



Latest Developments Related to CfD, RHI, CCL and ECA

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CHPQA

November 2018



Focus on...

1. CHPQA and ECA and CCL
2. CHPQA and CfDs
3. CHPQA and the RHI
4. CHPQA and the RO
5. Recent Government Support for Heat Networks



Enhance Capital Allowance Budget 2018

- The ECA for products on the Energy Technologies List (ETL) was introduced in 2001.
- ECA for CHP schemes is worth (NPV) in the order of 8-10% of eligible Capital expenditure.
- The majority, if not all New CHP schemes, installed since 2001, have benefited from ECA.
- In 2018 Budget Report HMT stated ... *The Government will end ECAs and First Year Tax Credits for Technologies on the Energy Technology (ETL) List and Water Technology List (WTL) from April 2020.....*
- If you wish to claim ECA then need to be certified by CHPQA and Energy Efficiency Certificate issued prior to 2020.



Changes to Climate Change Levy



45%
increase

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

67%
increase

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



Climate Change Levy-Budget 2018

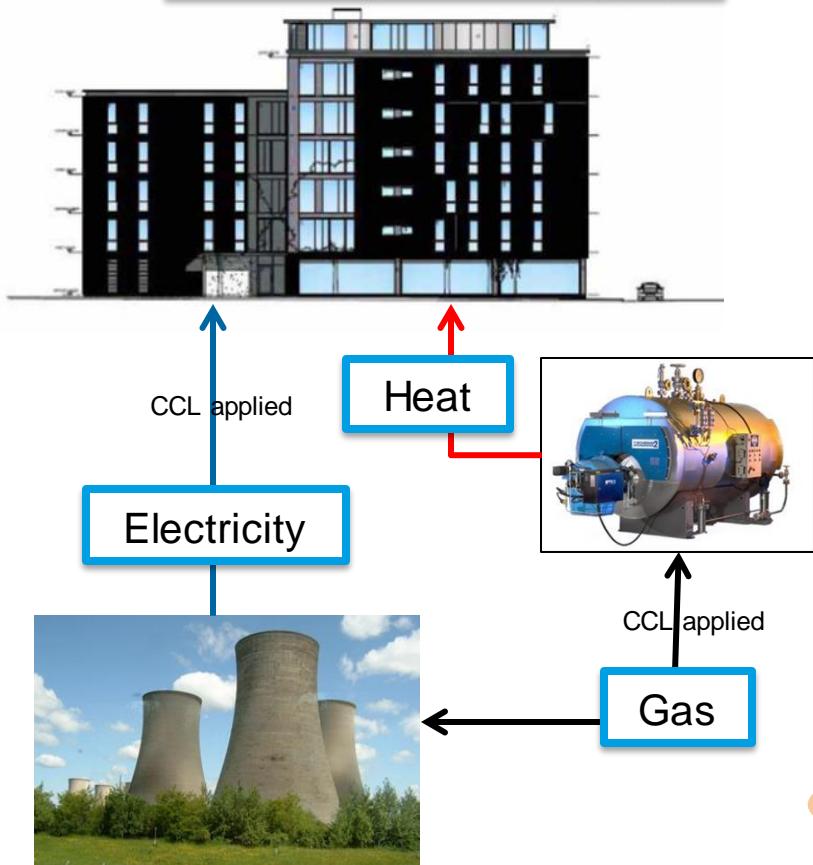
- New rates of CCL will apply from 1 April 2019, these will be, for electricity £8.47/MWh and for N. Gas £3.39/MWh
- In 2018 Budget report HMT stated... *The Government's commitment to rebalance the main rates paid for gas and electricity, so planning*
 - To lower the electricity rate in 2020-21 and 2021-22
 - To increase the N. Gas rate in 2020-21 and 2021-22 so it reaches 60% of the electricity main rate by 2021-22.
- Other fuels, such as coal, will continue to align with the gas rate.
- The discount for sectors with Climate Change Agreements will change to reflect the change in CCL main rates



CCL benefit for GQCHP

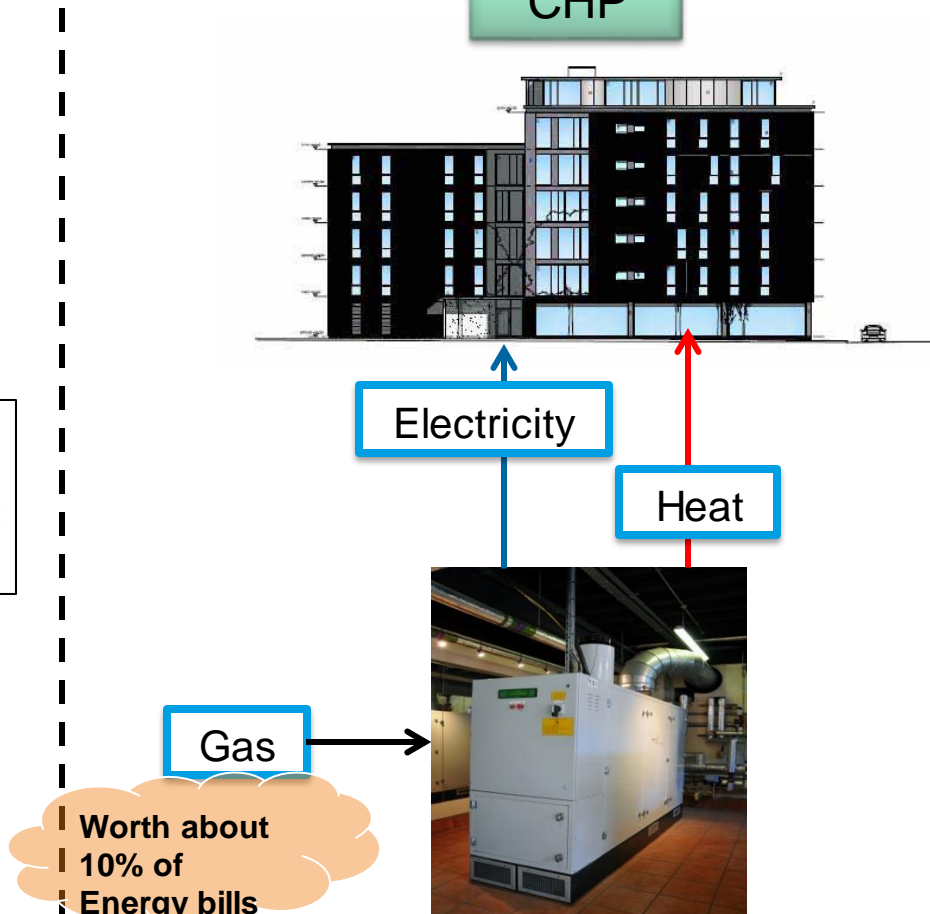


Conventional Methods



- CCL on Electricity Consumed
- CCL on fuel to Boiler

CHP



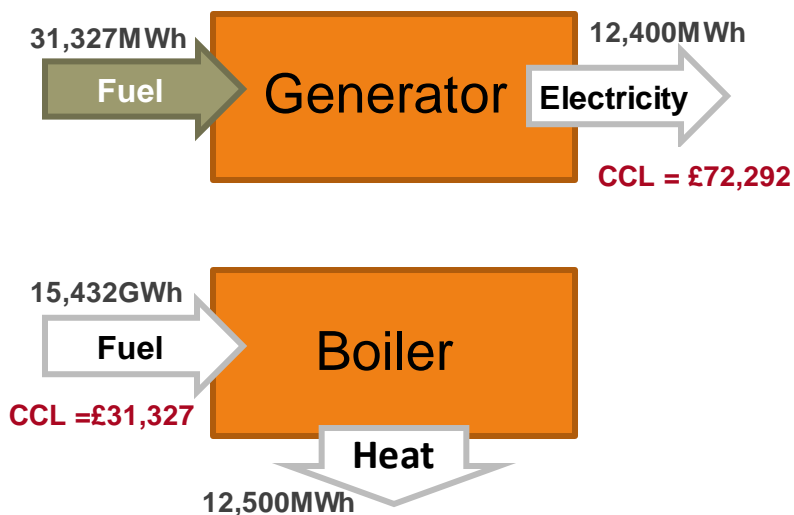
- NO CCL on Electricity Consumed
- NO CCL on fuel to CHP



Benefit from being GQCHP

Current CCL Rate

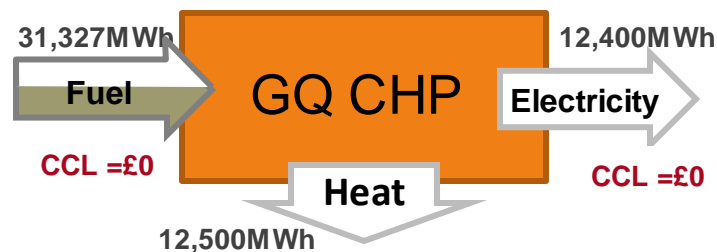
Separate Generation



CCL liability = £103,619

Good Quality CHP

TPC	-	1.92 MWe
TFI	-	36,900 MWh
TPO	-	12,400 MWh
QHO	-	12,500 MWh
η_p	-	33.6% ✓
η_{HEAT}	-	33.9% ✓
QI	-	104 ✓



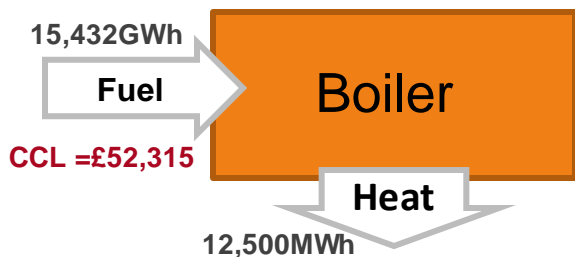
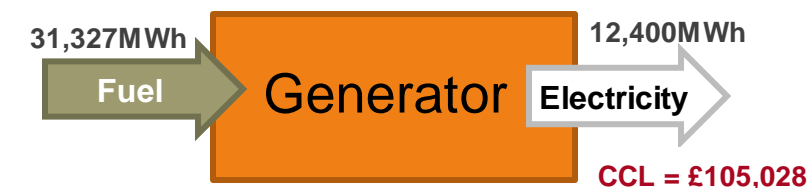
CCL liability = £0



Benefit from being GQCHP

Rate from 1 April 2019

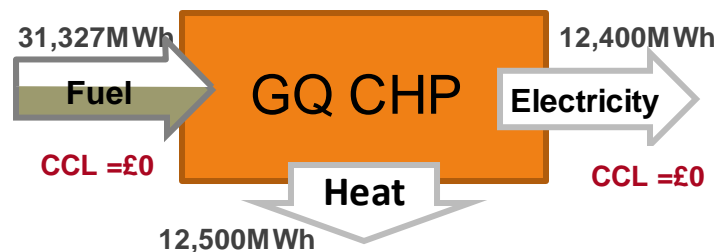
Separate Generation



CCL liability = £157,343

Good Quality CHP

TPC	-	1.92 MWe
TFI	-	36,900 MWh
TPO	-	12,400 MWh
QHO	-	12,500 MWh
η_p	-	33.6% ✓
η_{HEAT}	-	33.9% ✓
QI	-	104 ✓



CCL liability = £0

➤ An additional benefit of ~£54k as a result of changes to CCL rates



Contracts for Difference (CfD)



CHP-specific CfD Eligibility

- Support 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.
- QI formulae in GN44 issue 6 are currently used



GN44 Changes

- The Government consulted on changes to GN44 Issue 6; specifically increasing overall efficiency requirements in line with the Energy Efficiency Directive (EED)
- Changes will only affect future schemes which qualify for CfD under the **Third and subsequent allocation rounds.**
- The X and Y values for CfD schemes currently certified under the CHPQA and GN44 issue 6 **will be grandfathered.**
- GN44 certificates issued in relation to any Scheme in respect of which a 'with CHP' CfD contract is entered into on or after the publication of this Guidance Note 44 (Issue 7) will be issued using the QI values in Table 2 (Issue 7 QI formulae).



GN44 Changes

Current Arrangement

➤ For CHP schemes under 25MWe to have a minimum:

- Primary energy saving of 10%, and
- Heat efficiency of 10% Gross Calorific Value (GCV)

➤ For CHP schemes equal to and over 25MW to have a minimum:

- Primary energy saving of 10%,
- Heat efficiency of 10% GCV, and
- Overall efficiency of at least 35% GCV

Going Forward

➤ For CHP schemes of all sizes to have a minimum:

- Primary energy saving of 10%, and
- Heat efficiency of 10% Gross Calorific Value (GCV)
- Overall efficiency of 70% NCV for all sizes.



Renewable Heat Incentive (RHI)



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 $(20-15)/20 \times 100\% = 25\%$.
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 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 “The Government has decided to implement a 20% 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.”



Latest Tariff announcement

- Tariffs that apply for installations with an **accreditation date on or after 22 May 2018**:
 - ❑ From 20 Sept 2017 the tiering threshold for small and medium biomass boilers will change **from 15% to 35% of heat load**
 - ❑ Large biomass boilers will move from a single tariff to 2 Tier tariff with the same 35% threshold for Tier 1.
 - ❑ Tier 1 and Tier 2 tariff for non-domestic biomass boilers will be the same for all sizes
 - ❑ CHP no change to tiering, a single tier for all sizes.
 - ❑ Biomass CHP will be eligible for Tariff Guarantees. This will apply from the date of full accreditation, and the tariff at that time will apply.



Tariff rates for RHI accreditation (Current)

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 \leq 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.



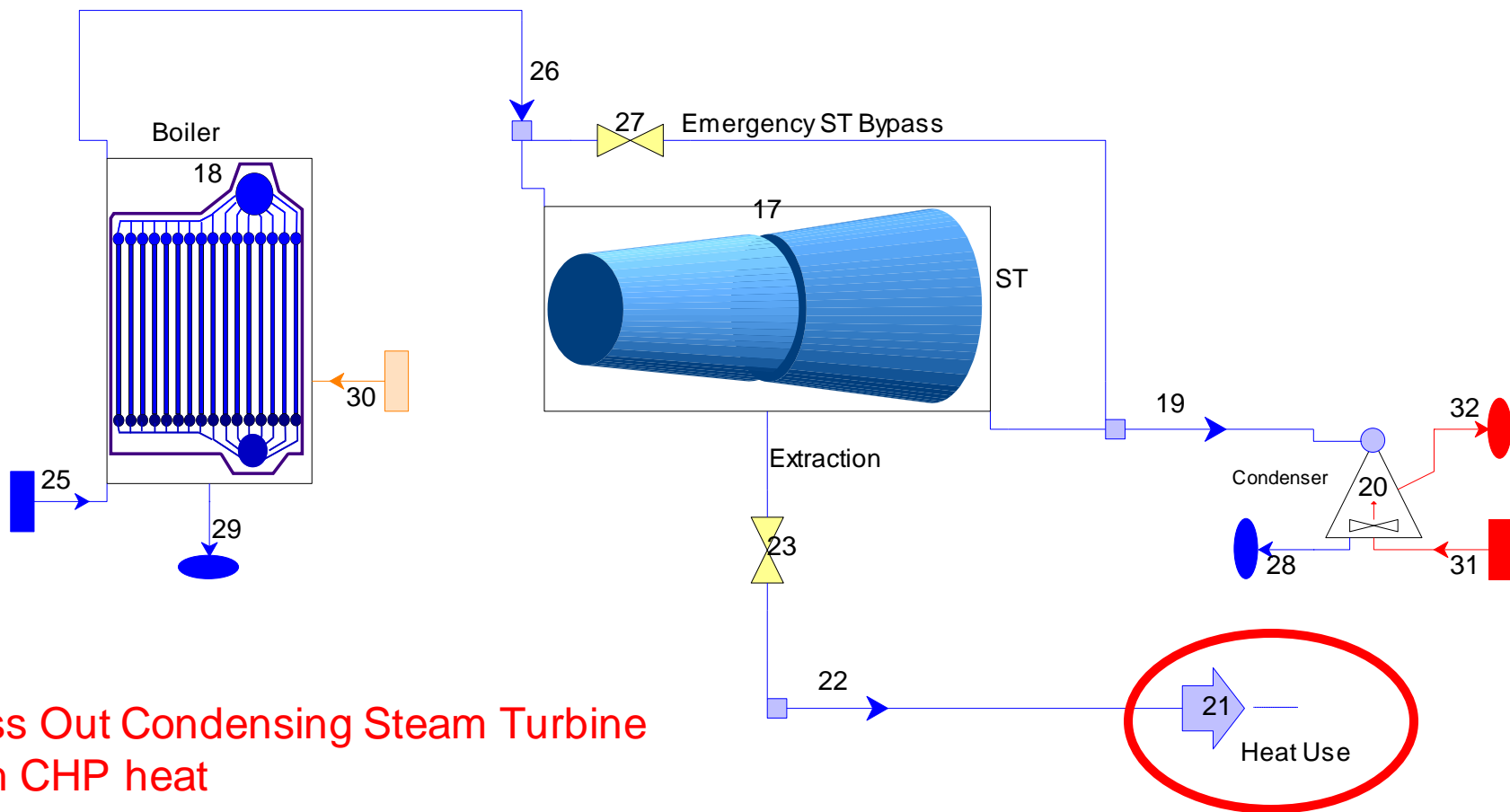
The RHI (Amendment) Regulations 2018 – Use of Heat

- Following uses of heat are **Not** eligible for RHI (for applications made on or after 22 May 2018)
 - wood fuel drying,
 - digestate drying,
 - waste drying or processing, and
 - domestic swimming pools on Non-Domestic premises as eligible uses of heat.

- Provide Ofgem a filled-in copy of the **Eligible Heat Use questionnaire** during accreditation



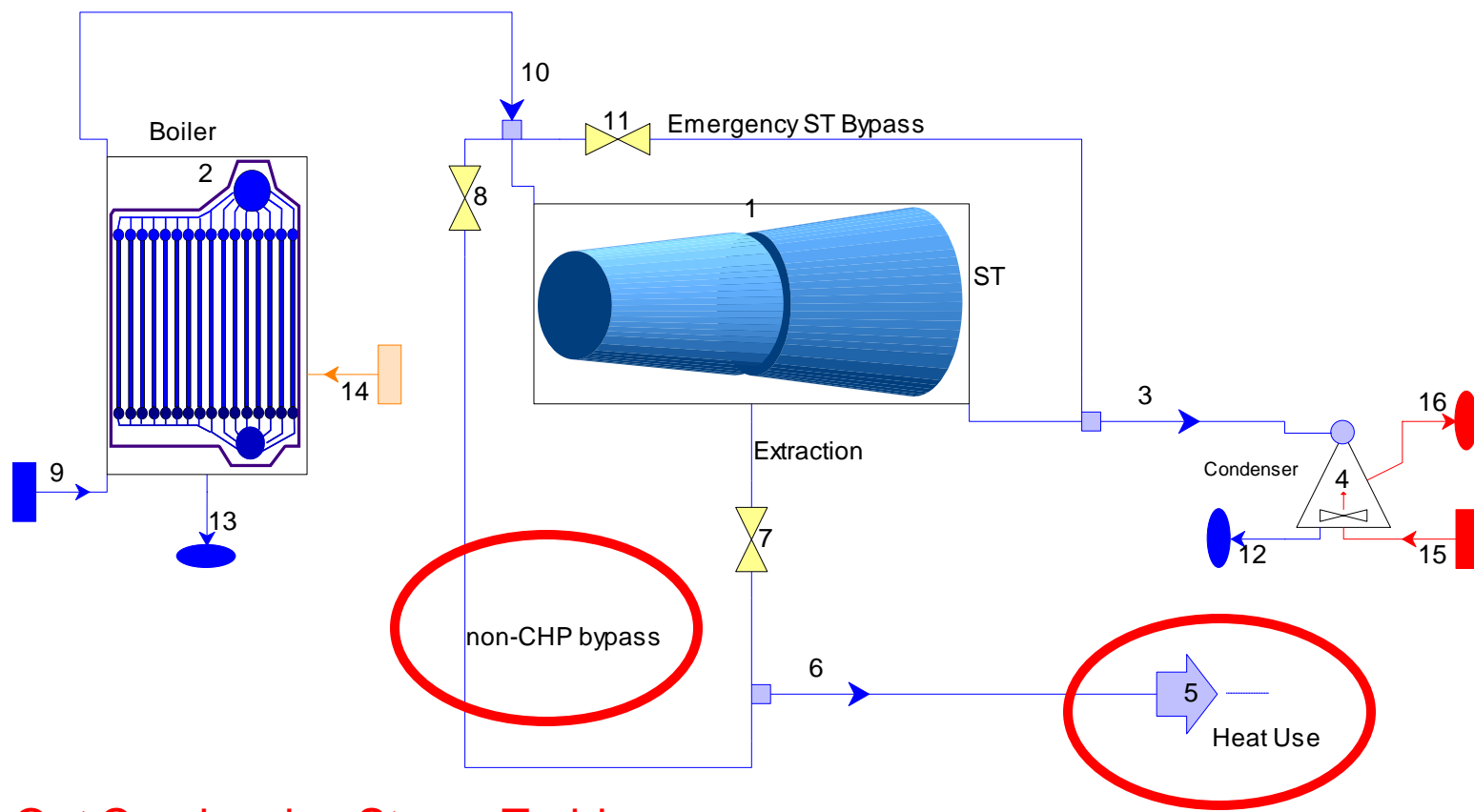
ST Example CHP



Pass Out Condensing Steam Turbine
with CHP heat



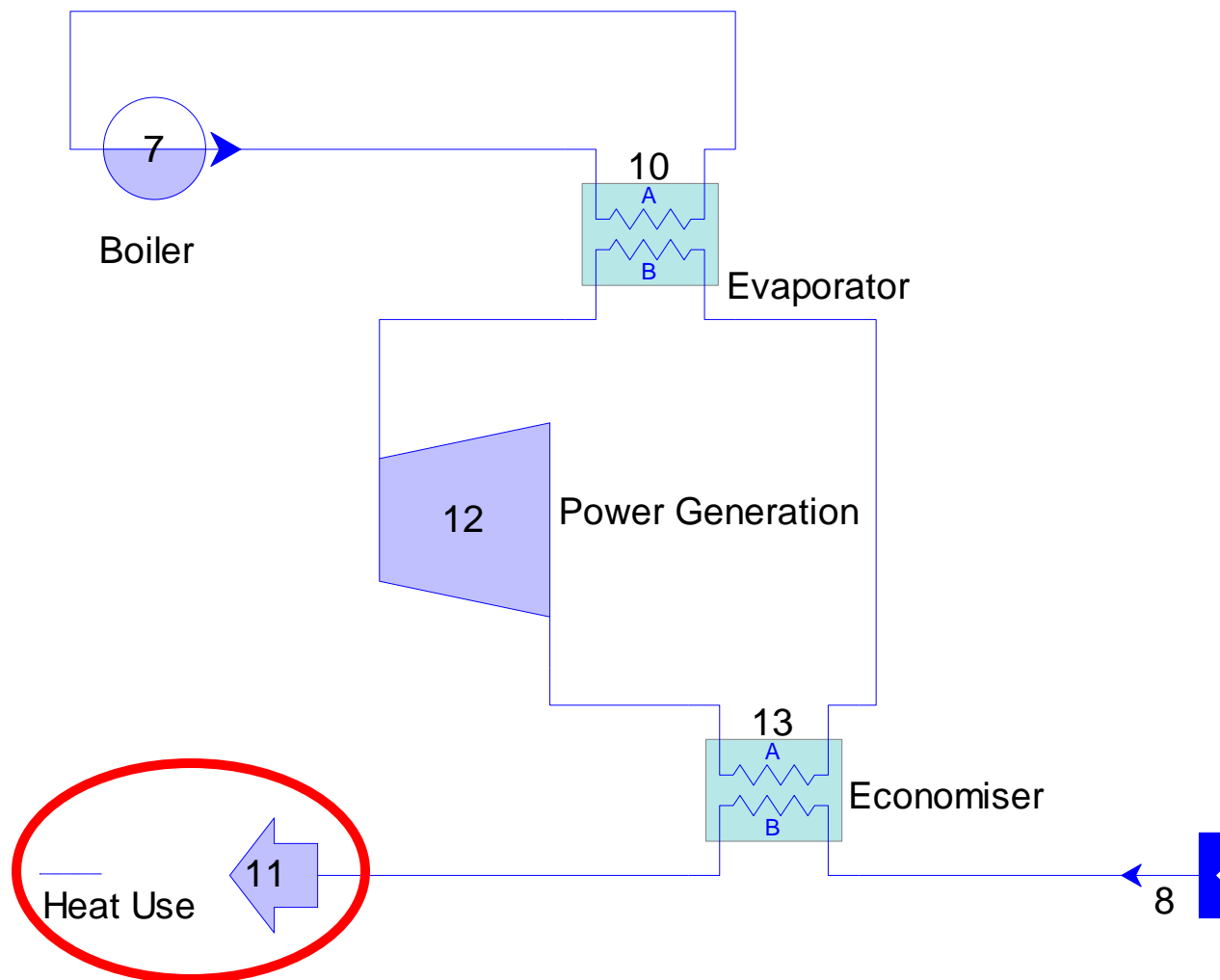
ST Example with non-CHP Heat



Pass Out Condensing Steam Turbine
with non-CHP heat in bypass



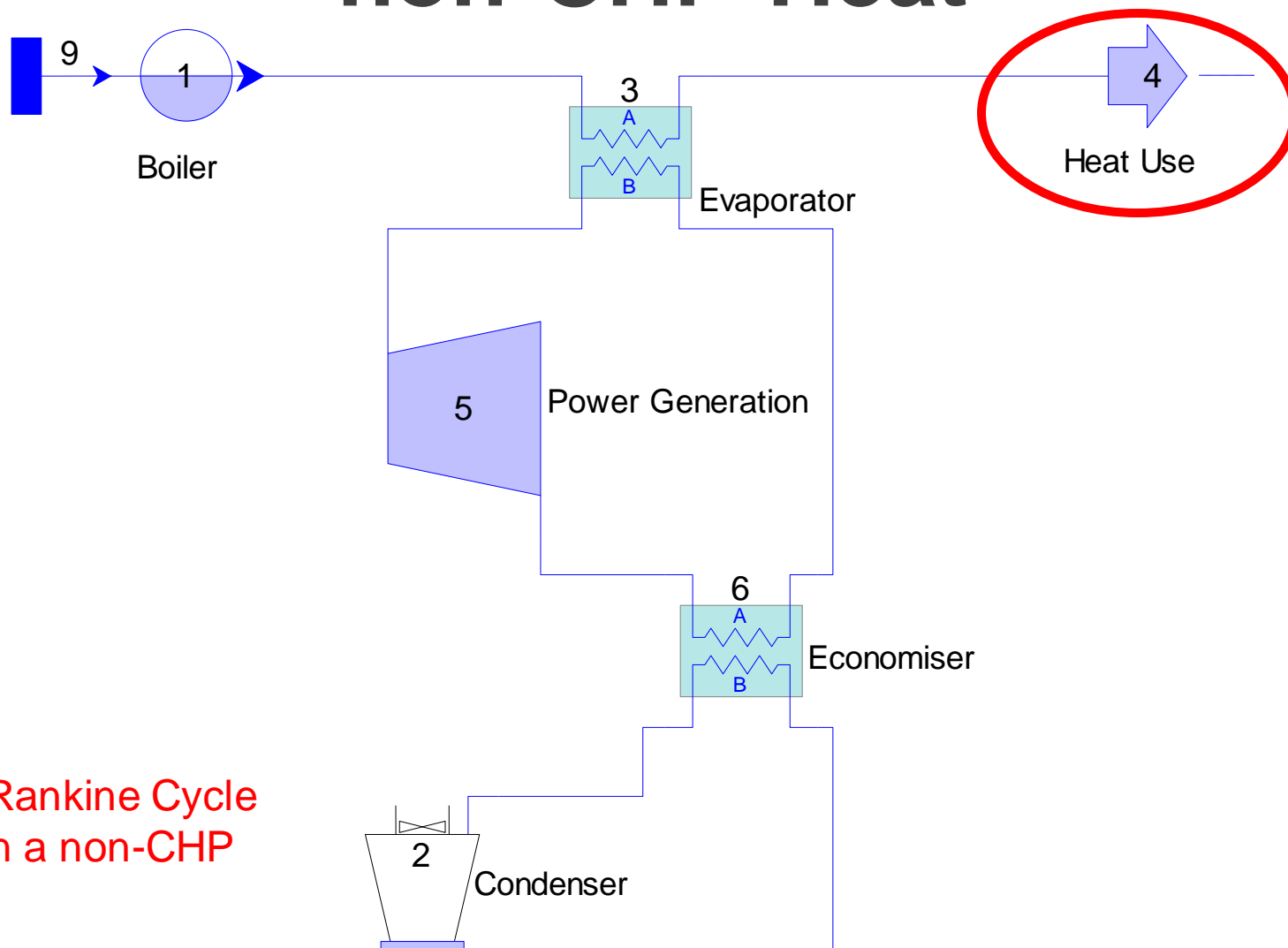
CHP Heat



Organic Rankine
Cycle Turbine as
CHP mode



non-CHP Heat



Organic Rankine Cycle
Turbine in a non-CHP
mode



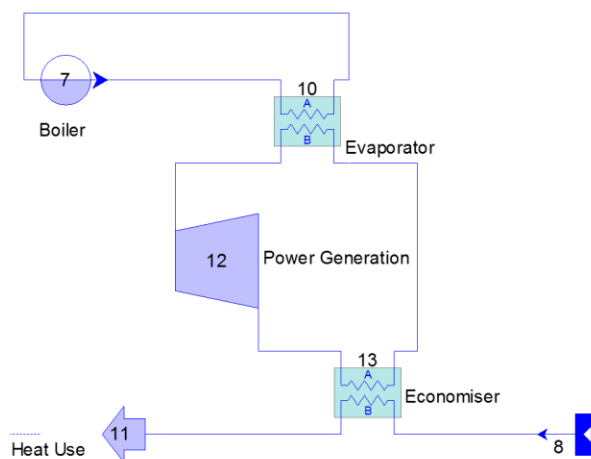
Example of Biomass CHP

TPC = 200 KWe

Thermal Capacity = 1 MWth

Power efficiency = 12%

QHO = 6,000 MWh



- CHP tariff will apply to $6,000 * (12/20) = 3,600$ MWh
- The remaining 2,400 MWh will supported under Biomass Boiler tariff.
 - Tier 1 will apply to, $1 \text{ MW} * 8760 * 35\% * 40\% = 1,226.4$ MWh
 - Tier 2 will apply to, $2,400 - 1,226.4 = 1,173.6$ MWh
- CHP RHI payment $= 3,600 * 44.2 = \text{£}159,120$
- Biomass boiler Tier 1 payment $= 1,226.4 * 30.5 = \text{£}37,405$
- Biomass boiler Tier 2 payment $= 1,173.6 * 21.4 = \text{£}25,115$
- Total RHI payment = $\text{£}221,640$



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**



Government support for Heat Networks



Heat Networks Investment Project (HNIP)

- Delivering **£320 million** of capital investment support to increase the volume of heat networks built
- expected to support up to 200 projects by 2021 through grants and loans
- aim is to deliver carbon savings for carbon budgets, and help create the conditions for a sustainable market that can operate without direct government subsidy
- The project would run from 2018 to 2021
- investment is offered as 'gap funding' through a combination of grants and loans which will be offered to eligible projects from April 2019
- HNIP also offers support for the refurbishment, expansion, or interconnection of existing heat networks

Funding offered through HNIP seeks to leverage around £1bn of private sector and other investment to support the commercialisation and construction of heat networks.



The Industrial Heat Recovery Support (IHRS)

- **A competitive grant funding programme in 2 phases, which aims to:**
 - ❑ increase industry confidence to invest in technologies to recover heat from industrial processes
 - ❑ increase the deployment of such technologies in England and Wales
- **The IHRS programme's total funding is £18 million:**
 - ❑ £12 million designated Capital Expenditure
 - ❑ £6 million designated Programme Expenditure



IHRS – Phase 1 and 2

Phase 1 - Concept and Definition activities

- Feasibility study
- Preliminary Engineering

Phase 2 - implementation activities

- Detailed design
- Construction
- Commissioning,
- Operation start up,
- Post project evaluation by providing grant funding

The IHRS Programme is now open to all applications



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Thank You