EE 21: MODERNIZE BOILER REGULATIONS

Summary

Issue:
NYC’s boiler regulations were written in 1973, and are based on now outmoded technology.

Recommendation:
A dedicated task force -- including boiler experts, DEP Air Engineering Staff, and members of the Green Codes Task Force -- should review existing boiler regulations and propose revisions.

Proposed Legislation, Rule or Study

Study on Local law 49/71 and DEP Rules Regarding Fuel Oil Burning Equipment.

By Jan. 1, 2011, the Department of Environmental Protection shall convene a dedicated task force, including boiler experts from city government, NYPA and the private sector, DEP Air Engineering Staff, and members of the Green Codes Task Force, to update the city’s regulatory language for boiler regulations and improved combustion efficiency, along with supporting materials. The updated regulations shall be completed by Jan. 1, 2012, with rulemaking completed by June 1, 2012.

Some preliminary ideas follow:

1. Eliminate the need for separate DEP Air Resources approval of equipment. The buildings department as of July 2008 has eliminated the MEA requirement for burners. The only requirement should be that the burner is listed with a NRTL (Nationally Recognized Testing Laboratory, e.g. UL, ETL, CSA, etc.)

2. Provide standard minimum performance criteria. Suggested standards: Minimum 81% boiler/burner efficiency with zero trace smoke, less than 100 ppm CO and 8% or less O2. This regulation should apply to both oil and gas burners.

3. Ban the installation of new oil burners that do not provide 100% of required combustion air. This ban should become effective within two years after passage of new DEP regulations. There should be no exceptions.

4. Eliminate inconsistencies in the DEP regulations (e.g. B8(b) allows #2 smoke for burner acceptance but smoke alarm regulations state a maximum of #1 smoke).

5. Firing rate controls: There should be phased-in regulations of burner firing rate capability and firing rate controls for all burners, both gas and oil. Suggested standards: Burners 450,000 Btu/h can be on-off firing. Burners above 450,000 and under 2,000,000 low-high-low with a minimum 1.5 to 1 turndown ratio. 2,000,000 to 2,800,000 low-high-low with a minimum 2 to 1 turndown ratio. Above 2,800,000 the turndown ratio should be at least 3 to 1 using either step modulation or full modulation.

6. Draft regulations: Current DEP regulations are extremely specific regarding minimum draft for a C of O performance test. They say little or nothing regarding draft control itself. Proposed revisions should include requirements for adequate draft controls based upon chimney height or set draft standards. For example, all combustion equipment must provide adequate draft control to maintain draft between -0.02” w.c and -0.10” w.c with outside air between 0 and 94 degrees Fahrenheit.

7. Reevaluate the need for the chimney receptor regulations in view of proposed combustion performance improvement regulations.

8. Eliminate the prohibition against the use of parallel firing rate lead-lag controls.

9. Reevaluate the threshold for the triennial boiler inspection. Possibly it would be advantageous to lower the size threshold to 1.5 or 2MM Btu/hr to include additional boilers and or boilers firing #2 oil or natural gas.
Supporting Information

Issue- Expanded
The current New York City Department of Environmental Protection (DEP) fuel oil combustion code was written in 1973 and has not been updated since. It was designed with regard to horizontal rotary burners and other types of burners that were not designed to supply the air required for proper combustion by themselves. Rather, these devices relied upon chimney draft for the air necessary to achieve complete combustion. Such burners can no longer be installed in NYC. All oil burners currently installed do provide 100% of the air required for combustion and consequently this code is obsolete for the vast majority of installations. The current code also does not apply to burners smaller than 20 gph and is unevenly enforced. A larger set of other accumulated shortcomings is enumerated above in the formal proposal.

Amending the existing regulation to bring the combustion code up to date to address current technology, and expanding the application of the code to smaller boilers could achieve very significant energy savings.

Environmental & Health Benefits
Implementation of a revised set of regulations will result in reduced soot emissions (2.5 micron) as well as energy savings from higher boiler/burner combustion efficiency. It will also result in lower citywide emissions of greenhouse gasses and of Clean Air Act pollutants due to better combustion efficiency.

This proposal was found to have a positive, indirect environmental impact.

This proposal was found to have a positive indirect health impact.

Cost & Savings
This proposal is for a task force, which will have no direct impact on costs.

Precedents
Enabling law covered in section 204 of Title 4 of NYS labor law governing boilers And NYC local law 62/91.

LEED
This proposal will have no direct impact on LEED credits

Implementation & Market Availability
The resultant changes will only include off the shelf technologies that have not necessarily been previously encouraged in NYC.

Notes
Potential energy savings from all boilers in NYC of 8 to 15% per annum depending upon an existing building’s combustion efficiency, combustion control options and heating plant application (heating only or heating/DHW combined.)