



Overview of Draft General Plan Approval and/or General Operating Permit for Combined Heat and Power (CHP) Facilities (GP-20)

Air Quality Technical Advisory Committee

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Combined Heat and Power Facility

Combined Heat and Power Facility (CHP) – A facility that generates electricity and useful thermal energy for heating or cooling in a single, integrated system, also known as a cogeneration or trigeneration facility.



Background

- A General Permit is a pre-approved plan approval and operating permit which applies to a specific source category that the Department determines are similar in nature and can be adequately regulated using standardized specifications and conditions.
- As part of the General Permit process, the Department establishes Best Available Technology (BAT) requirements for new sources. BAT requirements can include equipment, devices, methods, or techniques as determined by the Department, which will prevent, reduce, or control air emissions to the maximum degree possible and which are available or may be made available.
- The General Permit sets forth standardized terms and conditions related to emission limits, source testing, recordkeeping and reporting requirements. In addition, the General Permit requires permittees to comply with all applicable federal requirements.



Draft GP-20 Applicability

Draft GP-20 is applicable to a combined heat and power facility with new or modified natural gas-fired engines or natural gas-fired turbines used for electric generation with a maximum electric generating capacity less than 25 megawatts total combined electric generating rated capacity.

Draft GP-20 Applicability (cont.)

- The actual emissions from all sources and associated air pollution control equipment must not be equal or exceed the following on a 12-month rolling sum basis.

NO_x – 100 tons

SO_x – 100 tons,

PM_{2.5} – 100 tons

Single HAP – 10 tons

CO – 100 tons

PM₁₀ – 100 tons,

VOCs – 50 tons

Total HAPs – 25 tons

- For facilities located in Philadelphia, Bucks, Chester, Montgomery, or Delaware Counties, the NOX and VOC emissions thresholds are less than 25 tpy each.

Draft GP-20 Conditions

Draft GP-20 terms and conditions include the following requirements:

- Municipal notification
- Source specific emission limits
- Performance testing
- Notification, recordkeeping and reporting
- Periodic monitoring
- Malfunction reporting
- Applicable federal requirements



Draft GP-20 Conditions (Cont.)

- The terms and conditions of draft GP-20 cannot be modified during the authorization.
- Specific BAT emission limits for natural gas-fired engines and natural gas-fired turbines.
- Specific obligation to document operations below major source thresholds.
- Compliance demonstration requirements and periodic monitoring requirements every 2500 hours of operations.

Output-Based Emission Limits

- The draft GP-20 includes power output-based emissions standards in order to encourage efficiency and pollution prevention while providing more flexibility to combustion sources.
- Since the emission sources in draft GP-20 are used to generate electricity instead of mechanical power, the emissions units applicable for the sources in draft GP-20 are expressed in units of electricity (watt-hour).

Engine Limits

Engine Type	Electric Rating (KW)	NO _x (lb/MWh)	CO (lb/MWh)	NMNEHC (as propane) excluding HCHO (lb/MWh)	HCHO (lb/MWh)	CO ₂ (lb/MWh)
all	<75	1.55	3.11	1.09	---	683
Lean-Burn	<u>>75 and <373</u>	1.55	1.09	0.47	---	
Lean-Burn	<u>≥373 and <1770</u>	0.78	0.39	0.39	0.080	585
Lean-Burn	<u>≥1770 and <3730</u>	0.47 Uncontrolled or 0.080 with control	0.39	0.39	0.080	
Lean-Burn	<u>≥3730 and <6711</u>	0.080	0.18	0.11	0.038	
Lean-Burn	<u>≥6711 and <25000</u>	0.080	0.18	0.058	0.014	512
Rich-Burn	<u>>75 and <373</u>	0.39	0.47	0.31	---	683
Rich-Burn	<u>>373</u>	0.31	0.47	0.31	0.040	

Turbine Limits

Electric Rating (MW)	NO _x (lbs/MWh)	CO (lbs/MWh)	NMNEHC (as propane) (lbs/MWh)	Total PM (lb/MWh)	CO ₂ (lb/MWh)
≥0.75 and <3.73	0.62	0.38	0.22	0.21	810
≥3.73 and <11.86	0.38	0.15	0.12	0.21	810
≥11.86	0.20 Uncontrolled or 0.050 with control	0.14 Uncontrolled or 0.030 with Control	0.11	0.18	720

Compliance Demonstration

- Must notify the local municipality prior to submitting application.
- Submission of performance test results for each applicable source as specified to the Department.
- Maintaining records for a minimum period of 5 years.
- Report annual emissions to the Department for annual emissions inventory.
- Report Malfunctions.

Questions?





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