

# 25 Enhance Building Water Reserves

## I. Summary

**Issue:**

Water towers can provide potable water during power losses. City regulations no longer require water towers for new construction and they allow towers to be removed from existing buildings.

**Recommendation:**

Encourage building owners to maintain existing water towers and consider using water towers in new construction.

---

## II. Proposed Legislation, Rule or Study

This is a best practice recommendation using existing technology and techniques only. Part of this proposal is adopted from the Green Codes Task Force Proposal BR 8, “Enhance Building Water Supply During Blackouts.”

---

## III. Supporting Information

**Expanded Issue and Benefits:**

The wooden water towers of New York City rooftops are not just a nostalgic feature of the City’s skyline, but are an important component of community resiliency in times of power outage. In many older buildings more than six floors in height, municipal water is pumped up to these rooftop water tanks, where it is then distributed back down through the building via gravity. In lieu of rooftop gravity tanks, newer systems often utilize one or more water pressure tanks, which store very little water and continuously supply water at the necessary pressure by pumping.

Rooftop storage units offer several advantages. If electrical or water systems are disrupted, the water stored in the tank is available and can be distributed using gravity, not power. Additionally, gravity tanks generally use less energy than water pressure tanks. In the former, pumping is only required intermittently when the water level dips below a threshold and the tank is refilled, whereas with the latter, more frequent pumping is needed to maintain the availability of water at the required pressure.

Nonetheless, many building owners are abandoning their old water tanks, often because of perceived maintenance issues. In addition, new buildings often opt for water pressure tanks because they don't impact the building silhouette and do not require the robust structural supports required for gravity fed tanks.

This proposal discourages the removal of existing tanks and encourages new buildings to either install water tanks or comply with the emergency water supply standards developed by the Department of Buildings.

While this proposal is focused on residential buildings, which are more likely to be occupied continuously during extended power outages, commercial buildings would benefit from even a limited water supply during an emergency.

If buildings retain or install water tanks, the following details are provided as best practice:

### **Maintain Existing Water Tanks**

An existing gravity tank serving the domestic water requirements of a building should not be removed unless it is replaced by a gravity tank of greater or equal capacity.

### **New Construction**

1. New buildings in occupancy groups I-1, R-1, and R-2 under 300 feet in height should include a gravity tank as part of the domestic water supply system. Such tank should have a minimum capacity of 25 gallons per dwelling unit in addition to any tank capacity reserved for fire protection.
2. New buildings in occupancy groups I-1, R-1, and R-2 over 300 feet in height should include a gravity tank as part of the domestic water supply system. Such tank should have a minimum capacity of 7,500 gallons in addition to the capacity required for fire protection under fire code regulations.
3. New buildings in occupancy groups I-1, R-1, and R-2 may not need the above if either:
  - a. The domestic water system for the building is designed to not make use of electric pumps, or
  - b. Pressure or water distribution pumps serving the domestic water supply of the building are connected to an approved standby generation source capable of operation during an extended power outage.

### **Rationing**

If water is to be "rationed" with an independent emergency downfeed water line with a communal "tap" on each floor, it should follow the following guidelines:

1. **Emergency water rationing line.** An independent emergency water rationing line should be connected to the domestic outlet piping from the elevated water tank, upstream of the main downfeed shut-off valve. The line should extend to the lowest occupied floor. On each occupied floor, in an area which is freely accessible to the tenants of the building, the emergency water line should be fitted with a faucet or fitting suitable for supplying drinking water for human ingestion meeting the requirements of Section PC 424 of the NYC Plumbing Code.
2. **Valves.** A full port control valve should be installed at the top of the independent emergency water rationing line in close proximity to the main downfeed shut-off valve

## 25 ENHANCE BUILDING WATER RESERVES

from the elevated water tank. Downstream from the last faucet, the line should terminate at a blow off/cleanout hose bib or valve for maintenance.

3. **Water pressure reducing valve or regulator.** Where water pressure on the emergency water rationing line will exceed 85 psi (586 kPa) static, a water pressure reducer should be utilized in accordance with Section 604.8 of the NYC Plumbing Code.
4. **Signage.** Faucets, valves, or fittings connected to the emergency water rationing line, and the rooms in which these items are installed, should be designated by a sign that reads: "EMERGENCY POTABLE WATER." Signs should be readily visible and clearly identify the equipment in question.
5. **Prohibited location.** Faucets or fittings connected to the emergency water rationing line should not be located in a public or private restroom.

### **Implementation:**

There are no known implementation issues for this proposal. Many companies in New York City provide installation and maintenance services for water tanks.

### **Cost:**

Because gravity water tank systems use pumps less frequently, they typically allow for downsizing of the building generator powering the water pump. No cost estimation was performed for this proposal.