EO 5: INSPECT & MAINTAIN COMMERCIAL HVAC SYSTEMS

New York City Mechanical Code
Proposal developed by the Energy & Ventilation Committee

Summary

Issue:
Without routine inspection and maintenance, HVAC systems do not deliver on energy efficiency, thermal comfort and indoor air quality.

Recommendation:
Adopt ASHRAE 180P for the inspection and maintenance of HVAC systems in commercial buildings.

Proposed Legislation, Rule or Study

Amendments to the New York City Mechanical Code:

1. Amend Section 102.3 as follows:

   102.3 Maintenance. Mechanical systems, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the applicable provisions under which they were installed. The owner shall be responsible for maintenance of mechanical systems. To determine compliance with this provision, the commissioner shall have the authority to require existing mechanical systems to be inspected. For all buildings of 20,000 square feet or more and, for all buildings classified in occupancy group R-2 that are four stories or more in height above grade, “ASHRAE Standard 180-2008 -- Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems” or a more recent version of such standard approved by the Commissioner shall be a part of minimal compliance with this section, in accordance with the schedule in Table 102.3. Buildings shall file a copy of the Maintenance Plan called for in ASHRAE Standard 180-2008 with the department in accordance with the schedule in Table 102.3.

<table>
<thead>
<tr>
<th>Building Size (square feet)</th>
<th>Compliance with ASHRAE Standard 180-2008 Required</th>
<th>Maintenance Plan Submitted to Dept. Of Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 250,000 sf</td>
<td>July 1, 2013</td>
<td>July 1, 2014</td>
</tr>
<tr>
<td>Over 100,000 sf</td>
<td>July 1, 2016</td>
<td>July 1, 2017</td>
</tr>
<tr>
<td>Over 50,000 sf</td>
<td>July 1, 2019</td>
<td>July 1, 2020</td>
</tr>
<tr>
<td>Over 20,000 sf</td>
<td>July 1, 2022</td>
<td>July 1, 2023</td>
</tr>
</tbody>
</table>

2. Amend Section 1502 as follows:

<table>
<thead>
<tr>
<th>ASHRAE</th>
<th>Reference Number</th>
<th>Title</th>
<th>Referenced in code section number</th>
</tr>
</thead>
</table>
Supporting Information

Issue – Expanded
Current building codes and regulations do not set forth a specific minimum standard of care in the inspection and maintenance of commercial building heating, ventilating and air conditioning (HVAC) systems. The owners of commercial, institutional and other building facilities often enact inconsistent practices for inspecting and maintaining their HVAC systems. Many choose to follow rigorous polices that maintain the system in new or nearly new condition. Other owners either lack policy in this area or have adopted a run-to-failure approach where the system or components of the system are attended to only when there is a total failure. When there is no routine inspection and subsequent adjustment or maintenance of system operation and components, the system typically performs poorly. Consequently, the system does not provide the intended energy efficiency to the owners or thermal comfort and indoor air quality to the occupants.

ASHRAE 180 was developed in response to this situation to provide a basic guideline to good practice in HVAC maintenance. It is now a mature and approved standard. The primary requirement is that a specific plan be developed for the building at hand that recognizes each significant piece of equipment and establishes a schedule for inspection, adjustment, and replacement when needed. The description of Standard 180 specifically states that it does not comprise a complete maintenance program by itself: “Ancillary maintenance issues related to equipment reliability, equipment robustness and minimizing overall maintenance costs are also appropriate in order to protect the HVAC capital investment and/or minimize system downtime. These issues, however, are outside of the scope of this standard.” Hence Standard 180 is necessary but not sufficient for minimal compliance with Section 102.3.

Environmental & Health Benefits
This measure will help ensure that the indoor environment in all buildings where persons work, visit, or reside will be maintained at the healthiest and most comfortable level possible. The enhanced energy efficiency and boiler operations will result in lower emissions of pollutants and greenhouse gases.

This proposal was found to have a low, positive environmental impact per building and to impact a large number of buildings. It was thus given an environmental score of 2.

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

Cost & Savings
As described in the Executive Summary, Bovis Lend Lease prepared cost estimates for each Task Force proposal in the context of well-defined construction projects in specific buildings. Where possible, members of the Technical Committees prepared savings estimates for some of these projects and buildings. These cost and savings estimates are presented in the February 1st draft version of Appendix A. The innate uncertainty in how construction and operation will vary from one building to another, the complexity of the Task Force proposals, and the wide range of applications in which the proposals may be realized mean these figures are truly estimates.

This proposal is not expected to have any significant impact on capital costs. This proposal was also estimated to generate significant annual financial savings.

Building operators and owners will bear the slight cost of inspection and maintenance program, but the increment over a competent maintenance program is minimal or negative once the Maintenance Plan has been prepared. These statements refer to the cost of setting up and following the protocols of Standard 180P, but do not include the cost of actual maintenance. However, any apparent increase in actual maintenance costs, such as the cost of fan belts that might not otherwise have been replaced, will be returned many times over either in fuel and electric savings or in avoided lack of services.

Precedents
The Mechanical Code explicitly considers maintenance to be within its purview:
“101.2 Scope. This code shall regulate the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings.”

This measure ensures that the mandate above will be carried out professionally.

LEED
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Adherence to this requirement will provide material assistance for buildings striving for a LEED for Existing Buildings – Operations and Maintenance certification.

Implementation & Market Availability
This service is widely available and can be procured from HVAC service contractors. Expertise with the precise requirements of 180P will grow rapidly and naturally as the market expands.