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ENVIRONMENTAL PERMITTING REQUIREMENTS

NEW CONSTRUCTION PROJECTS

LEHIGH UNIVERSITY
BETHLEHEM, PENNSYLVANIA

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TABLES

1.0 INTRODUCTION

Lehigh University (Lehigh) operates a number combustion units comprised of boilers, hot water heaters, and electric generators (EGENs) to provide space heating, hot water, and emergency electric power at its Campus in Bethehem, Pennsylvania. The Campus is classifed as a minor source of air pollutants and has a valid Synthetic Minor State-Only Operating Permit.

From time to time, Lehigh University undertakes construction projects to add new buildings or renovate old buildings, which may require the installation of new boilers, hot water heaters, and EGENs. These units are sources of air emissions and subject to federal and Pennsylvania State air quality regulations.

It is the intent of Lehigh University to continue operating under its minor source permit after the completion of these construction projects. Therefore, appropriate steps must be taken to keep emissions low during the design phase of the projects.

Lehigh University must obtain approvals from the Pennsylvania Department of Environmental Protection (Department) before initiating the construction of new combustion units. These approvals may be in the form of Requests for Determination of Minor Source Significance (RFDs) or Plan Approvals. The Department can take between two and four weeks to approve the RFD, but about six months to issue a Plan Approval, depending on the capacity of the combustion unit and its emission rates.

This document summarizes the minimum requirements that must be provided related to emissions along with other design documents and specifications so that the optimum permitting strategy can be developed and the appropriate documents submitted to the Department to obtain approval in a timely manner without affecting the construction schedule.

2.0 BOILERS & HOT WATER HEATERS

Boilers and hot water heaters with heat inputs of 10 MMBTU/hr or more and firing either natural gas or No. 2 fuel oil, or both, must be equipped with low-NO_x burners with flue gas recirculation (FGR) systems. It is highly recommended that boilers and hot water heaters with capacities of less than 10 MMBTU/hr be equipped with low-NO_x burners.

3.0 ELECTRIC GENERATORS (EGENs)

EGENs must be EPA-certified, based on use – Emergency or Non-Emergency

4.0 OTHER COMBUSTION EQUIPMENT

Other combustion equipment that may be used on campus include stoves for cooking, gas used in laboratory fume hoods, and indoor fireplaces or outdoor fire pits. The Department considers these units to be “trivial” and do not need to be included in the State-Only Operating Permit.

Packaged HVAC units, direct-fired chillers, cogen turbines, and fuel cells, however, will require burner capacities, (BTU/hr) rate, and emission data for NO_x, CO, and other pollutants as noted in the Data Sheet D1.

Attached Tables D1 or D2 must be completed depending on the type of equipment being supplied and submitted along with the design documents to Lehigh University.

TABLE D1

STEAM BOILERS AND HOT WATER HEATERS

Combustion Unit: _____Boiler _____ Hot Water Heater

Heat Input Capacity (MMBTU/hr): _____

Type of Fuel Used: _____ Natural Gas, or _____ No. 2 Fuel Oil, or _____ Both

Manufacturer's Name: _____

Model No. _____

Burner Type: _____Standard, or _____ Low-NO_x, or _____ Low-NO_x with FGR

Emissions Data at the maximum rated capacity: (lb/hr or ppm at 3% O_2)

NO_x: _____

CO: _____

VOC: _____

SO_x: _____

$PM_{10/2.5}$: _____

Complete this Data Sheet for each unit.

TABLE D2

ELECTRIC GENERATOR

Engine Capacity:
kW: _____
bHP: _____

Use:
Emergency: _____
Non-Emergency _____

Type of Fuel Used: _____ Natural Gas, or _____ Diesel Fuel

Fuel Input (MMBtu/hr) _____

Engine Manufacturer's Name: _____

Engine Model No. _____

EPA Engine Tier Certification: _____

Emissions Data at maximum rated capacity: (lb/hr or gm/bhp-hr)

NO_x: _____

CO: _____

VOC: _____

SOx: _____

$PM_{10/2.5}$: _____

Any Add-on Control Device: _____ Oxidizing Catalyst _____SCR System

Complete this Data Sheet for each unit.