SIMPLE GUIDE TO CHPQA ELIGIBILITY

Abstract

This is a simple guide to CHPQA Eligibility covering the definition of a Scheme and its boundary, plus the technologies, fuel types, and heat uses that are eligible as part of the CHPQA programme.

CHPQA Administrator

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1. Introduction

The ‘Simple Guide To’ series is designed to assist Responsible Persons (RPs) in understanding various aspects of the CHPQA process. The content here is a simplified and condensed form of that found in the detailed Guidance Notes 11-12, 14 and 50 which are outlined below and can be accessed online with the following hyperlinks. References are made to these and other guidance notes in the form “**GNXX.X**” which refer to paragraphs within the detailed guidance notes. In any cases of doubt, please refer to the detailed guidance notes as they are comprehensive and shall always take precedence.

Detailed Guidance Notes:

GN11 – CHP Scheme Definition Information

GN12 – CHP Scheme Description Information

GN14 – CHP Scheme Energy Inputs Information

GN50 – Quantifying and Justifying Useful Heat Outputs

CHPQA Guidance Notes

https://www.gov.uk/guidance/chpqa-guidance-notes

Combined Heat & Power (CHP) does not refer to just one technology type, rather it is a philosophy that can be applied to various technologies and several fuel sources. CHP is used across a wide variety of applications from small scale “micro-CHP” for domestic space heating and hot water demands, through to large scale commercial users utilising heat for industrial processes.

The CHPQA programme acknowledges this and has therefore been designed with flexibility in mind, to encompass the various configurations of CHP schemes and their applications. This guide provides a brief overview on what CHP technologies, fuels and heat uses are considered eligible for certification under the CHPQA programme.

2. What are the eligible technologies?

The key component of a CHP scheme is the prime mover. This is the technology that takes fuel or heat input, and converts this chemical or thermal energy into rotational kinetic energy within a shaft, which turns a generator to produce electrical power. Excess heat not used in the energy conversion process is then recovered from the prime mover and utilised as heat either on site or off-site (e.g. district heating). The most common CHP prime mover is the reciprocating engine, which constitutes the majority of schemes in the CHPQA programme. There is no restriction on the size or capacity of prime mover that can apply for certification under the CHPQA programme. The list of prime movers currently covered by CHPQA is shown below:

CHPQA Eligible Technology Type (prime mover)	CHPQA Submission Process
Reciprocating Engine	Simple* or Complex
Simple Cycle Gas Turbine Combined Cycle Gas Turbine Renewable Gas Turbine Back-pressure Steam Turbine Pass-out Steam Turbine Steam Expander Organic Rankine Cycle Fuel Cell	Complex

*A single reciprocating engine scheme is eligible for the Simple application process if it is under 2MWe installed power capacity, uses a single conventional fuel and has no heat-only boiler included within its boundary.

Simple Schemes account for approximately half of the schemes certified by CHPQA programme, so a shortened and streamlined process was developed to accommodate this large proportion. More information on the 'Simple' and 'Complex' submission routes can be found in the accompanying ***Simple Guide to the CHP Quality Assurance (CHPQA) Programme***.

3. What are the eligible fuels?

The CHPQA programme has developed an extensive list of CHP fuels which are designated under two criteria: Conventional and Alternative. The annual total energy input to a CHP Scheme is reported to CHPQA as CHP Total Fuel Input (CHP_{TFI}).

Fuel Classification	
Conventional Fuels	**Alternative Fuels**
Natural Gas	Biogas
Liquified Petroleum Gas	Liquid Biofuels
Fuel Oils	Biomass
Coal	Solid and Liquid Waste
	Industrial by-product gases

The Conventional Fuels category covers fossil fuels such as natural gas, oil or coal. To be eligible as a Conventional Fuel it should be a taxable commodity or covered by excise duty. These make up the majority of fuels used by Schemes on the CHPQA Programme, the most common of which is natural gas.

Alternative Fuels are typically renewable fuels, waste fuels or industrial by-products and are categorised based on their origin and physical state.

4. What are considered eligible or ‘useful’ heat uses?

For a quantity of heat to be included in the CHP Scheme’s Qualifying Heat Output (CHP_{QHO}) it must be deemed to be what is known as ‘**Useful Heat’**. This is defined as heat that is produced during a CHP process which is enough to satisfy an ‘**economically-justifiable demand’** for heating or cooling, is a demonstrable existing process requirement, or is required as a result of a regulatory need.

‘Economically-justifiable demand’ is defined as demand that does not exceed the needs for heating or cooling and which would otherwise be met at market conditions by energy generation processes other than CHP. Useful heat is thus heat output that is demonstrably used to displace heat that otherwise would be supplied from other sources. It excludes any heat rejected to the environment without any beneficial use, such as heat lost from chimneys or exhausts and heat rejected via equipment such as condensers and radiators.

4.1. Typical and Atypical Heat Loads

CHPQA categorise heat loads as either: typical or atypical. When applying to CHPQA, typical heat loads can be justified with historic fuel and/or metered heat data. For atypical loads, CHPQA may request further justification of the heat demand via an economic analysis.

Typical heat loads are those that are economically-justifiable by default due to their nature but must still be reasonable for the application at hand. An example would be process use, space heating or domestic hot water. More details of this can be found at **GN50.6-12.**

Atypical heat loads are those that are considered unusual or unconventional where the usefulness of the heat can be in doubt. A typical example would be the commercial drying of fuel/waste. The full definitions of Useful Heat and typical/atypical heat loads are detailed in **GN50.3-5.**

5. What can be included as part of a CHPQA Scheme?

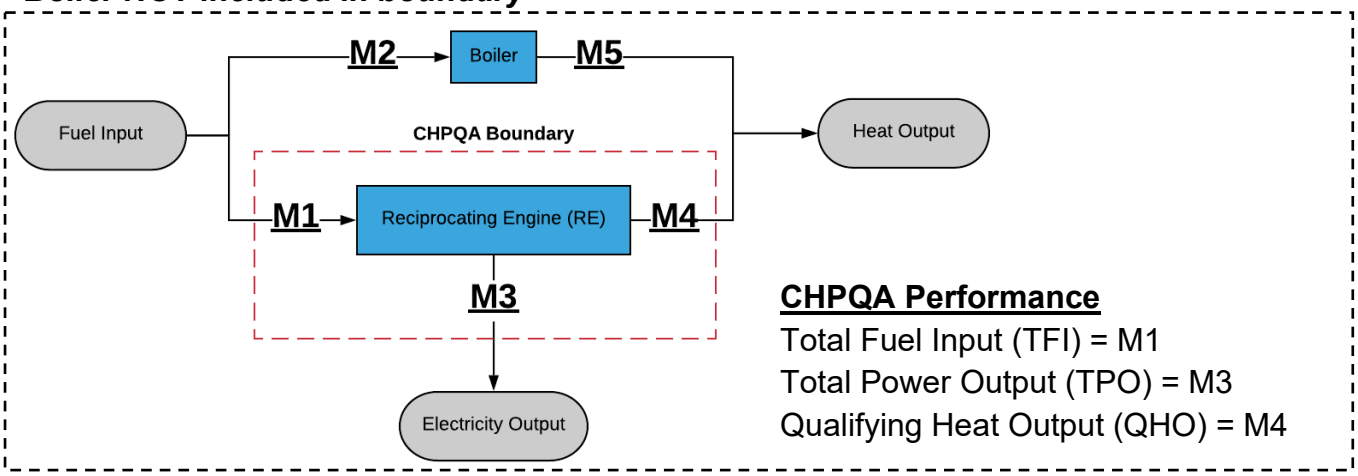
There may be more than one possible configuration for a CHP Scheme, depending on the inclusion/exclusion of site boilers or other equipment. The **CHPQA Boundary** is the method by which an RP communicates what plant is to be included as part of the CHP Scheme. It is an imaginary border that is drawn around the prime mover plus any other essential plant/equipment that is to be included. The RP is required to draw the CHPQA Boundary on the Single Line Diagram (SLD) when submitting to CHPQA.

5.1. Prime mover(s) with boiler(s) in parallel

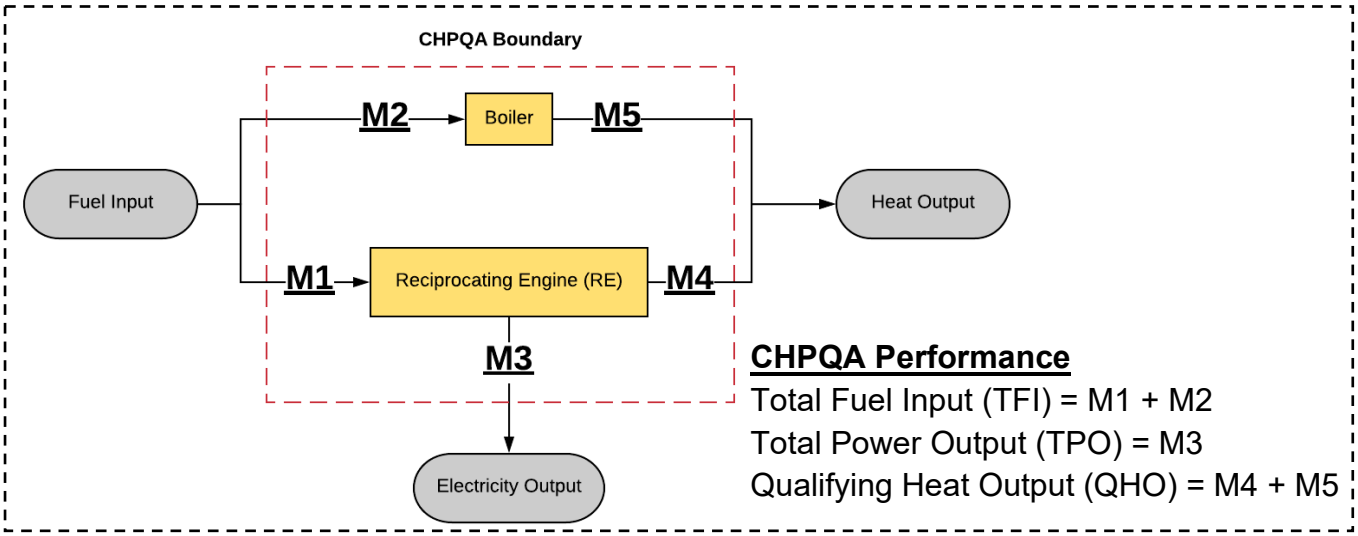
The CHPQA programme allows heat only boilers to be included within the CHPQA Boundary provided they are used for top-up or back-up purposes. Consider the two examples below; this is a single reciprocating engine CHP Scheme with a back-up heat only boiler providing heat in parallel to the prime mover. The RP has the option to exclude or include the heat only boiler as detailed below.

The inclusion of the heat only boiler in the CHPQA boundary will increase the Scheme's Total Fuel Input (TFI) and its Qualifying Heat Output (QHO). This will act to increase its heat efficiency, but at the same time reduce its power efficiency. This is likely to lead to a reduction in the Scheme's Quality Index (QI) value, however, an RP may opt for the inclusion of the boiler in the CHPQA boundary for technical reasons (i.e. heat metering configurations).

Boiler NOT included in boundary



Boiler included in boundary

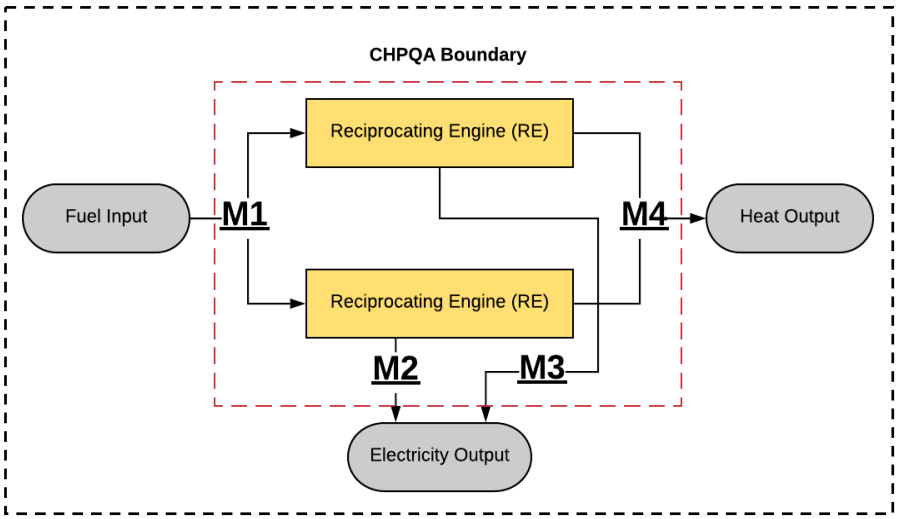


5.2. Prime movers in parallel

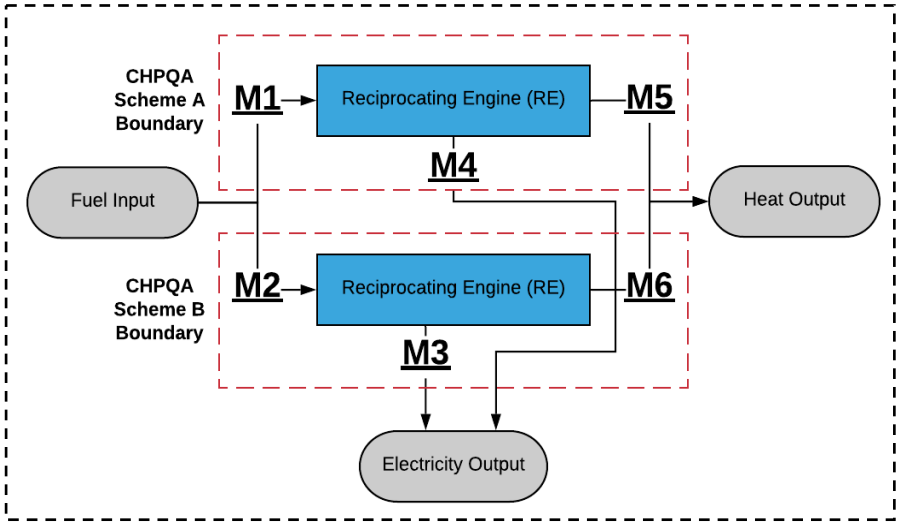
The CHPQA programme allows for the inclusion of multiple prime movers which act in parallel to be considered as a single CHP Scheme. See the two examples below; two reciprocating engines working in parallel providing heat to a single site. These could be considered as two separate CHPQA Schemes if monitoring arrangements are suitable, alternatively if the CHPQA boundary is drawn around both prime movers, it could be considered a single Scheme for simplicity.

Note that there is no limit on the number of parallel prime movers that can be grouped together as a single CHPQA Scheme.

Single CHPQA Scheme with two prime movers in parallel

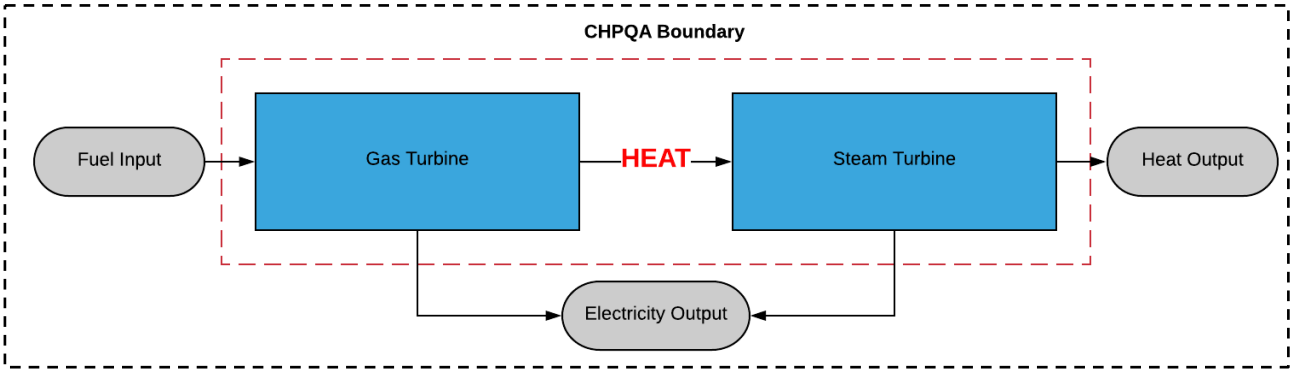


Two separate CHPQA Schemes with two prime movers in parallel



5.3. Prime movers in series

Combined cycle prime movers which are connected in series by heat distribution systems cannot be considered as two separate Schemes, even if they are geographically located apart from each other. See the below diagram:



6. Further information

6.1. Further guidance

See the accompanying series of ‘Simple Guide to’ guides and the detailed guidance notes here: https://www.gov.uk/guidance/chpqa-guidance-notes

6.2. Contact us

In the first instance, all queries on CHPQA should be directed to the CHPQA helpline, or emailed to the Administration team using the details below:

CHPQA Helpline:

- Tel: 01235 753004
- E-mail: chpqainfo@chpqa.com
- Website: https://www.gov.uk/combined-heat-power-quality-assurance-programme