



## CASE STUDY



# CBRE | New England - One Beacon Street

## *Water Efficiency Through Rainwater Harvesting*

### **CBRE | New England One Beacon Street**

**Location** - Boston, MA

**Building Type** - Class A Office Tower

**Facility Size** - 1,017,169 SF

**Stories** - 36

**Year Built** - 1970-1973

**Project Description** - Rainwater Harvesting

**Project Completion** - 2013

**Project Cost** - \$10,000

**Payback Period** - 9 years

### **Recognition**

**2014 TOBY Earth Award**

**LEED O+M: EB Platinum Certified**

**Challenge for Sustainability Peer Award**

**Energy Star Certified**

One Beacon Street is a 36-story building in downtown Boston comprised primarily of office space, with some retail and a 309-space underground parking garage. Built from 1970 to 1973 by Turner Construction, One Beacon has been enhanced with a \$10.8 million capital upgrade program over nearly ten years. Tenants include a dynamic mix of law firms, insurance companies, and investment houses.

The building is managed by CBRE | New England, which handles all aspects of energy, water, and waste operations for the building. In 2012, in preparation for LEED recertification, CBRE Chief Engineer for One Beacon, Fred O'Grady, proposed a novel method of improving water efficiency for the building – rainwater harvesting. In 2013, the first year of the project's implementation, O'Grady's rainwater harvesting program provided 86% of total irrigation water usage for the building, equating to nearly \$700 in savings just in the first year.

At the time of the project inception, One Beacon had 5,000 square feet of planter beds that require roughly 68,000 gallons of water to irrigate annually. The roof of One Beacon has 6 drains that drain 5000 square feet of roof space each. O'Grady took this area as an opportunity to install seven rainwater collection tanks that can store approximately 3,500 gallons at a single time, which provides about 10 days of irrigation. The weight of the water is certainly not trivial – when full, these tanks weigh almost 15 tons, which limited

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the potential for the building to support additional storage. Still, when the tanks went into operation on May 17th, 2013, they supplied 3,100 gallons of rainwater irrigation by the end of the month and had excess water to spare. In June, 2013, O’Grady was actually asked to cut down on irrigation because their plants were getting enough water from the rain alone.

In 2014, O’Grady and the One Beacon team were met with a new challenge when the weight of the hoses combined with the high pressure of the water running through them led to the development of a significant leak. Throughout 2014, most of the hosing needed to be reinforced, limiting the success of the project such that only 21% of irrigation usage in 2014 was from rainwater. This served as an important lesson for O’Grady. “I doubt I would recommend our particular methods to any building over 350 feet in height,” O’Grady said. Still, with reinforced hosing in place, and pressure reduction methods in place for the water traveling down the building, the rainwater harvesting project moved further forward in 2015 with the introduction of rainwater use for the building’s car wash.

One Beacon has a full time car wash in their garage that’s located just 20 feet from the irrigation system. In 2015, they began to use some of the captured rainwater to support the car wash. The car wash will become a special focus for the water use during the irrigation off-season. So far, in 2015, nearly 3000 gallons of rainwater have been used in the car wash, despite periods of heavy drought in the region.

It’s fair to wonder, with leaks, droughts, and other unforeseen challenges, does One Beacon’s rainwater harvesting program pay off? Fred O’Grady believes so. In addition to its 9-year projected return on investment, the project helped push the facility’s LEED recertification rating to Platinum. The program enabled One Beacon to earn five LEED points for Water Efficiency (WEc3, v3 – LEED 2009). “LEED Platinum added significant resale value to the property and allows the property to command a higher rent – tenants want to be green,” said O’Grady.

### ABOUT THE CHALLENGE FOR SUSTAINABILITY

The Challenge for Sustainability helps business or buildings save money by increasing energy efficiency, reducing resource consumption, decreasing solid waste, and reducing overall greenhouse gas emissions through hands-on technical assistance and access to local, state, and private incentives.

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#### FUNDERS



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