BR 8: ENHANCE BUILDING WATER SUPPLY DURING BLACKOUTS

New York City Plumbing Code
Proposal developed by the Climate Adaptation Committee

Summary

Issue:
Water towers are an energy-efficient method for providing water pressure and ensuring access to potable water during short power losses. The building codes do not require water towers for new construction, and they allow the towers to be removed from existing buildings.

Recommendation:
Prohibit the removal of existing water towers, and require water towers in all new and renovated buildings.

Proposed Legislation, Rule or Study

Amendments to the New York City Plumbing Code:

1. Amend Section 606.5.6 as follows:

   606.5.6.1 Maintain Existing Gravity Tanks. An existing gravity tank shall not be removed unless it is replaced by a gravity tank of greater or equal capacity; it may not be removed and replaced by potable water pressure tanks.

   Exception: A gravity tank may be replaced by a gravity tank of smaller size if it can be demonstrated that the water requirements of the building have diminished by more than 30% due to a change of use or occupancy.

   606.5.6.2 New Construction. New buildings shall either install a gravity tank or comply with performance standards that shall be established by the department for minimum emergency water supplies according to building occupancy.

Supporting Information

Issue-Expanded

The wooden water towers on New York City’s rooftops constitute a signature feature of the City’s skyline; in addition, they provide resilience to the City’s buildings in the event of power outages, by ensuring that there is some water available. In many older buildings, water from the city system is pumped up to the roof and stored in a water tank, where it is then distributed throughout the building via gravity. Newer systems often do not use such rooftop gravity tanks. Instead they use one or more water pressure tanks, which store very little water and continuously supply water at the necessary pressure by pumping.

In terms of building resilience, the rooftop storage units offer several advantages. If the building’s electrical or water systems were to be disrupted, the building would at least have the water stored in the tank. Similarly, because these tanks work by gravity, water could still be distributed through the building without any power supply. In addition to resilience, gravity tanks generally use less energy than water pressure tanks. In the former, pumping is only required intermittently when more water is needed to fill the tank, whereas with the latter, more frequent pumping is needed to maintain the availability of water at the right pressure.

Nonetheless, some building owners are abandoning their old water tanks, often because of maintenance issues. And new buildings often opt for water pressure tanks because they don’t impact the design of the roof and they do not require structural supports needed by the gravity fed tanks.

This proposal would prohibit the removal of existing tanks, since they are on buildings that were designed to support them. It would also require new buildings to either install water tanks or comply with emergency water supply standards developed by the Department of Buildings.
Environmental & Health Benefits
Having water available in power outages has obvious health and safety benefits, since water is necessary for drinking and hygiene. In addition, gravity tanks generally use less electric energy for pumping.

This proposal was found to have a low, positive environmental impact per building and to impact a small number of buildings. It was thus given an environmental score of 1.

This proposal was found to have a low positive health impact per building and to impact a small number of buildings. It was thus given an health score of 1.

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 was estimated to increase first capital costs by 0.03%. It was thus categorized as incurring a low capital cost increment.

Precedents
There are no known precedents for this proposal.

LEED
There are no LEED credits affiliated with this proposal.

Implementation & Market Availability
This is a mature technology and is available.

Notes
This proposal is consistent with BR 6 - Analyze Strategies to Maintain Habitability During Power Outages.