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Puget Sound Clean Air Agency

PUGET SOUND CLEAN AIR AGENCY

Additional Notice of Construction Application Requirements for

GAS TURBINES, RECIPROCATING ENGINES

General

Description of Equipment and its Purpose (*Specify turbine or reciprocating engine and its intended use (electrical generation, steam for process, heat for other process fluids, cogeneration, hot air, mechanical power for pumps or compressors, resource recovery))*

Identify which of the following categories the project fits into:

1. New Construction *(New construction also includes existing, unpermitted equipment or processes*)
2. Reconstruction *(Reconstruction means the replacement of components of an existing facility to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility)*
3. Modification *(Modification means any physical change in, or change in the method of operation of, a source, except an increase in the Hours of Operation or production rates (not otherwise prohibited) or the use of an alternative fuel or raw material that the source is approved to use under an Order of Approval or operating permit, that increases the amount of any air contaminant emitted or that results in the emission of any air contaminant not previously emitted)*
4. Amendment to Existing Order of Approval Permit Conditions

Date of Equipment Manufacture (month/yr) *(Specify the date when the turbine or reciprocating engine was built by the manufacturer.)*

Estimated Hours of Operation (hr/day, day/wk, wk/yr) *(Estimate the hours of operation for the new turbine or reciprocating engine - not necessarily the entire facility.)*

Estimated Installation Date *(Estimate the date when the turbine or reciprocating engine will be put into service)*

Fuel Properties

Type of Primary Fuel *[Specify natural gas, propane, or waste gas (landfill gas, sewage digester gas, process gas), gasoline, kerosene (#1 fuel oil), diesel (#2 fuel oil), or residual fuel (#6 fuel oil)]*

Estimated Primary Fuel Usage (Million cu ft/yr, thousand gal/yr) *[Estimate how many million cubic feet of gaseous fuel or thousands of gallons of liquid fuel will be burned annually. Alternatively, specify how many billion Btu/yr]*

Type of Secondary Fuel *[Specify natural gas, propane, or waste gas (landfill gas, sewage digester gas, process gas), gasoline, kerosene (#1 fuel oil), diesel (#2 fuel oil), or residual fuel (#6 fuel oil). Specify 'none' if not capable of firing a secondary fuel]*

Estimated Secondary Fuel Usage (Million cu ft/yr, thousand gal/yr) *[Estimate how many million cubic feet of gaseous fuel or thousands of gallons of liquid fuel will be burned annually. Alternatively, specify how many billion Btu/yr]*

Heat Content of any Waste Gas or Process Gas Burned (Btu/Million ft3) *[Specify the upper heating value.]*

Chemical Composition of any Waste Gas or Process Gas Burned (%, ppmv) *[Specify the principle components in percent, and the trace constituents (H2S, ammonia, hydrogen chloride, vinyl chloride, etc.) in parts per million by volume]*

Design *[Most design information is available from the manufacturer or vendor. Submittal of a brochure, scale drawing or process and instrumentation diagram will facilitate the review of the permit application]*

Make & Model *[Specify the manufacturer of the turbine or reciprocating engine and its model number - not its serial number.]*

Type of Internal Combustion Engine *[For turbines, specify the operating cycle (simple, regenerative, cogeneration, or combined) and the type of combustor (annular, can-annular or silo). For reciprocating engines, specify the ignition system (compression or spark ignition), the air scavenging cycle (2-stroke or 4-stroke), the fuel delivery system (injection or carburetor), the air-to-fuel ratio (rich-burn or lean-burn), the total cubic inch displacement and the number of cylinders]*

Emission Warranties for NOx, CO and Formaldehyde *[Supply the vendor's emission warranties for nitrogen oxides, carbon monoxide, formaldehyde (if gas-fired) and particulate (if oil-fired)]*

Combustion Monitoring and Control *[Supply the vendor's information regarding excess air control and combustion monitoring (O2, CO, °F)]*

Emission Controls

- *For turbines, specify if using water or steam injection, dry controls such as two-stage lean/lean or two-stage rich/lean (DLN, DLE, SoLoNOx) combustors, or add on controls such as selective catalytic reduction or other catalytic reduction systems (SCONOx, XONON).*
- *For reciprocating engines, specify if using exhaust gas recirculation, ignition timing retard, pre-ignition combustion chambers, air-to-fuel ratio adjustments, or derating of the engine, nonselective catalytic reduction (3-way catalyst), or selective catalytic reduction.*
- *If applicable, complete the permit forms for selective catalytic reduction.*

Emissions Estimate (lb/hr, lb/yr) *[Estimate the emissions of each pollutant and include your calculations. Emissions should be based on the manufacturer's warranties or measurements. For other pollutants, use emission factors from http://www.epa.gov/ttn/chief/ap42/index.html]*

Rated Heat Input (MMBtu/hr) *[Specify the heat input, not the heat output. The heat input is equal to the maximum fuel firing rate times the upper heating value of the fuel]*

Rated Capacity (hp or kW) *[Specify the maximum engine output in horsepower or kilowatts.]*

Manufacturer's Rated Brake-Specific Fuel Consumption or Heat Rate at Peak Load (Million Btu/hp-hr or kJ/W-hr) *[For turbines, specify this is sometimes called the 'rated heat rate at the rated peak load]*

Stack *[Required only for units without 'add on' control equipment. Otherwise, complete the applicable permit form for selective catalytic reduction or nonselective catalytic reduction.]*

Stack Height (ft) *[Specify the height of the top of the stack above ground level - not above the building or sea level]*

Stack Diameter or Rectangular Cross-Sectional Dimensions (inches) *[Specify the internal dimensions - not the external dimensions]*

Exhaust Flowrate (acfm) *[Specify the airflow in actual cubic feet per minute]*

Exhaust Temperature (°F) *[Specify the temperature of the exhaust leaving the stack]*

Distance to Nearest Property Line (ft) *[Specify the distance from the base of the stack to the nearest property line]*

Height, Length and Width of Buildings (ft) *[Specify the approximate dimensions of any buildings that are >40% of the stack height and are located within 5 building heights from the stack]*

Operation and Maintenance

Describe Preventive Maintenance *[Specify the periodic maintenance recommended by the manufacturer and its frequency]*