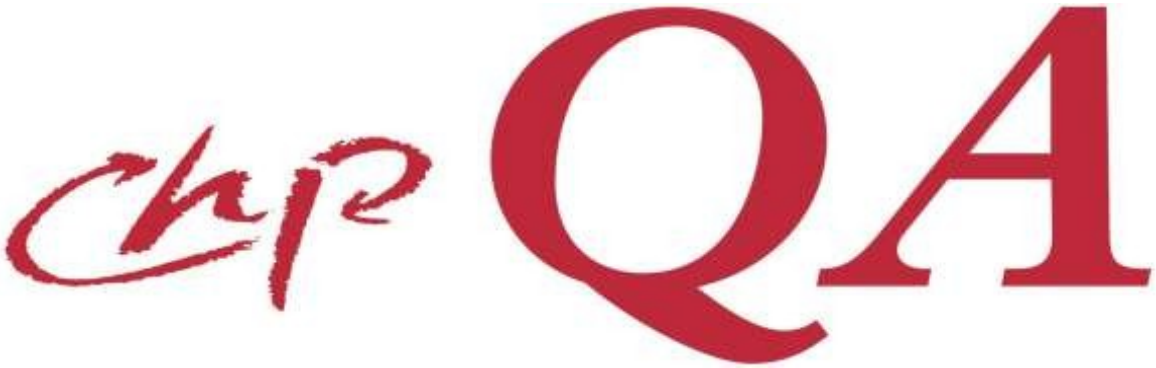

Quality Assurance for Combined Heat and Power

GUIDANCE NOTE 44

Use of CHPQA to obtain Renewable Obligation Certificates for Electricity generated by Biomass, Bioliquid and Waste fueled CHP and for the purpose of qualifying for Contracts for Difference support for Biomass and Energy from Waste CHP

Issue 5 v2

September 2014 (revised February 2026)

Prepared by the Department of Energy and Climate Change, in consultation with other Government Departments, as well as the Scottish Executive, the Welsh Government and the Northern Ireland Department of Enterprise, Trade and Investment.

GUIDANCE NOTE 44

Scope

GN 44.1

One of the aims of the CHPQA programme is to ensure that entitlements to fiscal and other benefits are commensurate with, and incentivise, the energy efficient performance of CHP Schemes. Therefore, measures specifically designed to support the electrical output from renewable CHP Schemes may include requirements for a CHPQA Guidance Note 44 (GN44) Certificate.

However, it must be emphasised that the CHPQA GN44 certificate is an additional CHPQA certificate based on separate QI formulae from those used to access other benefits available to GQCHP.

The purpose of this Guidance Note is to enable operators of biomass and waste-fueled CHP Schemes to:

- Understand the role of the CHPQA GN44 Certificate in accessing support measures for the electrical output of renewable CHP
- Interpret eligibility for renewables obligation certificates (ROCs)
- Determine the Qualifying Power Output (QPO) if their biomass or waste-fueled scheme fails the Quality Index (QI) threshold when using the QI formulae shown in GN44.

Issue 5 of GN44 applies GN44 for the purposes of

- Determining QPO for the purposes of Contracts for Difference (CfDs)
- Implementation of the CfD investor safeguard for biomass CHP.

Following a December 2012 Government consultation (and January 2013 supplementary questions) that reviewed the qualification criteria for renewable CHP Schemes (the 'CHPQA Review'), the QI formulae used for the purposes of obtaining a CHPQA GN44 certificate were updated and published in CHPQA GN44 Issue 4. These QI formulae are shown in GN44.13 (Table 2) together with the associated revised fuel type categories (Table 1).

For the purposes of ROC (but not CfD) eligibility, the old GN44 QI formulae and fuel categories in version 2 of GN44 will continue to apply to all schemes that were in operation, or can demonstrate they reached financial close, prior to 26 July 2012.

The original QI formulae are shown in GN44.20 (Table 3) which also contains the associated fuel categories.

The following changes were also implemented in GN44 Issue 4:

- A safeguard provision to ensure that new renewable CHP Schemes are guaranteed a QI of 100 for their CHPQA GN44 certificate if they meet specified minimum heat efficiency, overall efficiency and primary energy saving criteria even if they do not achieve a QI of 100 based on the X and Y values in Table 2. A new scheme specific QI formula will be developed for such schemes by recalculating the X coefficient in the QI formulae as set out in GN44.17.

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- Lowering the required Quality Index for certain new schemes which supply heat primarily through a Heating/Cooling Network to a Quality Index of 95 for the first 5 years of operation, to support the evolution of such networks.

Transitional Provisions

Issue 4 of GN44 applied from 1 January 2014. However, since CHPQA certification for operational schemes is based on scheme performance over the previous calendar year, Issue 2 is being used for the 2014 certification round based on schemes' performance in the 2013 calendar year. Issue 4 will continue to apply for certification of CHP Schemes accredited to the Renewables Obligation. Issue 5 of Guidance Note 44 will be used for the 2015 certification round (from 1 January 2015) for CHP Schemes seeking or receiving support via Contracts for Difference.

For schemes seeking certification on the basis of an F3 design submission during the 2014 calendar year the version of GN44 used will be the Issue referenced in the current version of the Renewables Obligation Order, as amended, at the date certification is issued. The amended Renewables Obligation Order incorporating the reference to Issue 4 of GN44 came into force on 1 April 2014.

Renewables Obligation

GN 44.2

The Renewables Obligation (RO) places a mandatory requirement on electricity suppliers to submit a specified number of ROCs each year in respect of each megawatt hour of electricity they supply to UK customers. ROCs are issued in respect of the generation of electricity from eligible renewable sources.

Since the introduction of banding in April 2009, the level of support (ROCs/MWh) available for the generation of electricity from eligible renewable sources has varied depending on a number of factors such as the method of generation, the fuel used and the date on which the station was accredited under the RO.

GN 44.3

The detailed rules for support levels under the RO are set out in the Renewables Obligation Orders. In general terms the level of support for renewable electricity generated by Good Quality CHP is (**for stations accrediting under the RO before 1 April 2015**):

- Energy from Waste with CHP - 1 ROC/MWh
- Dedicated biomass with CHP - 2 ROCs/MWh
- Co-firing of biomass with CHP - between 0.8 ROCs/MWh and 1.5 ROCs/MWh depending on a number of factors such as the proportion of biomass, the date of generation and type of fuel (e.g. bioliquid or energy crop)
- Biomass conversions with CHP - 1.5 ROCs/MWh

In order to demonstrate Good Quality CHP the scheme must hold a CHPQA GN44 certificate.

Electricity generated by Good Quality CHP using anaerobic digestion, landfill gas, sewage gas or advanced fuels (gasification or pyrolysis) may also be eligible for support under the RO but these would receive the same level of support (ROCs/MWh) as

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generating stations without CHP. Therefore, in these cases there is no requirement under the RO to demonstrate Good Quality CHP.

In the case of dedicated biomass, co-firing of biomass and biomass conversions, the RO also supports the generation of renewable electricity by stations without CHP, but at a lower level of support. This lower level of support is also applied to CHP stations which do not hold a CHPQA GN44 certificate and will be applied where solid biomass stations opt to receive the Renewable Heat Incentive on their heat output. This lower level of RO support will apply to all solid biomass CHP plant which are eligible for the RHI and which accredit to the RO after 31 March 2015.

Contracts for Difference

GN 44.4

A generator party to a CfD is paid the difference between the 'strike price' (a price for electricity reflecting the cost of investing in a particular low carbon technology) and the 'reference price' (a measure of the average market price for electricity in the GB market). In the event that the reference price exceeds the strike price the generator pays the difference to the Low Carbon Contracts Company. To be eligible for CHP specific CfDs (applicable to biomass and waste, but not bioliquid, fueled CHP), the operator will need to provide a CHPQA GN44 certificate, confirming that the scheme either partially or fully qualifies under the CHPQA criteria. The CfD regulations came into force in Great Britain on the 1 August 2014 and will replace the RO for all new projects from 1 April 2017. CHP Schemes in Northern Ireland are not eligible for a CfD before 2017.

Certification

GN 44.5

All CHP Schemes wishing to be recognised and supported under the RO and under CfDs as Good Quality CHP must obtain dual certification, as shown below:

Proposed schemes

Certificate (1) schemes that are at the final design stage should make a Design Submission to CHPQA for validation. Validation will be made against the Threshold Criteria with QI formulae as described in the CHPQA Standard, resulting in the issue of a 'Regular' CHPQA Certificate and enabling a Secretary of State (CHP) Exemption Certificate to be obtained (see CHPQA GN 41). This will also allow access to benefits such as CCL Exemption (refer to CHPQA GN41) if applicable.

Certificate (2) Those schemes wishing to use CHPQA to claim CfDs must state as such on the same Design Submission and their design data will be validated against the QI Threshold Criteria of 100 under "Normal Operating Conditions", using the appropriate QI formulae laid out in GN44, resulting in the issue of a CHPQA GN44 Certificate.

Schemes under Normal Operation

Certificate (1) Operating schemes should make an Operational Submission to CHPQA, which will be validated against the Threshold Criteria with QI formulae as described in the CHPQA Standard. This will result in the issue of a 'Regular' CHPQA Certificate and enable a Secretary of State (CHP) Exemption Certificate to be obtained or maintained (see CHPQA GN 41).

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Certificate (2) Those schemes wishing to use CHPQA to claim ROCs or CfDs must also submit their annual operating data by making an Operational Submission, which will be validated against the QI Threshold Criteria of 100 under "Normal Operating Conditions" using the appropriate QI formulae laid out in GN44. This will result in the issue of a CHPQA GN44 Certificate.

Thus, both proposed schemes and those under normal operation will receive two certificates from CHPQA. Both certificates will require renewal by annual submission to CHPQA.

Important Notes:

- **For CHPQA GN44 certification, a CHP Scheme is not required to meet any power efficiency threshold, as eligibility will be based on achieved QI and QPO.**
- However, a minimum power efficiency threshold must still be met in order to obtain Enhanced Capital Allowances (threshold power efficiency criteria are detailed in CHPQA Guidance Note 42). CHP Schemes failing to meet the relevant Threshold Power Efficiency Criterion do not qualify for Enhanced Capital Allowances on any expenditure incurred. **[Scheme now closed].**
- **For CHPQA certification for CfD purposes, the validity of the GN44 certificate will continue beyond, and not cease on its expiry date, until such time as a new GN44 certificate is obtained - but the continued validity of a GN44 certificate after its expiry date will apply only in respect of electricity generated during periods when the reference price is above the strike price and the term of the CfD has not expired**.

GN 44.6

Policy responsibility for the RO lies with the Department for Energy Security and Net Zero (DESNZ) and the RO is administered by the Office of Gas and Electricity Markets (Ofgem).

More detailed guidance on how the Renewable Obligation is administered is available from the Ofgem website: http://www.ofgem.gov.uk

The approach taken by Ofgem to the issue of ROCs for waste-fueled CHP Schemes under the RO is detailed in the "Renewables Obligation: Fuel Measurement and Sampling" Guidance document downloadable from the Ofgem website.

Policy responsibility for CfDs also lies with DESNZ, however a CfD is a private law contract between a Low Carbon electricity generator and the Low Carbon Contracts Company (LCCC), a Government-owned company.

For more detail on how CfD will be administered, please refer to the Electricity Market Reform (EMR) Implementation Response on the GOV.UK website.

https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform

GN 44.7

This Guidance Note is based upon information found at:

- The Ofgem website: http://www.ofgem.gov.uk/
- The DESNZ website:

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https://www.gov.uk/government/organisations/department-for-energy-security-and-net-zero

These remain the definitive sources at the time of publication. Readers seeking further clarification over the procedures described herein should refer initially to these sites.

Glossary

GN 44.8 The following terms are used in this Guidance Note, the majority of which are defined in more detail in the CHPQA Standard, Issue 5, December 2013 (downloadable from: https://www.gov.uk/government/publications/chpqa-standard)

Certification is the issuing of a certificate by the CHPQA Administrator that certifies that a Scheme meets the criteria for Good Quality for all or part of its energy inputs, outputs and capacity, based on Validation of Self-Assessment submitted by a Responsible Person.

CHP Qualifying Multiplier (CHPQM) is the ratio QPO/TPO, but in the case of CfDs for biomass CHP (but not Energy from Waste CHP) the scheme's Responsible Person may elect to use QPO and TPO from the Design Certificate for the purposes of calculating the CHPQM, rather than figures from their Operational Certificate. They may do this for a maximum of 5 certification years, in addition to the normal use of the Design Certificate QPO in their first year of operation.

CHP Total Fuel Input is the total registered annual fuel input to a CHP Scheme (MWh) based on gross calorific value (GCV). See GN14.15 for guidance on fuels with variable moisture content and GN29 for guidance on energy inputs from alternative fuels including biomass and waste.

Heating/Cooling Network is a network for the delivery of heat in the form of hot water or steam, or cooling in the form of chilled water, to:

- buildings or processes on more than one site[1] or,
- to more than one building on building developments which were new[2] at the time of their connection to the CHP scheme, or
- to more than one industrial or commercial user[3].

Qualifying Power Output (QPO) is the registered annual power generation from a CHP Scheme (MWh_e) that qualifies as Good Quality CHP.

Total Power Output (TPO) is the total annual power generation from a CHP Scheme (MWh_e), as measured at the generator terminals.

Useful Heat is the heat from a CHP Scheme delivered to satisfy an economically justifiable demand for heat or cooling. Evidence of this demand should be available (e.g. a Business case, Contract or Memorandum of Understanding). It is not sufficient for a scheme to be simply "CHP ready" without clear plans to supply heat.

Heat used for drying the incoming biomass or waste fuel to the CHP plant may be classified as a useful CHP heat output, but only if it can be demonstrated that such a use

[1] "site" is understood to mean a separate parcel of land, not necessarily bounded by a highway. A single industrial estate could therefore contain more than one site, where separate commercial entities are located on the same industrial estate.
[2] "new" building developments are (i) developments where at least one of the buildings intended to be connected to the network has been unoccupied up to the time of the connection of the first user to the network and also (ii) developments where construction was not complete at the time of the connection of the first user to the CHP scheme.
[3] "user" here relates to operations owned or operated by separate commercial entities.

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of heat is an economically justifiable precursor to the combustion of the fuel within the CHP plant.

Applicants wishing to claim such a use of heat as a CHP heat output will be expected to provide an economic justification and calculations in support of their claim. For example, it must be demonstrated that the drying of the fuel independent of the CHP plant could be justified economically as an alternative to using CHP heat, taking account of the required capital expenditure, operating and maintenance costs and the resulting benefit (including the capital cost of the alternative boilers and the cost of the displaced fuel that would otherwise be used for the drying).

A simple 'payback' analysis should be included:

$$\textit{Simple payback} = \frac{\textit{Capex of alternative boilers}}{\textit{(Theoretical benefit from improved efficiency} - \textit{Cost of fuel)}}$$

Where: *'Cost of fuel'* is the theoretical cost of the alternative boilers' fuel.

A statement of the Company's investment criteria should also be included that sets out what is considered to be an acceptable payback period.

ROC Eligibility

The RO contains support levels (also known as "bands") specifically for renewable electricity generated by CHP Schemes. The detailed eligibility criteria for the RO are set out in the Renewables Obligation Orders. The following is a brief description (for schemes accrediting to the RO up until 31 March 2015 and not opting for the RHI).

GN 44.9

Dedicated biomass with CHP

This band applies to CHP Schemes fueled wholly by biomass. It is not available to fossil fuel stations which convert to biomass. Biomass is defined in the RO as a fuel where at least 90% of the energy content is derived from plant or animal matter. It also includes certain bioliquids. Eligible electricity under this band receives 2 ROCs per MWh when it meets the qualifying Good Quality CHP definition i.e. according to the QPO/TPO ratio. Any remaining electricity that does not meet the qualifying Good Quality CHP definition will receive support under the band for 'dedicated biomass (without CHP)' i.e. 1.5 ROCs per MWh.

Energy Crops

Different support levels may apply under the RO where electricity is generated using energy crops. A list of energy crops is set out in the RO legislation, together with the detailed circumstances in which a 0.5 ROC uplift per MWh may be available for the use of energy crops.

Co-firing of biomass with CHP

This band applies to combustion units fueled by a mixture of biomass and fossil fuel. Eligible electricity under this band receives between 0.8 ROCs per MWh and 1.5 ROCs per MWh[4] when it meets the qualifying Good Quality CHP definition i.e. according to the QPO/TPO ratio. Any remaining electricity that does not meet the qualifying CHP definition

[4] The level of support depends on a number of factors such as the proportion of biomass, the date of generation and the type of biomass.

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will receive support under the equivalent band for 'co-firing of biomass (without CHP)' i.e. between 0.3 ROCs per MWh and 1 ROC per MWh.

Biomass conversion with CHP

This band applies to fossil fuel combustion units which convert to generating electricity wholly from biomass. Eligible electricity under this band receives 1.5 ROCs per MWh when it meets the qualifying Good Quality CHP definition i.e. according to the QPO/TPO ratio. Any remaining electricity that does not meet the qualifying Good Quality CHP definition will receive support under band for 'biomass conversion (without CHP)' i.e. 1 ROC per MWh.

Energy from Waste with CHP:

This band applies to CHP Schemes generating electricity using waste of which at least 10% of its energy content, but less than 90% of its energy content, is derived from plant or animal matter. Eligible electricity under this band receives 1 ROC per MWh, according to the renewable content of the waste and the QPO/TPO ratio, with nothing on the remainder.

For example, a CHP Scheme burning waste, where the biomass content of the fuel has been established or deemed at 50%, will receive ROCs on 50% of their eligible electricity if the QPO equals the TPO. However, a plant using the same waste stream, but with QPO that is 70% of TPO, will receive ROCs on 35% (i.e. 70% of 50%) of their electricity generation.

ROCs will be issued for the QPO using the following calculation:

ROCs issued = gross output (MWh) x biomass qualifying percentage x

CHP_{QPO} / CHP_{TPO} x net output (MWh) / gross output (MWh)

The QPO and TPO will be based on the most recent 'CHPQA GN44' certificate held by the generator but, unlike the Climate Change Levy (CCL), there will not be an end-of-year reconciliation process.

CfD Eligibility and Investor Safeguard

GN 44.10

The two technologies eligible for CHP-specific CfDs are *dedicated-biomass with CHP* (excluding bioliquid) and *Energy from Waste with CHP*. Support under the CfD will be paid only on the proportion of metered electrical output assessed by CHPQA to be QPO. This is given effect in the CfD contract by applying a CHP Qualifying Multiplier to the total electrical output of the plant. The CHP Qualifying Multiplier will be recorded on the GN44 certificate and, in normal circumstances, will be the ratio QPO/TPO. The GN44 definition of QPO will continue to be used for this purpose and schemes will need to maintain their CHPQA certification annually once operating and for the duration of any CfD offered if it is to continue to receive support.

Schemes claiming a certificate for the purposes of CfD eligibility will be audited in their first year of operation to confirm that they are constructed to the design specified in the Design Certificate and that their electrical efficiency is as per the value in the Design Certificate. In the event that the audit identifies that the ratio of QPO/TPO is lower than that in the Design Certificate as a result of a lower than envisaged electrical efficiency, the Design Certificate will be reissued.

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The plant will also be required to provide evidence of their intended heat load in its Design Submission.

During the CfD contract lifetime biomass (but not EfW) CHP Schemes will be protected against the risk of loss of heat customer(s) for up to 5 years (5 CHPQA certification periods) through the application of an “investor safeguard”. Under this safeguard, a plant may elect to have their CHP Qualifying Multiplier (the QPO/TPO ratio) assessed on the basis of their most recent CHPQA Design Certificate, rather than on the operation in the last CHPQA certification period.

Electricity generated by CHP using anaerobic digestion or advanced conversion technologies (gasification or pyrolysis) are eligible for CfDs, however there is no requirement for AD and ACT CHP plant to obtain GN44 certification in order to qualify for CfDs.

Fuel Categories and QI Formulae

GN 44.11

The QI formulae for large CHP plants (those with installed generation capacity greater than 25 MWe) within the CHPQA Standard are designed to ensure that schemes who meet the QI threshold have an overall efficiency above 70% (Net Calorific Value). This overall efficiency criterion can be met by large CHP Schemes using conventional fuels.

GN 44.12

However, it has been determined that large Energy from Waste (EfW) and solid biomass-fueled CHP plants over 25 MWe are unable to meet such high overall efficiencies as conventional fuel CHP and, as a result, rarely meet this criterion, so would not fully qualify for ROCs/CfDs regardless of the level of Good Quality CHP output they attain. For this reason, Guidance Note 44 Issue 2 Quality Index formulae were derived using criteria which did not include a 70% (NCV) overall efficiency requirement.

These criteria were

- 35% overall efficiency (gross calorific value) for >25 MWe schemes, and
- 10% Primary Energy Savings (PES) when compared with the alternative for the separate generation of electricity and heat (for schemes of 1 MWe and above, and greater than 0% in the case of schemes below 1 MWe).

GN 44.13

As part of the CHPQA Review consulted upon in December 2012, all CHPQA QI formulae for renewable fuels were reviewed with efficiency criteria revised, where appropriate, with the aim that all CHP Schemes using such fuels passing the QI threshold should meet:

- At least 10% Primary Energy Savings (PES) for schemes of 1 MWe and above (greater than 0% in the case of schemes below 1 MWe)
- A minimum overall efficiency of 35% Gross Calorific Value (GCV) for >25 MWe schemes
- A minimum heat efficiency of 10% for schemes of all sizes.

In addition, the categorisation of schemes by fuel types used in Guidance Note 44 were reviewed to ensure that the fuels were grouped within each category according to the efficiencies of the most efficient available prime mover technologies and thus a common

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QI formula was applicable.

The revised fuel categories are summarised in Table 1 below. A full description of fuel categories is shown in CHPQA Guidance Note 14.

Table 1: Revised Renewable Fuel Type Categories

Fuel Category	Default Fuels included
A	Gas produced by anaerobic digestion of biological material Sewage gas Landfill gas
B	Synthesis gas from gasification of biological material
C	Fatty Acid Methyl Esters Bio DiMethyl Ether Biomass To Liquid fuels Virgin vegetable oil Pyrolysis oil from pyrolysis of biological material Hydrogenated vegetable oil Biomethanol Bioethanol Biobutanol Bio Methyl Tertiary Butyl Ether Bio Ethyl Tertiary Butyl Ether
D	Tallow Used cooking oil
E*	The biological fraction of; Municipal solid waste Industrial waste Clinical waste Refuse derived fuel Solid recovered fuel Poultry litter De-watered sewage sludge Paper sludge
F*	Logs Roundwood Energy crops Agricultural residues Prunings

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Fuel Category	Default Fuels included
	Milling residues Arboricultural & Forestry residues Distillers grain
G*	Contaminated waste wood (grades B-D of PAS 111)
H*	Wood pellets Dry wood chips Straw Bagasse Nut shells Husks and Cobs Visibly clean waste wood (grade A of PAS 111)

*** Relevant also for schemes seeking GN44 certification for the purposes of CfDs (categories E-H only).**

Each category specifies a default list of fuels included. Developers may however submit evidence to the CHPQA administrator in support of a categorisation, where their fuel is not listed, or in support of an alternative categorisation. This evidence must demonstrate that the category is applicable based on the maximum potential prime mover efficiency and physical state of the fuel (solid, liquid, gaseous) at normal temperature and pressure. See GN14.

The QI formulae for various types of CHP Renewable Schemes are incorporated in Table 2 below.

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Table 2: Revised QI Formulae for Various Types of CHP Renewable Schemes

Proposed QI Formulae								
Category A (e.g. AD gas, sewage gas, landfill gas)								
≤1 MWe	QI =	238	x	η_{power}	+	120	x	η_{heat}
>1 to 25 MWe	QI =	225	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	193	x	η_{power}	+	120	x	η_{heat}
Category B (e.g. synthesis gas)								
≤1 MWe	QI =	275	x	η_{power}	+	120	x	η_{heat}
>1 to 25 MWe	QI =	251	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	193	x	η_{power}	+	120	x	η_{heat}
Category C (e.g. Fatty Acid Methyl Ester, Pyrolysis oil etc.)								
≤1 MWe	QI =	245	x	η_{power}	+	120	x	η_{heat}
>1 to 25 MWe	QI =	191	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	176	x	η_{power}	+	120	x	η_{heat}
Category D (e.g. Tallow, Used Cooking Oil)								
≤1 MWe	QI =	245	x	η_{power}	+	120	x	η_{heat}
>1 to 25 MWe	QI =	226	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	176	x	η_{power}	+	120	x	η_{heat}
Category E (e.g. Municipal waste, sewage sludge, paper sludge etc.)								
≤1 MWe	QI =	370	x	η_{power}	+	130	x	η_{heat}
>1 to 10 MWe	QI =	370	x	η_{power}	+	130	x	η_{heat}
>10 to 25 MWe	QI =	370	x	η_{power}	+	130	x	η_{heat}
>25 MWe	QI =	350	x	η_{power}	+	130	x	η_{heat}
Category F (e.g. Logs, Energy crops, Agricultural residues etc.)								
≤1 MWe	QI =	348	x	η_{power}	+	130	x	η_{heat}
>1 to 10 MWe	QI =	348	x	η_{power}	+	130	x	η_{heat}
>10 to 25 MWe	QI =	348	x	η_{power}	+	130	x	η_{heat}
>25 MWe	QI =	338	x	η_{power}	+	130	x	η_{heat}
Category G (e.g. Contaminated waste wood)								
≤1 MWe	QI =	352	x	η_{power}	+	120	x	η_{heat}
>1 to 10 MWe	QI =	338	x	η_{power}	+	120	x	η_{heat}
>10 to 25 MWe	QI =	338	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	318	x	η_{power}	+	120	x	η_{heat}
Category H (e.g. Wood pellets, straw, clean waste wood etc.)								
≤1 MWe	QI =	329	x	η_{power}	+	120	x	η_{heat}
>1 to 10 MWe	QI =	293	x	η_{power}	+	120	x	η_{heat}
>10 to 25 MWe	QI =	286	x	η_{power}	+	120	x	η_{heat}
>25 MWe	QI =	279	x	η_{power}	+	120	x	η_{heat}

For CHP Schemes using advanced conversion technologies (i.e. gasification, pyrolysis or anaerobic digestion of solid waste or biomass), if the bio/syngas/pyrolysis oil is used in reciprocating engines or gas turbines it will be considered as the input fuel to the CHP scheme (the power efficiency is determined as total electricity generated divided by

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gas/oil input).

GN 44.14

When a scheme fails to meet the QI threshold of 100 under "Normal Operating Conditions" using the appropriate QI formula from the tables above, (or the QI threshold of 95 in the case of certain schemes primarily supplying heat through a Heating/Cooling Network during the first 5 years of its operation (see GN44.18), the scale-back mechanism (as described in CHPQA GN3 and GN4 for proposed and existing schemes respectively) will be applied to determine the QPO/TPO ratio to be used in the ROCs eligibility formula shown in GN44.9 and in calculating the CHP Qualifying Multiplier for CfDs.

GN 44.15

If a scheme meets all of the relevant criteria shown in GN44.13, but failed to meet the QI threshold of 100, it can use the Safeguard Provision shown in GN44.17.

GN 44.16

The responsibility for notifying Ofgem of any changes in eligibility for ROCs lie with the applicant and significant penalties are possible in the event of fraudulent or negligent claims. Where these changes apply to CfDs, the Low Carbon Contracts Company is the applicable body.

Safeguard Provision

GN 44.17 The revised Quality Index (QI) formulae in Table 2 of this Guidance Note, arising out of the CHPQA Review, were derived with the objective of satisfying the following three policy criteria:

- The minimum primary energy saving requirement of 10% (0% for schemes <1 MW electrical capacity).
- A new requirement for a minimum heat efficiency of 10% (gross calorific value).
- An overall efficiency of at least 35% (gross calorific value) for schemes >25 MW electrical capacity.

Primary energy saving shall be calculated to ensure compliance with the CHPQA Standard.

However, the QI formulae cannot perfectly ensure that schemes which meet all three policy criteria fully qualify as Good Quality CHP. To address this, for the purposes of GN44, there is now a safeguard provision available that CHPQA will use to ensure that new schemes that meet all three policy criteria but do not achieve a QI of 100 using the Table 2 formulae, will be awarded a QI of 100 regardless, and an appropriate X value will be developed as shown below.

To avoid introducing a "cliff-edge" effect in support levels, in the event of a subsequent reduction in a scheme's performance, the safeguard will be implemented by recalculation of the X coefficient. This procedure is based on determination of the operating point at which a scheme would just meet all three policy criteria and recalculation of the X coefficient in order to give a QI of 100 at this point. Scale-back of Qualifying Power Output will then be conducted using the normal CHPQA rules and based on the QI formula with the recalculated X coefficient. This recalculation will only be conducted on a scheme's design data with the revised X value now used to calculate QI and QPO for this scheme

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at all operating conditions for its lifetime. There will be no subsequent recalculation of the X value based on the scheme's operational data.

An example of this procedure is shown below.

e.g. >25 MWe waste wood fueled CHP, fully exporting, >200kV transmission grid connected, commissioned after 2005.

$\eta_{power\ (Fully\ Condensing\ Design)} = 28\%$

$\eta_{power\ (CHP)} = 26\%$

$\eta_{heat} = 10\%$

z ratio[5] = 5

Guidance Note 44 QI formula

$QI = 318\ \eta_{power} + 120\ \eta_{heat}$

$= 318 \times 0.26 + 120 \times 0.1$

$= 94.68$

Determine operating point at which the scheme is just compliant with safeguard criteria

$\eta_{power} = 26\%$

$\eta_{heat} = 10\%$

PES = 16.8%

Recalculate X to satisfy QI =100

$100 = X\ \eta_{power} + 120\ \eta_{heat}$

$X = (100 - 120\ \eta_{heat}) / \eta_{power}$

$X = (100 - 120 \times 0.1) / 0.26$

$X = 338.46$

Revised X value is now used to calculate QI and QPO for this scheme at all operating conditions for its lifetime as illustrated in Figures 1 and 2 below.

[5] As defined in Guidance Note 28 procedures.

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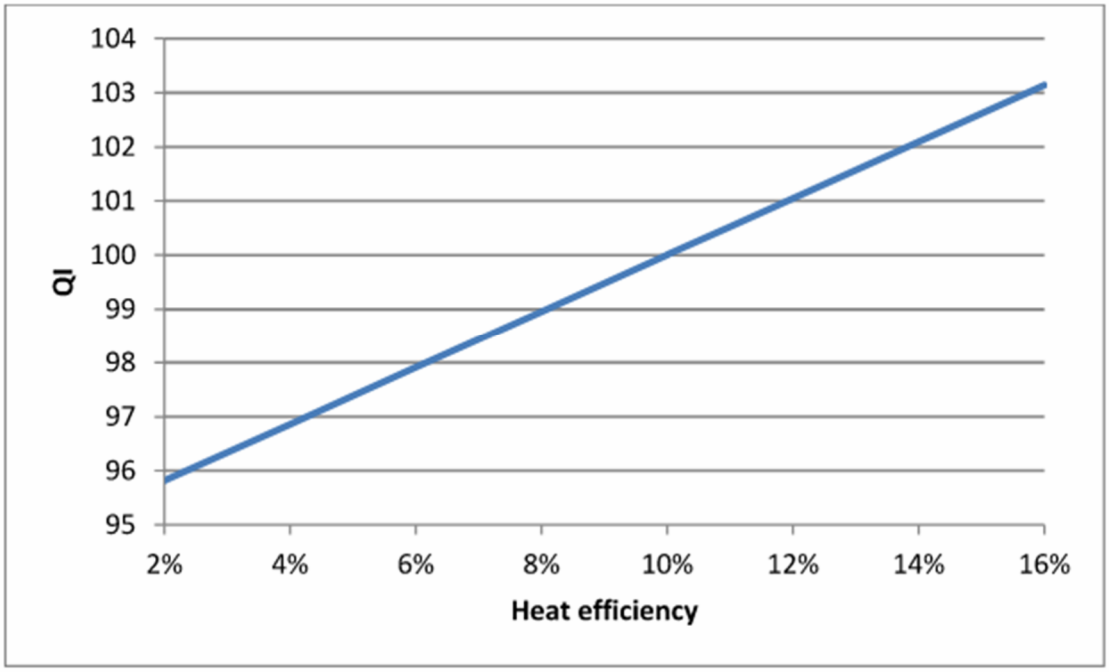

Figure.1: Illustration of QI under scale-back provision for safeguarded Schemes

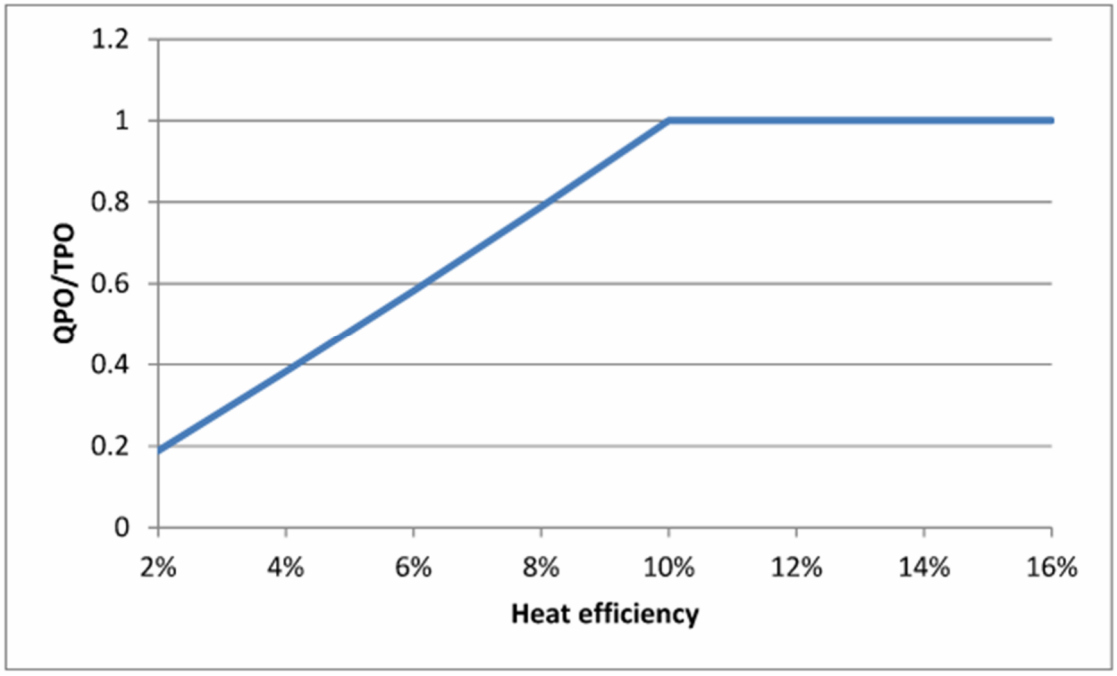

Figure.2: Illustration of QPO under scale-back provision for safeguarded Schemes

New Renewable CHP primarily supplying Heating/ Cooling Networks

GN 44.18

For the purposes of this GN44, a QI threshold of 95 for an initial period of operation of 5 years will be allowed for new renewable CHP primarily supplying a Heating/Cooling Network where the Business Plan for heat load development demonstrates either:

i) that the CHP scheme will achieve a QI of 100, by the 6th full calendar year from

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the start of operation of the CHP scheme, or by the 6th full calendar year from the date of first connection to the network, whichever is the later, and

ii) that it will achieve this by means of network connection to heat loads in additional buildings, on additional sites or to additional industrial or commercial users

Or;

iii) that the QI of the CHP scheme in the first calendar year in which it operates will be increased by at least 5 points by the 6th full calendar year from the start of operation of the CHP scheme or by the 6th full calendar year from the date of first connection to the network, as appropriate, and

iv) that this will be achieved by means of network connection to heat loads in additional buildings, on additional sites or to additional industrial or commercial users.

The full power output of such new schemes meeting the QI threshold of 95 will qualify and the power output of schemes which do not fully meet this threshold will be scaled-back against the threshold of 95. This 5 year period starts from the date of first firing[6] plus the following full 5 calendar years. After this period schemes will be validated against a QI threshold of 100 under “Normal Operating Conditions”.

GN 44.19

In order to benefit from the reduced QI threshold, it is necessary to provide a Business Plan with the Design Submission[7] that provides confidence that the development of the Heating/Cooling Network will go ahead and that the criteria in paragraph 44.18 will be met. There is no fixed format for the Business Plan, but we would expect it to include the following:

- A timetable for the development of the project (including the network) from now through to commissioning.
- Current status with regard potential heat customers (e.g. Heat sale contracts, memoranda of agreement).
- Financing approval.
- Planning permission and other necessary consents for the project (including the network).

Grandfathering old QI Formulae

GN 44.20

Further to the CHPQA Review, the old Guidance Note 44 QI formulae and associated fuel categories (as previously stated in Issue 2 of GN44) will continue to apply to all schemes that were in operation, or that can demonstrate they reached financial close, prior to 26 July 2012.

Note: Grandfathering of the GN44 Issue 2 QI formulae only applies for the purposes of CHP plant claiming ROCs and does not apply for CfDs.

The QI formulae for these schemes are set out in Table 3 below.

[6] Or from the date the scheme first connects to a Heating/Cooling Network, if later.
[7] Or, in the case of a scheme that first connects to a Heating/Cooling Network after its initial operation, the Business Plan may be provided with the Operational submission in the calendar year in which it first connects to the network.

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Table 3: Old QI Formulae for Various Types of CHP Renewable Schemes

QI Formulae							
Biogas							
≤1 MWe	QI =	285	x	η_{power}	+	120	x η_{heat}
>1 to 25 MWe	QI =	251	x	η_{power}	+	120	x η_{heat}
>25 MWe	QI =	193	x	η_{power}	+	120	x η_{heat}
Syngas							
≤1 MWe	QI =	285	x	η_{power}	+	120	x η_{heat}
>1 MWe	QI =	251	x	η_{power}	+	120	x η_{heat}
Liquid Biofuels							
≤1 MWe	QI =	275	x	η_{power}	+	120	x η_{heat}
>1 to ≤25 MWe	QI =	191	x	η_{power}	+	120	x η_{heat}
>25 MWe	QI =	176	x	η_{power}	+	120	x η_{heat}
Liquid Waste							
≤1 MWe	QI =	275	x	η_{power}	+	120	x η_{heat}
>1 to ≤25 MWe	QI =	260	x	η_{power}	+	120	x η_{heat}
>25 MWe	QI =	176	x	η_{power}	+	120	x η_{heat}
Solid Waste							
≤25 MWe	QI =	370	x	η_{power}	+	140	x η_{heat}
>25 MWe	QI =	364	x	η_{power}	+	140	x η_{heat}
Agricultural Biomass							
≤25 MWe	QI =	370	x	η_{power}	+	130	x η_{heat}
>25 MWe	QI =	338	x	η_{power}	+	130	x η_{heat}
Wood Fuels							
≤1 MWe	QI =	329	x	η_{power}	+	120	x η_{heat}
>1 to ≤25 MWe	QI =	315	x	η_{power}	+	120	x η_{heat}
>25 MWe	QI =	315	x	η_{power}	+	120	x η_{heat}

The following evidence will be required by CHPQA in order to demonstrate that the scheme reached financial close prior to 26 July 2012.

1) Letter(s) from a company board, investment committee, or project finance providers (or from person(s) with written delegated authority from the company board, investment committee or project finance providers), attesting to the fact that they have/had committed to finance the project subject to ordinary course conditions precedent, which have a reasonable expectation of being met. Such letter(s) would have to be signed by a director or other individual with due authority, and state that the information provided is true and accurate in all material respects and that the commitment was made in the period prior to 26 July 2012; and

2) A letter from the company board or investment committee confirming that the letters provided under 1) sum up to 100% of the total projected capital cost of the project; and

3) Board minutes attesting to the fact that financial close occurred in the period prior to 26 July 2012; and

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4) Evidence of a minimum of 10% of the total projected capital cost of the project having been disbursed towards the project reaching commissioning (e.g. supply chain contracts, construction work contracts) by 12 July 2013[8].

Waste fueled schemes may alternatively submit the following evidence to demonstrate that the scheme reached financial close prior to 26 July 2012:

1) A copy of a binding tender for a waste contract, which includes a contractual obligation to supply heat, submitted prior to 26 July 2012; and

2) Confirmation from the waste authority that this tender was successful and that the waste contract has been awarded to the project; and

3) Evidence of a minimum of 10% of the total projected capital cost of the project having been disbursed towards the project reaching commissioning (e.g. supply chain contracts, construction work contracts) by 12 July 2013.

If the above evidence is not satisfactorily provided and the scheme is also unable to demonstrate that it was in operation prior to 26 July 2012, the revised QI formulae (Table 2) and revised fuel categories (Table 1) will be applied by the CHPQA Programme.

The safeguard provision (GN44.17), the relaxation of the QI threshold for certain Heating/Cooling Networks (GN44.18) and the ability to seek an alternative categorisation of a fuel (GN44.13) will not apply to schemes using the original QI formulae in Table 3.

[8] The date of publication of the Government Response on the CHPQA Review

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