Emergency Generators and Demand Response under Massachusetts Air Regulations

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to MADRI

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Commonwealth of Massachusetts
Department of Environmental Protection

Questions

- *What are the Massachusetts air pollution control regulations regarding the use of backup generators?*
- *How do these interact with the practices and procedures in ISO New England?*

Massachusetts Emergency/Standby Generator Terminology

- “It’s the engine” rated fuel input or engine output (not generator rating)
- 1 million (mm) Btu/hr ≈ 100 kW (mechanical) ≈ < 100 kW (elec)
- ERP = Environmental Results Program: self certification (like permit-by-rule or general permit)

Emergency Engine Provisions
New Engines

- Engines installed after March 23, 2006
  - ≥ 37 kW: ERP Self Certification
    - Non-road or NSPS (emergency) diesel Tier emissions for same model year as calendar year of installation; same emissions standards apply for spark ignition (may need add-on 3-way cat.) : cleanest engines only; ULSD required for diesels
    - no relocation except to serve same building
    - 300 hr/year maximum including manufacturer-recommended "normal maintenance and testing procedures"
    - Emergency Demand Response allowed
    - Stack height provisions become more stringent for larger engines
    - Modeling required for engine rated ≥ 1 MW, if stack less than 1.5 times building height, or less than height of any nearby structure

Emergency Engine Provisions
Older (pre-March 24, 2006-installed) Engines

Permit thresholds evolved over time:

- Installed before June 1, 1990
  - ≥ 3 mmBtu/hr
- Installed on or after June 1, 1990 and before March 24, 2006
  - ≥ 10 mmBtu/hr:
- Permit-by-rule for Engines ≥ 3 mmBtu/hr < 10 mmBtu/hr installed between June 1, 1990 and March 23, 2006 inclusive

2006 rule changes retroactively allowed same operating provisions as new engines, but as-is emissions performance:

- 300 hr/yr
- ULSD (for diesels)
- May operate for Emergency Demand Response
- Elective for < 3 mmBtu/hr (not previously regulated)

Emergency definition in Massachusetts Air Regulations for Engines - 1

- [Emergency/standby]
  - an electric power outage due to failure of the grid, in whole or in part, on-site disaster, local equipment failure, flood, fire, or natural disaster. Emergency shall also mean when the imminent threat of a power outage is likely due to failure of the electrical supply or when capacity deficiencies result in a deviation of voltage from the electrical supplier to the premises of 3% above or 5% below standard voltage,

..... *continued* .....

Emergency definition in Massachusetts Air Regulations for Engines - 2

...continued...

- *[Emergency Demand Response – per ISO-NE]*
  - *or periods during which the regional transmission organization directs the implementation of voltage reductions, voluntary load curtailments by customers, or automatic or manual load shedding within Massachusetts in response to unusually low frequency, equipment overload, capacity or energy deficiency, unacceptable voltage levels, or other such emergency conditions.*

Emergency Demand Response in terms of ISO-NE declared conditions

Owner asks: "Aggregator offers to sign me up for demand response. Is that allowed with my ERP engine?"

MassDEP answers: "Make sure you will only operate when ISO-NE has declared OP4 - Action 6."

- Original 2006 situation: OP4 - Action 12
- Changed in 2010: New OP4 – now Action 6

Population Statistics

~ 1,000 engines installed with ERP certification since March 2006

> 400 facilities included in ISO-NE RTEG testing (year-old snapshot – which ERP, or pre-ERP, unknown)

~ 65 MW actual (not rated capacity) output measured in snapshot test

Unresolved issues

- When do “emergency engines” operate?
- Does EDR enrollment significantly increase emissions from enrolled engines?
- How flexible are “manufacturer-recommended maintenance and testing procedures?” Can we minimize hours and emissions?
- What about the 1-hour NO_2 NAAQS?

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Comments or questions:

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