



# Department of Environmental Protection

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## “Ask the Office of the Permit & Regulatory Ombudsman”

### Issue Summary: Minimum Stack Height Requirement for Engines and Turbines

*MassDEP's Office of Permit and Regulatory Ombudsman serves as a Point of Contact for raising issues about permitting or questions about how law, policy, and regulations are being applied across the agency. This summary provides information about an issue raised to the Office and should not be considered legal or consulting advice. Project proponents should consult the regulations and appropriate MassDEP Regional Office on how this information may apply to their specific projects.*

**Issue:** Air Quality Regulation Specifying Minimum Stack Heights for Large Engines and Turbines

**Recent Inquiry:** An applicant was preparing the design requirements for the installation of an emergency diesel-engine generator with a 2 megawatt (MW) rated output to be located on top of a 14-foot-tall building. The applicant noted that MassDEP's regulations require that for an engine of this size, the height of the top of the stack must be at least 1.5 times higher than the building. However, for a smaller engine (greater than 300 kilowatt (kW) but less than 1 MW) installed on the roof, the regulatory requirement is that the stack extend at least 10 feet above the roof top. The proponent noted that, in this case, the required minimum stack height of 1.5 times the building height would only extend 7 feet above the roof, which is less than the 10-foot requirement for smaller engines and turbines. MassDEP advised the applicant that the 1.5 times the building height is a minimum requirement and that the stack should extend at least 10 feet above the roof top.

**Regulatory Background:** MassDEP's minimum stack height requirements in 310 CMR 7.26(42) *Emergency Engines and Turbines* and 310 CMR 7.26(43) *Engines and Turbines* are designed to protect public health by minimizing exposure to pollutants emitted by regulated engines and turbines. A minimum 10-foot stack reduces the potential for significant exposure to engine and turbine exhaust. Note that a stack higher than 10 feet may be required to avoid creating a condition of air pollution.

The minimum 10-foot stack height requirement for engines and turbines with rated power output equal to or greater than 300 kW but less than 1 MW are found in 310 CMR 7.26(42)(d)4.b. and 310 CMR 7.26(43)(d)3.c. The regulations require a minimum stack height of ten feet above the rooftop or the engine or turbine enclosure, whichever is lower. For a free-standing engine or turbine in this size range, a stack 10 feet above the engine or turbine enclosure may be lower than nearby or adjacent buildings,

which may be acceptable. However, the regulations also require that the stack be of sufficient height and in a location that will prevent and minimize flue gas impacts on sensitive receptors (e.g., away from people, windows that open, fresh air intakes). In other words, good air pollution control engineering is required when considering stack height for all engines and turbines and may necessitate a stack taller than 10 feet to minimize impacts.

Based on the potential for increased emissions from larger engines and turbines (1 MW and above), MassDEP's regulations at 310 CMR 7.26(42)(d)4.c. and 310 CMR 7.26(43)(d)3.d require that for an engine or turbine with a rated power output equal to or greater than one MW, the stack height be a minimum of 1.5 times the height of the building on which the stack is located, and at least as high as nearby building heights (or provide a modeling analysis to support deviations from this standard).

**Resolution:** The Ombudsman raised this question with the Bureau of Air and Waste and confirmed that the minimum stack height for engines and turbines with power outputs above 300 kW, including equal to or above 1 MW, should be 10 feet above the building roof top. To address this issue, MassDEP is considering clarifying the regulations by amending 310 CMR 7.26(42)(d)4.c. and 310 CMR 7.26(43)(d)3.d by deleting "but less than 1 MW," which would make the 10-foot minimum stack height requirement explicitly applicable to all engines and turbines with a rated power output equal to or greater than 300 kW. Thus, larger engines and turbines would have the minimum stack height requirement of 1.5 times the height of the building (or provide a modeling analysis) and also would be subject to the 10-foot minimum stack height requirement that applies to smaller engines and turbines. Any change to the regulation would be done through a Chapter 30A notice and comment process.