel input subject to 100% CPS rates
- No CCL on fuel input
- All electricity output subject to 100% CCL same as grid electricity





GQCHP – Fully Qualified with Capacity ≤2MW_e

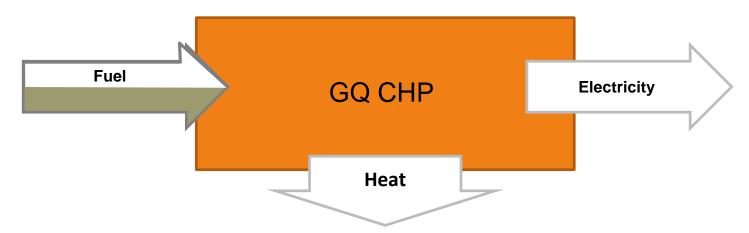


- Fuel input exempt from CPS
- Fuel input exempt from CCL
- Electricity output (Direct Supply) exempt from CCL





GQCHP – Fully Qualified with Capacity >2MW_e



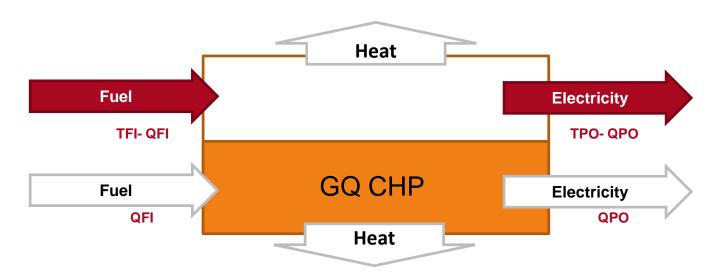
- Fuel input exempt from CCL
- Electricity output (Direct supply) exempt from CCL
- Fuel for heat (QHO) not liable to CPS rates
- Fuel input referable to electricity generation used on site not liable to CPS rates (from April 2015)

In this case No CCL or CPS Liability





GQCHP – Partially Qualified with Capacity ≤2MW_e

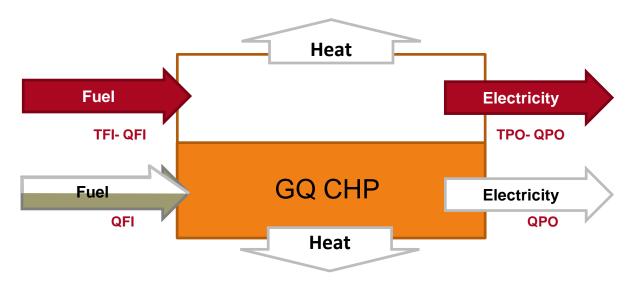


- Fuel input exempt from CPS
- Qualifying fuel input (QFI) exempt from CCL
- Qualifying power output (QPO) exempt from CCL where directly supplied





GQCHP – Partially Qualifying with Capacity >2MW_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 <u>used on site</u> 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

CEP QA



Department for Business, Energy & Industrial Strategy

Ouality Certification for an existing CHP Scheme

CHPQA (The Percentage of Fuel Input Referable to Electricity Generation is:

56.22 %

Scheme: CHPOA SITE Z GEMINI BUILDING HARWELL OXII 0QR

The Percentage of Conventional Fuel is:

1.31 %

CHPQA Scheme Reference No: 8760 Z

This is to Certify that the Self-Assessm ent 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 threehold Quality Index criterion for under Annual Operation is:	100
	and the Quality Index of this Scheme is:	97.75
5.	The Total Fuel Imput 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

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 Rusiness, 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 2000 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.





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

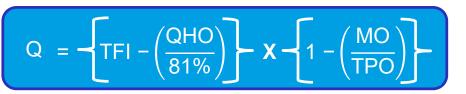
 $\eta_{h,ref} = Reference boiler efficiency (81\%)$





Example 1: Full GQCHP > 2MW_e

Fuel input referable to electricity production:





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

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

= 715 GWh = 58% of TFI

Fuel Subject to CPS:

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

CCL exemption worth £2.5M, based on £2.03/MWh ✓

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

R = 71.5 GWh

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

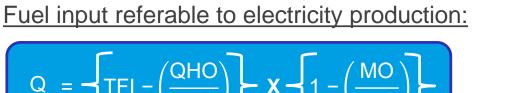
This means 94.2% of TFI is exempt from CPS, worth in the order of £3.9M pa, based on CPS rate of £3.34/MWh of Gas

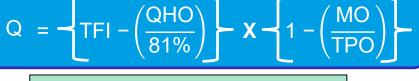




Example 2: Partial GQCHP > 2MWe

£2.03/MWh





TPC - 7.2 MWe
TFI - 57 GWh

TPO - 9.5 GWh

QHO - 21 GWh

η_p - 16.6% **×**

QI - 73.97 ×

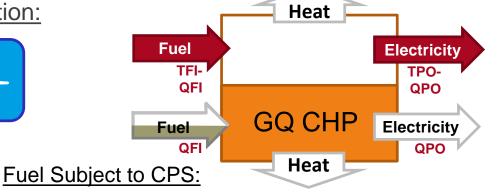
QFI - 48 GWh~

QPO - 5.8 GWh

All QPO used on site

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

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



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

CCL exemption worth £98K, based on $R = 31 \times \left\{1 - \left(\frac{5.8}{9.5 - 0}\right)\right\}$

R/TFI = 12.1/57 = <u>21.2%</u>

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

- CCL exemption on Qualifying fuel and Electricity is worth in the order £180 million per year
- CPS exemption on Fuel for heat is worth in the order £120 million per year.
- ➤ The value of CPS exemption on Fuel for **QPO used on site** is the order of £80 million.

Total value of CCL and CPS exemption for CHP schemes certified by CHPQA is the order of £380 million/year





Fiscal Measures for Renewable CHP, covering

- RO
- CfD
- RHI





Renewables Obligation (RO)





The Renewable Obligation (RO) and Banding

- First introduced in 2009 and gave:
- "Banding" concerns the provision of varying levels of support (ROCs/MWh) for different types of generation technology
- New banding regime introduced in April 2013 to run through to March 2017
- NOW CLOSED TO NEW CAPACITY
- But accredited schemes under the RO will need to continue with CHPQA certification to end of the policy period in 2037.





Banding Regime 2016/17

Generation Type	CHP Qualifying Power Output [ROCs/MWh]	Non-CHP Power Output [ROCs/MWh]
Co-firing of regular bioliquid with CHP	1.0	0.5
Low-range co-firing of relevant energy crops with CHP	1.5	1.0
Dedicated biomass with CHP*	1.8	1.4
High-range co-firing with CHP	1.4	0.9
Mid-range co-firing with CHP	1.1	0.6
Low-range co-firing with CHP	1.0	0.5
Station/unit conversion with CHP†	1.5	1.0
Energy from Waste with CHP	1.0	0.0

Ref: The Renewables Obligation Order 2015

These are only available where support under the RHI is not available

^{*} Only available in Northern Ireland as NI RHI has been closed.

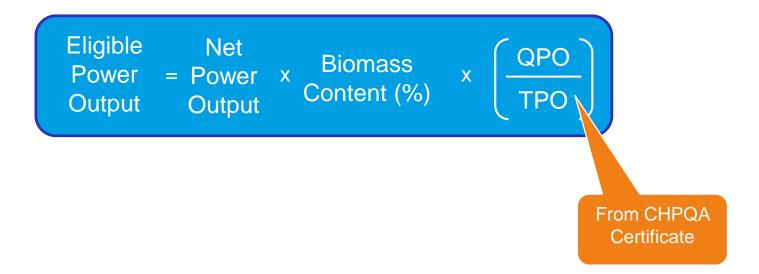
[†] Where conversion has been from co-firing CHP





ROC Eligibility

For GQCHP, the power output eligible for the award of ROCs is determined using:



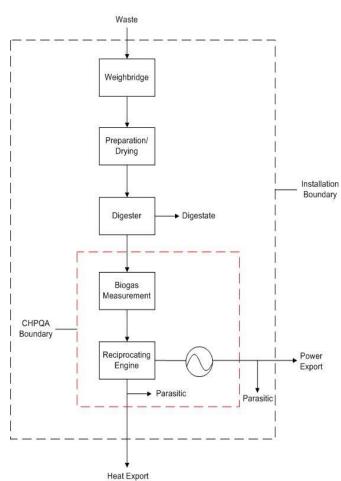




ROC Eligibility – QI Definitions

Advanced Conversion Technologies (ACTs)

- Gasification
- Pyrolysis
- Anaerobic Digestion
- For biogas fired schemes, the fuel input boundary should normally be drawn at the gas inlet to RE
- Should use the Biogas QI formula







Contract for Difference (CfD)





Contracts for Difference (CfD)

- ➤ Regulations for CfDs came into force in Great Britain on 1/8/2014
- CfDs replace the RO for all new projects from 1/4/2017
- Generators are paid the difference between the <u>'strike price</u>' and the <u>'reference price</u>' (average market price for electricity in GB market). <u>If 'reference' exceeds 'strike' price, generator must pay difference.</u>
- CfDs are awarded via allocation rounds, which government can tailor to specific technologies
 - ☐ First allocation round was in October 2014: two EfW CHP stations were awarded CfDs
 - Second allocation round was announced in April 2017. Technologies include:
 - Advanced Conversion technologies (with or without CHP)
 - Anaerobic Digestion (with or without CHP) 1 Scheme Awarded
 - Dedicated Biomass with CHP 2 Schemes Awarded
 - ☐ Third allocation round was in Sep 2019 CHP not included





Contracts for Difference (CfD)

Round 2, Successful applications:

- > 2 Dedicated biomass CHP, total capacity 85.64 MWe
- ➤ 1 ACT CHP, capacity of 0.05 MWe

Technology	Capacity (MWe)	Strike Price (£/MWh)	2021/22 Administrative Strike Price (£/MWh)
Advanced Conversion Technologies (with or without CHP)	0.05	74.75	125
Dedicated Biomass CHP	85.0	74.75	115
Dedicated Biomass CHP	0.64	74.75	115





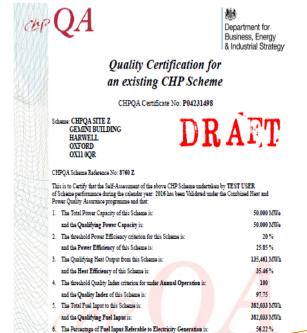
CHP-specific CfD Eligibility

- Dedicated Biomass and Energy from Waste generators are only supported if they are 'with CHP'.
- Provision for other technologies to be 'with CHP' (ACT, AD and geothermal)
- Support is paid only on the proportion of metered electrical output assessed by CHPQA to be QPO.
- Uses the CHP Qualifying Multiplier, CHPQM = QPO/TPO.
- Provide evidence of intended "useful heat" load in F3 submission.
- ➤ For 'with CHP' technologies, the generator must maintain annual CHPQA certification (full or partial) including **GN44 certification** for the duration of the CfD.
- ➤ Biomass (not EfW) schemes seeking CfDs will also be able to apply for the RHI. This is, however, set for each CfD round.



Dual CHPQA Certification







Information for CfD Eligibility

Department for

DRAFT

Business, Energy

& Industrial Strategy

1. The Total Power Capacity of this Scheme is:		50.000 MWe
2. 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:		35.46 %
4. The threshold Quality Index criterion for this	Scheme under Annual Operation is:	100.00
and the Quality Index of this Scheme is:		114.33
5. The Total Fuel Input to this Scheme is:		382,033 MWh
6. The Total Power Output from this Scheme is:		98,764 MWh
and the Qualifying Power Output is:		98,764 MWh
7. The CHP Qualifying Multiplier for this Scheme i	is:	1.00
8. The Technology Type for this Scheme is:	Pass-out condensing s	team turbine
9. The Main Fuel Type for this Scheme is:		Wood Fuels
10. The Percentage of Renewable Fuel is:		98.69 %

6. The Total Power Output from this Scheme is:

other unique ID descriptors) for this Scheme are:

and the Qualifying Power Output is:

7. The Percentage of Conventional Fuel is: 8. The Total Power Output from this Scheme is:

98,764 MWh

98,764 MWh

The first supply reference(s) (e.g. TRANSCO/MPR gas meter reference nos. and/or

1.31 %

98.764 MWh 89,049 MWh

For the purposes of the Climate Change Lavy (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

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

For the numbers of the Climate Change Levy (General) (Amendment) Regulations 2003 only, the OPO limit shall be actual to the actual outrest of the





Renewable Heat Incentive (RHI)





CHP in RHI

- The specific tariff for solid biomass GQCHP of 4.42p/kWh
- Schemes need to be certified by CHPQA in order to benefit from CHP tariff
- EfW plants are only eligible for the biomass boiler tariff for the biomass percentage contained in the waste
- No special CHP RHI tariffs for EfW or other fuels
- RHI eligible heat from CHP is not the same as QHO
- CHP scheme boundaries for CHPQA certification are not always the same as for RHI eligible installation
- Only heat produced via the engine/turbine can qualify for the CHP tariff
- This needs to be metered separately





The RHI (Amendment) Regulations 2016

- ➤ Effective from the 1 August 2016, the government introduced a threshold of 20% power efficiency below which the heat qualifying for the RHI CHP tariff would be scaled back proportionately.
 - For example, if the power efficiency was 15%, the amount of heat that could qualify for the CHP tariff would be reduced by (20-15)/20x 100%=25%.
 This means 25% boiler heat and 75% CHP heat.
- Introduced to address concerns that a number of Schemes with low power efficiencies and high heat to power ratios (25:1 up to 90:1) were receiving disproportionate support where significant heat was simply passing through the prime-mover
- ➤ However: given feedback from the industry, the government has reduced the threshold to 10% power efficiency from 1 Jan 2017 for a transitional period to allow for Consultation to be carried out.





The RHI Recent Consultation

- ➤ In 2017 the Government published a consultation "The Renewable Heat Incentive: Support for Biomass Combined Heat and Power, to gather additional views on power efficiency threshold issue.
 - Response to Consultation was published in September 2017.
 - ☐ This stated that "<u>The Government has decided to implement a 20%</u> power efficiency threshold requirement....."
 - □ This also stated "Participants with an application effective date between 1 Aug 2016 and the date on which the regulations containing the new 20% power efficiency requirements come into force will continue to have a 10% power efficiency requirement.





Tariff rates for RHI accreditation after 1 April 2018

Tariff name	Eligible sizes	Tariff, p/kWh	
Small commercial biomass	< 200 kWth	Tier 1 Tier 2	3.05 2.14
Medium commercial biomass	200 kWth to ≤ 1MWth	Tier 1 Tier 2	3.05 2.14
Large commercial biomass	>1MWth	Tier 1 Tier 2	3.05 2.14
Solid biomass CHP systems	All capacities	n/a	4.42

Tier 1 rate paid for the initial amount of heat generated each 12 month period equal to the amount of heat that would be generated by the installation running at its installation capacity for 3,066 hours (35% load factor). Remainder of heat generated in the 12 months paid at Tier 2 rate.









ECA & Stat

Quality Certification for an existing CHP Scheme

CHPQA Certificate No: P01234567

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

CHPOA 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:

 The Total Power Capacity of this Scheme is: and the Qualifying Power Capacity is:

The threshold Power Efficiency criterion for this Scheme is: and the Power Efficiency of this Scheme is:

 The Qualifying Heat Output from this Scheme is: and the Heat Efficiency of this Scheme is:

 The threshold Quality Index criterion for under Annual Operation is: and the Quality Index of this Scheme is:

The Total Fuel Input to this Scheme is: and the Qualifying Fuel Input is:

6. The Percentage of Fuel Input Referable to Electricity Generation is:

The Percentage of Conventional Fuel is:

The Total Power Output from this Scheme is:

and the Qualifying Power Output is:

 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 & RHI 3.605 3,605 MWe **CPS** 24.25 % 55,046 MWh 43.77 % 100 Full, Partial 97.62 125,183 MWh **CCL** 125,183 MW 45.71% **CPS** 100,00% 30,353 MWh 28,896 MW 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.





Interactions

- 1- Biomass CHP can obtain ROC uplift and ECA or
- 2- Standard ROC (no uplift) and RHI but no ECA and
- 3- From 2017 can only apply for CfD & RHI but no ECA





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 2020

Thank You