chp**QA**

Department for Business, Energy & Industrial Strategy

Quality Assurance for Combined Heat & Power
Form F4 – Self-Assessment for Existing Schemes

NOTES:

- This Form will enable you to determine on a Self-Assessment basis what proportion of your CHP Scheme, described in Form F2, is 'Good Quality' CHP, based on annual operational data
- You need to resubmit this Form annually (January of each year)
- Form F2 needs to be kept up-to-date and must relate to the CHP Scheme applying for Certification in this Form
- The most up to date version of the CHPQA Standard and Guidance Notes (GN) must be used, found on https://www.gov.uk/guidance/combined-heat-power-quality-assurance-programme. GN4 has been written to help you complete this Form
- Information provided on this Form will be stored electronically and treated in the strictest confidence. Only the government or its agents will use it for the purpose of the CHPQA programme, including collection and collation of national statistics, and the administration and development of government schemes, including the Renewables Obligation, the Renewable Heat Incentive and Contracts for Difference.
- For the purposes of providing statistics to Eurostat, additional information is required on the design performance of your Scheme. Please provide this information on the addendum and return with this form
- The Department for Business, Energy & Industrial Strategy maintain a publicly available database of CHP Schemes (https://www.gov.uk/guidance/combined-heat-and-power). To help inform regulatory and policy developments in support of CHP, this database should be as complete as possible. If you are willing for the CHPQA programme to provide this information, please complete and sign the addendum and return it with this form.

This Form should be completed and returned to *The Administrator, CHPQA programme, The Gemini Building, Fermi Avenue, Didcot OX11 0QR*

CONTENT OF FORM F4:

Part 1	Scheme Identification and Declaration	➢ See GN4
Part 2	Scheme Energy Inputs and Outputs	➢ See GN14, 15 & 16
Part 3	Criteria 1: Power Efficiency	➢ See GN10, 24 & 25
Part 4	Criteria 2: Quality Index	➢ See GN10, 24 & 25
Part 5	Calculation of CHP_{QPO} and CHP_{QPC}	➢ See GN10, 26 & 27
Part 6	Exports of Electricity and Heat	➢ See GN15 & 16
Part 7	Using CHPQA to Claim Renewable Obligation Certificates (ROCs) or Qualify for Contracts for Difference (CfD) support	➢ See GN44
Part 8	ROCs and CFD CHP_{QPO} calculation (Annual Operation)	
Part 9	Secretary of State (CHP) Exemption Certificate Application	➢ See GN41

GUIDELINES:

- All calculations in Parts 3, 4 and 5 should be completed to 2 decimal places
- Within this Form reference is made to Steam Turbines as ST

Part 1 Scheme Identification and Declaration

1. SCHEME IDENTIFICATION

Site Name	Site ref.
Company Name	Scheme ref.*

*The Programme Administrator will provide you with this Scheme ref. once Form F2 is processed

2. DECLARATION & ATTACHMENTS

- I confirm that I am the nominated Responsible Person (RP) for the operation of the Scheme described in Form F2
- I confirm that I have supplied all necessary information, as required by the Administrator under the CHPQA programme, based on the CHP Scheme described in Form F2 and that all information provided in this form is correct and conforms to the requirements set out in the CHPQA Standard
- I undertake to inform the CHPQA programme Administrator should any of the above details change

Signature _____ Date _____

Name _____ **(block capitals)**

Position _____ **(block capitals)**

List of attachments

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.

Part 2 Scheme Energy Inputs and Outputs

3. PERIOD OF OPERATION FOR SELF-ASSESSMENT

The energy inputs and outputs declared in Sections 4, 5 and 6 are based on _____ hours of operation of the CHP Scheme over a period of _____ months. ➤ See GN14

4. ENERGY INPUTS

Record below the total fuel inputs to the CHP Scheme for all fuels consumed by the Scheme over the reporting period. Each meter reading should be identified by its meter tag number given on Form F2 or by calculation number. ➤ See GN12.3

All fuel energy inputs should be based on gross calorific value (higher calorific value) and WITHOUT adjustment for excessive uncertainty. Imported heat is to be included as a fuel input. ➤ See GN14.6 and 14.7 and GN29

For Schemes with TPC<2MWe with no heat only boilers, it is acceptable to provide Annual Totals only

Meter Tag or Calc No						
Fuel Category						
Fuel Type						
User Tag						
CHPQA Calcs or Information only?						
Month : Year	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)
JAN :						
FEB :						
MAR :						
APR :						
MAY :						
JUN :						
JUL :						
AUG :						
SEP :						
OCT :						
NOV :						
DEC :						
Annual Totals						
Fraction of TFI						

TOTAL FUEL AND ENERGY INPUTS = CHP$_{TFI}$ = _____ MWh in Self-Assessment Period

*Please estimate the percentage of CHP$_{TFI}$ used in the prime mover (e.g. engine, gas turbine) _____%

and in the boilers (supplementary firing, auxiliary and top up boilers) _____% ➢ see GN 14.13

Note: If additional sheets have been used, enter **CHP$_{TFI}$** on the first sheet only. *For statistical purposes, the fuel used for the prime mover and for boilers needs to be separated. This data will be used only for preparation of statistics on CHP in the UK and does not form part of the self assessment. Schemes based on steam turbine CHP do not need to complete these figures.

5.   POWER OUTPUTS (GENERATED, EXPORTED OR IMPORTED)

- Record the power generated and power exported by the CHP Scheme (power is gross generated i.e. measured at the generator terminals) **and WITHOUT adjustment for excessive uncertainty** ➢ See GN15
- Record the power imported by the site via the distribution network (note if a site includes more than one Scheme the power imported should be the same for each Scheme ➢ See GN15.11
- Each meter reading should be identified by meter tag number given on Form F2 or, where determined by indirect methods, by calculation number ➢ See GN12
- Mechanical power should be included and reported as equivalent electrical output (multiplying factor 1.05) identified by calculation number ➢ See GN15.4
- For Schemes with TPC<2MWe with no heat only boilers, it is acceptable to provide Annual Totals only.

Meter Tag or Calc. No.						
Generated, Exported or Imported						
User Tag						
CHPQA Calcs or Information only?						
Month : Year	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)
JAN :						
FEB :						
MAR :						
APR :						
MAY :						
JUN :						
JUL :						
AUG :						
SEP :						
OCT :						
NOV :						
DEC :						
Annual Total						

TOTAL POWER GENERATED = CHP$_{TPO}$ = _____ MWh in Self-Assessment Period

of which, TOTAL POWER EXPORTED[1] = _____ MWh in Self-Assessment Period

plus, TOTAL POWER IMPORTED = _____ MWh in Self-Assessment Period

Note: If additional sheets have been used enter CHP$_{TPO}$ on the first sheet only. **(1)** If your Scheme exports power please see Part 6.

6.   HEAT OUTPUTS FOR ALL SCHEMES   ➤ See GN16

- Record below the useful heat supplied by the CHP Scheme **WITHOUT adjustment for excessive uncertainties**, and identify where the heat is supplied (either to site process or exported)
- If your CHP Scheme is Residential Community Heating, provide 12 months data and identify the heating period upon which your Self-Assessment is based   ➤ See GN10.20
- Each meter reading should be identified by meter tag number given on Form F2 or, where determined by indirect methods, by calculation number   ➤ See GN12.3
- Details of heat exports should be identified in the appropriate section below
- For Schemes with TPC<2MWe with no heat only boilers, it is acceptable to provide the Annual Total only (**based on actual heat monitoring figures)**.

Meter Tag or Calc. No.						
Supplied to site or Exported						
User Tag						
CHPQA Calcs or Information only?						
Month : Year	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)	Totals (MWh)
JAN :						
FEB :						
MAR :						
APR :						
MAY :						
JUN :						
JUL :						
AUG :						
SEP :						
OCT :						
NOV :						
DEC :						
Annual Totals						

CHP QUALIFYING HEAT OUTPUT (CHP$_{QHO}$) = _____ MWh in Self-Assessment Period

of which, TOTAL HEAT EXPORTED (CHP$_{THE}$) = _____ MWh in Self-Assessment Period

*Please estimate the percentage of **CHP$_{QHO}$** from the prime mover (e.g. engine, gas turbine) _____% and from the boilers (supplementary firing, auxiliary and top up boilers) _____% ➢ see GN 16.19

Note: If additional sheets have been used enter CHP$_{QHO}$ on the first sheet only. For statistical purposes, the heat output from the prime mover and from boilers needs to be separated. This data will be used only for preparation of statistics on CHP in the UK and does not form part of the self-assessment. NB Schemes based on steam turbine CHP do not need to complete these figures.

Now proceed to Part 3

Part 3 Criteria 1: Power Efficiency

7. CHP SCHEME EFFICIENCY ➤ See GN24.2

Calculate your CHP Scheme's Power and Heat Efficiencies, using energies declared in Part 2 and incorporating, where appropriate, the Uncertainty Adjustments Factors derived in accordance with GN19.

[report efficiency % to 2 decimal places]

$$\eta_{power} = 100 \times (CHP_{TPO} \times F_{OP}) / (CHP_{TFI} \times F_{OI})$$
$$= 100 \times (\underline{\hspace{1cm}} \times \underline{\hspace{0.5cm}}) / (\underline{\hspace{1cm}} \times \underline{\hspace{0.5cm}}) = \underline{\hspace{1cm}} \%$$
(See note)

$$\eta_{heat} = 100 \times (CHP_{QHO} \times F_{OH}) / (CHP_{TFI} \times F_{OI})$$
$$= 100 \times (\underline{\hspace{1cm}} \times \underline{\hspace{0.5cm}}) / (\underline{\hspace{1cm}} \times \underline{\hspace{0.5cm}}) = \underline{\hspace{1cm}} \%$$
(See note)

Note: Efficiencies are commonly quoted in terms of % figures, as calculated above, but for all of the calculations that follow, efficiencies must be expressed as decimal fractions, e.g. 40.25% = 0.4025

F_{OP}, F_{OH} and F_{OI}: Derived Uncertainty Adjustment Factors for power, heat and fuel

8. POWER EFFICIENCY THRESHOLD ➤ See GN24.8

A Scheme must achieve the relevant Power Efficiency Threshold for all fuel used to be considered 'Good Quality' CHP.

The Power Efficiency threshold for your Scheme is **20%**

Did your Scheme achieve the Power Efficiency threshold?   (tick box)   YES ☐   NO ☐

If YES then   ➤ Proceed to Part 4
If NO then   ➤ Complete Section 9

9. QUALIFYING FUEL INPUT (CHP$_{QFI}$)   ➤ See GN25

CHP$_{QFI}$ is the proportion of fuel input that qualifies as an input to 'Good Quality' CHP.

Calculate the proportion of fuel that qualifies as an input to 'Good Quality' CHP.

$$CHP_{QFI} = \frac{CHP_{TFI} \text{ (MWh)} \times \eta_{power}}{\text{Power Efficiency Threshold}} = \underline{\hspace{3cm}}$$

CHP$_{QFI}$ = Qualifying Fuel Input = _____ MWh

➤ Proceed to Part 4

Part 4 Criteria 2 Quality Index (QI)

10. QUALITY INDEX DEFINITION ➢ See CHPQA Standard (Issues 5 and 6)

For Schemes that have been certified previously and **prior to 1 January 2016** on the basis of an F3 submission or prior to **1 January 2017** on the basis of an F4 submission, the QI formulae in Table 1 of **Issue 5** of the CHPQA Standard will continue to be used for certification in 2017.

For those Schemes that have not previously been certified under CHPQA or were certified **for the first time between 1 January and 31 December 2016** on the basis of an F3 submission, the QI formulae in Table 1 of **Issue 6** of the CHPQA Standard must be used for certification in 2017.

Complete the following table to determine your weighted average QI factors (X and Y) using the fuel fractions calculated in Part 2 section 4. Please refer to CHPQA Standard (Issue 6) if further clarification is required.

Fuel type	Fraction of Total (Fn)	Factors		Weighted factors	
		X	Y	Fn x X	Fn x Y
		Sum		X =	Y =

11. QUALITY INDEX VALUE ➢ See GN24.11 & 24.12

Calculate your QI using the definition derived in Section 10 and efficiencies defined in Section 7.

$$QI = (\quad X \quad x \quad \eta_{power}) + (\quad Y \quad x \quad \eta_{heat}) = (\underline{\quad} x \underline{\quad}) + (\underline{\quad} x \underline{\quad})$$

QI = Quality Index = _____

12. QUALITY INDEX THRESHOLD   ➤ See GN24.13

CHP Schemes must achieve the relevant QI Threshold to be considered 'Good Quality' CHP.

What is the QI Threshold for your Scheme? (either 95 for Schemes in Initial Operation or 100 for Schemes in Long Term Annual Operation)		
Did your Scheme achieve the QI Threshold? (tick box)	YES ☐	NO ☐

If YES then   ➤ Proceed to Part 6   If NO then   ➤ Proceed to Part 5

Part 5 Calculation of CHP_{QPO} and CHP_{QPC}

NOTES:

- CHP_{QPO} calculation is based on fuels used, power generated and heat supplied in MWh based on annual data submitted in Part 2   ➤ See GN26

- CHP_{QPC} calculation is based on fuels used, power generated and heat supplied in MW based on the maximum heat capacity under normal operating conditions   ➤ See GN27
    - ➤ Schemes without condensing steam turbine(s) complete Sections 13 & 14
    - ➤ Schemes with condensing steam turbine(s) complete Sections 15 & 16

- Whilst for Schemes with TPC<2MWe the scale back in TPC (& TPO) applies, the TPC calculation, when appropriate, will be done by the CHPQA Administrator on your behalf and the corrected CHP_{QPC} given on your CHPQA Certificate.

13   CHP QUALIFYING POWER OUTPUT - WITH NO CONDENSING ST.

If a CHP Scheme achieves a QI less than the Threshold, the CHP_{QPO} is calculated. The CHP_{QPO} is the proportion of the power generated that qualifies as an output from 'Good Quality' CHP.

➤ See GN26

Step 1 - Calculate the heat efficiency required to achieve the QI Threshold (QI_{TH})

$$\text{New } \eta_{heat} = \frac{(QI_{TH} - (X \times \eta_{power}))}{Y} = \underline{\hspace{2cm}} = \underline{\hspace{1cm}} \%$$

Step 2 - Determine the equivalent heat to power ratio

$$\text{Equivalent Heat to Power ratio} = \text{New } \eta_{heat} / \eta_{power} = \underline{\hspace{1cm}} / \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Step 3 - Determine the $CHP_{QPO(calculated)}$

$$CHP_{QPO(calculated)} = CHP_{QHO} \times F_{OH} \quad / \text{ Equivalent Heat to Power ratio}$$

$$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \quad / \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{MWhe}$$

$CHP_{QPO(calculated)}$ = Qualifying Power Output = _____ MWh$_e$

➤ **For Schemes with TPC <2 MWe only, now proceed to Part 6**

14. CHP QUALIFYING POWER CAPACITY - WITH NO CONDENSING ST.

Where the QI fails to meet the Threshold value based on annual data it is necessary to determine a new QI value which is based on operation at maximum heat output under normal operating conditions.   ➢ See GN27

Step 1 - Define Maximum Heat Output under Normal Operating Conditions (NOC)

The maximum heat output of the CHP Scheme under NOC (MaxHeat) is _____MW and we confirm that this output is achieved (or exceeded) for _____ hours/year.   ➢ See GN27.4

Step 2 - Define the Fuel Input and Power Outputs at MaxHeat conditions

At MaxHeat conditions the CHP Scheme's Power Output is: _____ MW$_e$

At MaxHeat conditions the CHP Scheme's Fuel Input is: _____ MW

Step 3 - Determine Power and Heat Efficiencies at MaxHeat conditions

[Report efficiencies % to 2 decimal places]

η_{power} = 100 x   Power Output at MaxHeat   / Total Fuel Inputs at MaxHeat

         = 100 x   _____   / _____   = * _____ %

η_{heat} = 100 x Heat Output at MaxHeat   / Total Fuel Inputs at MaxHeat

         = 100 x   _____   / _____   = _____ %

* Efficiencies: For the calculations that follow efficiencies must be expressed as decimal fractions, e.g. 40.25% = 0.4025

Step 4 - Determine QI at "MaxHeat" conditions (QI$_{MaxHeat}$)

Calculate your QI using the definition specified in Section 8 (unless the mix of fuels is different) and MaxHeat Efficiencies defined in Step 3 above. If the mix of fuels differs from the annual mean, calculate the appropriate QI$_{MaxHeat}$ definition on separate sheet.

QI$_{MaxHeat}$ = (X   x η_{power})   + (Y   x η_{heat})

QI$_{MaxHeat}$ = (_____   x _____)   + (_____   x _____)   = _____

Did your Scheme achieve the QI Threshold of 100? (tick box)   YES ☐   NO ☐

If YES then   ➢ **Proceed to Part 6**
If NO then   ➢ **Continue**

Step 5 - Calculate the heat efficiency required to achieve the QI Threshold of 100

New η_{heat} $= \dfrac{(QI_{TH} - (X \times \eta_{power}))}{Y}$ = — — — — — — — — —   = _____ %

Step 6 - Determine the equivalent Heat to Power ratio

Equivalent heat to power ratio = New η_{heat} / η_{power} = _____ / _____ = _____

Step 7 - Determine the CHP_{QPC}

CHP_{QPC} = MaxHeat / Equivalent Heat to Power ratio

= _____ / _____ = _____ MWe

CHP_{QPC} = Qualifying Power Capacity at MaxHeat = _____ MW$_e$

➢ **Now proceed to Part 6**

15. CHP QUALIFYING POWER OUTPUT - WITH CONDENSING ST.

If a CHP Scheme achieves a QI less than the Threshold, the CHP_{QPO} is calculated. The CHP_{QPO} is the proportion of the power generated that qualifies as an output from 'Good Quality' CHP. ➢ See GN26 & 28

Step 1 - Define Z ratio for the CHP Scheme

Wherever possible the Z ratio should be determined by plant trials. Only where this is not possible is it permitted to use a figure from Table GN28-1 in GN28. Complete only one of the two statements that follow:

A. *The Z ratio for the CHP Scheme, determined by plant trials, is* _____
   Test data and calculations are included as an Attachment.

B. *It is not possible to determine the Z ratio for the CHP Scheme by plant trials for the following reasons:*

   ………………………………………………………………………………………...

   ……………………………………………………………………………………………

   Therefore, the most appropriate value from Table GN28-1 in GN28 has been selected:

   Steam export pressure _____ *bar(a); Steam Turbine size* _____ *MWe; Selected Z ratio* _____

Step 2 - Calculate heat efficiency required to achieve the QI Threshold value

Change in η_{heat} $= 100 \times \dfrac{\text{Change in QI} *}{\left(Y - \dfrac{X}{Z\,ratio} \right)}$ $= 100 \times \text{————}$ $=$ _____ %

New η_{heat} $=$ Change in $\eta_{heat} + \eta_{heat}$ $=$ _____ $+$ _____ $=$ _____ %

* Change in QI = Threshold QI minus Actual QI

Step 3 - Determine the corresponding change in power efficiency

Change in η_{power} $=$ Change in η_{heat} / Z ratio $=$ _____ / _____ $=$ _____ %

New η_{power} $= \eta_{power} -$ Change in η_{power} $=$ _____ - _____ $=$ _____ %

Step 4 - Determine the equivalent Heat to Power ratio

Equivalent Heat to Power ratio $=$ New η_{heat} / New η_{power} $=$ _____ / _____ $=$ _____

Step 5 - Calculate the CHP_{QPO}

CHP_{QPO} $= CHP_{QHO} \times F_{OH}$ / Equivalent Heat to Power ratio

$=$ _____ x _____ / _____ $=$ _____ MWhe

CHP_{QPO} = Qualifying Power Output = _____ MWh$_e$

16. CHP QUALIFYING POWER CAPACITY - WITH CONDENSING ST.

Where the QI fails to meet the Threshold value based on annual data it is necessary to determine a new QI value which is based on operation at maximum heat output under normal operating conditions. ➤ See GN27

Step 1 - Define Maximum Heat Output under Normal Operating Conditions (NOC)

The Maximum Heat Output of the CHP Scheme under NOC (MaxHeat) is _____MW$_e$

and this output is achieved (or exceeded) for _____ hours/year. ➤ See GN27.4

Step 2 - Define the Fuel Input and Power Outputs at MaxHeat conditions

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At MaxHeat conditions the CHP Scheme's Power Output is: _____ MW$_e$

At MaxHeat conditions the CHP Scheme's Fuel Input is: _____ MW

Step 3 - Determine Power and Heat Efficiencies at MaxHeat conditions

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[Report efficiencies % to 2 decimal places]

η_{POWER} = 100 x Power Output at MaxHeat   / Total Fuel Inputs at MaxHeat

           = 100 x _____   / _____   = * _____ %

η_{HEAT} = 100 x Heat Output at MaxHeat   / Total Fuel Inputs at MaxHeat

           = 100 x _____   / _____   = _____ %

Efficiencies: For the calculations that follow efficiencies must be expressed as decimal fractions, e.g. 40.25% = 0.4025

Step 4 - Determine QI at MaxHeat conditions (QI$_{MaxHeat}$)

Calculate your QI using the definition specified in Section 10 (unless the mix of fuels is different) and MaxHeat efficiencies defined in Step 3 above. If the mix of fuels differs from the annual mean, calculate the appropriate QI$_{MaxHeat}$ definition on separate sheet.

QI$_{MaxHeat}$ = (X x η_{power})   + (Y x η_{heat})

QI$_{MaxHeat}$ = (_____   x _____)   + (_____x _____)   = _____

Did your Scheme achieve the QI Threshold of 100? (tick box)   YES ☐   NO ☐

If YES then   ➤ Proceed to Part 6
If NO then   ➤ Continue

Step 5 - Calculate heat efficiency required to achieve the QI threshold value

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Change in η_{heat} $= 100 \text{ x } \dfrac{\text{Change in QI} *}{\left(Y - \dfrac{X}{Z \text{ ratio}}\right)}$ = 100 x ————   = _____ %

New η_{heat} = Change in η_{heat} + η_{heat} = _____ + _____ = _____ %

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*Change in QI = Threshold QI minus (QI$_{MaxHeat}$)

Step 6 - Determine the corresponding change in power efficiency

Change in η_{power} = Change in η_{heat} / Z ratio = _____ / _____ = _____ %

New η_{power} = η_{power} - Change in η_{power} = _____ - _____ = _____ %

Step 7 - Determine the equivalent Heat to Power ratio

Equivalent Heat to Power ratio = New η_{heat} / New η_{power} = _____ / _____ = _____

Step 8 - Calculate the CHP$_{QPC}$

CHP$_{QPC}$ = MaxHeat / Equivalent Heat to Power ratio

= _____ / _____ = _____ MW$_e$

CHP$_{QPC}$ = Qualifying Power Capacity = _____ MW$_e$

➢ **Now proceed to Part 6**

Part 6 Exports of Electricity and Heat

17.   ELECTRICITY AND HEAT CUSTOMERS

Does your Scheme export Electricity (See GN15.10 to15.14)	YES ☐		NO ☐
Does your CHP Scheme export Heat (See GN16.5-16.7)	YES ☐		NO ☐

If YES to either of these then   ➢ **Complete your customers' details in the tables below**
If NO to both of these then   ➢ **Go to Section 2 (Page 2) and sign the declaration**

The details of non-residential heat customers including the amount of heat supplied to these customers **is** necessary for CHPQA Certification.

The details of non-residential electricity customers including the amount of electricity supplied to these customers is **not** necessary for CHPQA Certification, but can be required by the Secretary of State under the Electricity Act 1989 (S98).   ➢ See GN15.12.

Organisation Name		Sector (See GN12.1)	
Contact Name		Position held:	
Address			
Town			
County		Postcode:	
Telephone No.		Email:	
Annual Electricity supplied	_____ MWh		
Annual Net Heat supplied	_____ MWh		
For electricity sales is this company (tick where appropriate)			
• Part of the same qualifying group?	☐		
• Not part of the same qualifying group?	☐		
• An electricity supplier?	☐		

Organisation Name		Sector (See GN12.1)	
Contact Name		Position held:	
Address			
Town			
County		Postcode:	
Telephone No.		Email:	
Annual Electricity supplied	_____ MWh		
Annual Net Heat supplied	_____ MWh		
For electricity sales is this company (tick where appropriate)			
• Part of the same qualifying group?	☐		
• Not part of the same qualifying group?	☐		
• An electricity supplier?	☐		

If additional entries are required, please insert further tables or photocopy this sheet include as a numbered attachment.

➢ **Go to Section 2 (Page 2) and sign the declaration**

Part 7: Using CHPQA to Claim Renewable Obligation Certificates (ROCs) or Qualify for Contracts for Difference (CFD) support

18. STATEMENT OF INTENTION TO USE CHPQA TO CLAIM ROCS OR QUALIFY FOR CFD SUPPORT

If your Scheme uses renewable fuels and you wish to use CHPQA to claim ROCs or qualify for CfDs you will need to obtain a GN44 CHPQA certificate.

If you wish to use CHPQA to claim ROCs or qualify for Contracts for Difference support please tick the "Yes" in the appropriate box below, if not then please tick "No" and go straight to Part 9 of the submission.

Do you wish to use CHPQA to claim ROCs? (tick box)	YES ☐	NO ☐
Do you wish to use CHPQA to qualify for CfD support? (tick box)	YES ☐	NO ☐

19. QI DEFINITIONS

ROCs

For Schemes that have been certified previously and **prior to 1 January 2016** on the basis of an F3 submission, or **prior to 1 January 2017** on the basis of an F4 submission, the QI formulae in Table 2 of **Issues 4 and 5** of Guidance Note 44 (GN44) will continue to be used for certification in 2017. (These formulae are also reproduced as Table A2 of GN44 Issue 6.)

However, the QI formulae in earlier issues of Guidance Note 44 and associated fuel categories will continue to apply to Schemes that were in operation or that can demonstrate they reached financial close, prior to 26 July 2012. These earlier QI formulae are reproduced as Table 3 of GN44 Issue 4 and as Table A1 of GN44 Issue 6.

For those Schemes that have not previously been certified under CHPQA or were certified for the first time between **1 January and 31 December 2016** on the basis of an F3 submission, the QI formulae in Table 2 of GN44 **Issue 6** must be used for certification/re-certification in 2017.

CFDs

Operators of Schemes intending to use CHPQA in connection with any 'with CHP' CFD entered into, or to be entered into, on or after the date of the publication of Guidance Note 44 Issue 6, i.e. 21 October 2016, should use the relevant QI formula in Table 2 of GN44 **Issue 6**, irrespective of whether the Scheme has previously been certified on the basis of any other QI formula.

Operators of Schemes for which a CFD contract was entered into prior to the publication of GN44 Issue 6 should use the relevant QI formula in Table 2 of GN44 **Issue 5** (reproduced as Table A2 of GN44 Issue 6), irrespective of the date of any previous or likely future CHPQA certification.

See GN44 Issue 6 for further information.

If your Scheme uses a mixture of fuels, you must calculate a weighted average QI definition using fuel fractions calculated in Part 2, section 4. Take the appropriate fuel X and Y factors for your Scheme directly from Table 2 or 3 from GN44 (v4/v5) and complete the table below.

Fuel type	Fraction of Total (Fn)	Factors		Weighted factors	
		X	Y	Fn x X	Fn x Y
			Sum X =		Y =

19. QUALITY INDEX VALUE ➢ See GN24.11 & 24.12

Calculate your QI using the definition derived in Section 29 and efficiencies defined in Section 7.

$$QI = (\ X\ \times\ \eta_{power}) + (\ Y\ \times\ \eta_{heat}) = (\ \underline{\quad}\ \times\ \underline{\quad}\ ) + (\ \underline{\quad}\ \times\ \underline{\quad}\ )$$

QI = Quality Index = _____

21. ROCS AND CFD QUALITY INDEX CRITERIA ➢ See GN44

CHP Schemes wishing to claim ROCs will be validated against a QI Threshold of 100 under Normal Operating Conditions. For ROC and CfD eligibility, a CHP Scheme is not required to meet any power efficiency threshold.

The QI Threshold Criteria for ROCs and CfD is 100 (under LTAO)		
Did your Scheme achieve a QI of 100? (tick box)	YES ☐	NO ☐

If YES then ➢ Proceed to End, If NO then ➢ Proceed to Part 8

Part 8: ROCs AND CFD CHP$_{QPO}$ calculation (Annual Operation)

NOTES:

- If a CHP Scheme achieves a QI less than the Threshold of 100, the CHP$_{QPO}$ is calculated. The CHP$_{QPO}$ is the proportion of the power generated that qualifies as an output from 'Good Quality' CHP.
  See GN26 & 28
- CHPQPO calculation is based on fuels used, power generated and heat supplied in MWh based on annual data submitted in Part 2. See GN26.

  ➢ Schemes without condensing steam turbine(s) complete Section 23.
  ➢ Schemes with condensing steam turbine(s) complete Section 24

22. CHP QUALIFYING POWER OUTPUT - WITH NO CONDENSING STEAM TURBINE.

If a CHP Scheme achieves a QI less than the Threshold, the CHP$_{QPO}$ is calculated. The CHP$_{QPO}$ is the proportion of the power generated that qualifies as an output from 'Good Quality' CHP.   See GN26

Step 1 - Calculate the heat efficiency required to achieve the QI Threshold (QI $_{TH}$)

$$\text{New } \eta_{heat} \quad = \frac{(QI_{TH} - (X \times \eta_{power}))}{Y} \quad = \frac{(100 - (\underline{\quad} \times \underline{\quad}))}{\underline{\quad}} \quad = \underline{\quad} \ \%$$

Step 2 - Determine the equivalent heat to power ratio

$$\text{Equivalent Heat to Power ratio} = \text{New } \eta_{heat} / \eta_{power} = \underline{\quad} / \underline{\quad} = \underline{\quad}$$

Step 3 - Determine the CHP$_{QPO}$.

$$CHP_{QPO} \quad = \quad CHP_{QHO} \quad / \text{ Equivalent Heat to Power ratio}$$

$$= \underline{\qquad\qquad} / \underline{\qquad\qquad} = \underline{\qquad\qquad} \text{ MWh}_e$$

CHP$_{QPO}$ = Qualifying Power Output = _____ MWh$_e$

23. CHP QUALIFYING POWER OUTPUT - WITH CONDENSING STEAM TURBINE.

Step 1 - Define Z ratio for the CHP Scheme.

From Table GN28-1 in Guidance Note GN28, select the most appropriate Z ratio for your Scheme. If actual Z ratio is known, this should be used. Complete the statement below:

Steam export pressure _____ bar(a); Steam Turbine size _____ MW$_e$; Selected Z ratio _____

Step 2 - Calculate heat efficiency required to achieve the QI Threshold value.

$$\text{Change in } \eta_{heat} = \frac{\text{Change in QI}^*}{\left(Y - \dfrac{X}{Z \text{ ratio}}\right)} = \frac{100 - \underline{\quad}}{\left(\underline{\quad} - \underline{\dfrac{\quad}{\quad}}\right)} = \underline{\quad}\ \%$$

$$\text{New } \eta_{heat} = \text{Change in } \eta_{heat} + \eta_{heat} = \underline{\quad} + \underline{\quad} = \underline{\quad}\ \%$$

* Change in QI = Threshold QI minus Actual QI

Step 3 - Determine the corresponding change in power efficiency.

$$\text{Change in } \eta_{power} = \text{Change in } \eta_{heat} / Z \text{ ratio} = \underline{\quad} / \underline{\quad} = \underline{\quad}\ \%$$

$$\text{New } \eta_{power} = \eta_{power} - \text{Change in } \eta_{power} = \underline{\quad} - \underline{\quad} = \underline{\quad}\ \%$$

Step 4 - Determine the equivalent Heat to Power ratio

$$\text{Equivalent Heat to Power ratio} = \text{New } \eta_{heat} / \text{New } \eta_{power} = \underline{\quad} / \underline{\quad} = \underline{\quad}$$

Step 5 - Calculate the CHP$_{QPO}$

$$\text{CHP}_{QPO} = \text{CHP}_{QHO} / \text{Equivalent Heat to Power ratio}$$

$$= \underline{\qquad\qquad} / \underline{\qquad\qquad} = \underline{\qquad\qquad} \text{ MWh}_e$$

CHP$_{QPO}$ = Qualifying Power Output = _____ MWh$_e$

Part 9: Secretary of State (CHP) Exemption Certificate Application

This section must be completed in order to obtain your Secretary of State (CHP) Exemption Certificate.

Please choose one of the options below (tick box).

1. Please maintain the validity of the Secretary of State (CHP) Exemption Certificate for this CHP Scheme. ☐
2. Please send me the Secretary of State (CHP) Exemption Certificate for this CHP Scheme. ☐
3. Please vary the Secretary of State (CHP) Exemption Certificate for this CHP Scheme.
   - It was previously certified as being partly exempt and now subsequently satisfies the conditions for full exemption, or ☐
   - Its efficiency percentage now falls below or rises above the prescribed threshold efficiency percentage. ☐
4. A Secretary of State (CHP) Exemption Certificate is not required ☐

Your SoS certificate will be raised on the CHPQA system and will then be available via your Responsible Person's system login, and located under the 'Certificates' tab.

ADDENDUM– PERMISSION TO PROVIDE DATA

1.   SCHEME IDENTIFICATION

Site Name	Site ref.
Company Name	Scheme ref.

REQUEST FOR ADDITIONAL INFORMATION TO PREPARE STATISTICS FOR EUROSTAT

Please state the design power efficiency of the primary element of your CHP Scheme (excluding Auxiliary Boilers)

The design power efficiency is --------------%

Please give the design heat recovery capacity of the primary element of your CHP Scheme (excluding Auxiliary Boilers)

The design heat recovery capacity is ---------------kW

PERMISSION TO PROVIDE DATA FOR PUBLICATION

The Department for Business, Energy & Industrial Strategy (BEIS) maintains a publicly available database of CHP Schemes (https://www.gov.uk/guidance/combined-heat-and-power). To help inform regulatory and policy developments in support of CHP, this database should be as complete as possible. Are you willing for the CHPQA programme to provide the following data from the F2 or F2(s) and F1 forms to BEIS to be placed on this database **and thus freely available to the public?**

Please tick this box if you agree for the data to be provided to BEIS   YES   ☐

The data for the BEIS public database would be
- Site name and address (Form F1)
- Company name and address (Form F1)
- Economic Sector (Form F2 or F2(s) 2.1)
- Status of Scheme (Form F2 or F2(s) 3.1)
- Manufacturer, model/type and year commissioned for prime mover(s) (Form F2 or F2(s) 4)
- CHP Total Power Capacity, Max Heat and Total Power Capacity under Max Heat conditions (Form F2 or F2(s), 6.1, 6.2, 6.3)

I confirm that I am the nominated Responsible Person for the operation of the Scheme

Signature   _____   **Date**   _____

Name   _____   **(block capitals)**