

Industry Host: NYC Department of Environmental Protection

Title: On-site Water Reuse: Designing Systems to Meet Water Savings Targets

Challenge:

Develop a building or district scale cost-saving water reuse system that meets the requirements of the On-site Water Reuse Grant Pilot Program to help the Department of Environmental Protection (DEP) meet its water demand reduction targets outlined in the Water Demand Management Plan.

Background:

In November 2016, DEP launched the On-Site Water Reuse Grant Pilot Program to provide commercial, mixed-use, and multifamily residential property owners with incentives to install water reuse systems. Water reuse systems not only make more efficient and safe use of rainwater, black water, or grey water, but they also keep considerable volumes of water out of the city's waste water system, relieving wastewater treatment plants that can get overloaded in large storm events. DEP's grant program promotes the construction of these systems at both the building-scale and district-scale by covering a portion of capital costs.

The concept of on-site water reuse systems is relatively new in New York City. However, the existing building stock and large new development projects represent a substantial opportunity to invest in and implement these systems thought the city and achieve significant water savings. The On-site Water Reuse Grant Pilot Program can catalyze the water reuse movement in NYC by providing an incentive for building owners and developers to install water reuse systems. The program sets ambitious water savings targets for eligible properties at the building and district scale:

Building-Scale Eligibility:

- 100,000 square feet or more of residential or commercial space
- Target water savings - 32,000 gallons per day

District-Scale Eligibility:

- Must include the sharing of water between two or more parcels
- Target water savings – 94,000 gallons per day

The goal of this project is to:

- Determine whether a cost-effective and energy efficient water reuse system can be designed to reach DEP's targeted water savings goals, and
- To design an implementable system, if determined to be feasible

Boundaries of Consideration:

- The water-energy nexus means that a balance must be found – a solution cannot save a significant amount of water but use a significant amount of energy to do so.

- Few have taken advantage of the Pilot Program so far, though we do not know if this is because the targets are too high, there are no affordable systems available, or if there are some other factors at play.
- Public health objectives need to be taken into account. A water reuse system cannot put users at risk of legionnaires or other illnesses.