

Take Building Efficiency To A New Level: Reducing Water Consumption By 45%



THE TOWER COMPANIES | WASHINGTON, D.C. METRO AREA

The Tower Companies (“Tower”), a partner of the DOE Better Buildings Challenge, has committed to reduce both energy and water consumption 20% by 2020 for nearly 3 million SF of commercial office and multi-family residential properties. After successfully implementing a real-time energy management program with 15% use reduction since 2010, The Tower Companies decided to go beyond energy and create a water monitoring pilot project in 2015.

The Tower Companies blew its goal out of the water (pun intended). Within a year, the team documented total water use reduction of 45% at a multi-tenant office building.

When The Tower Companies launched its water pilot program, the sustainability team looked to a rising utility management software, Aquicore. They knew that Aquicore’s wireless, web-enabled meters allowed a quick and affordable installation. Taking data from these meters, Aquicore displays the real-time data on a user-friendly interface the team could access from anywhere. This provided insights that The Tower Companies’ quarterly bills and manual readings could not deliver. In addition, the engineering team receives daily reports and customized alarm notifications to automatically detect consumption anomalies.

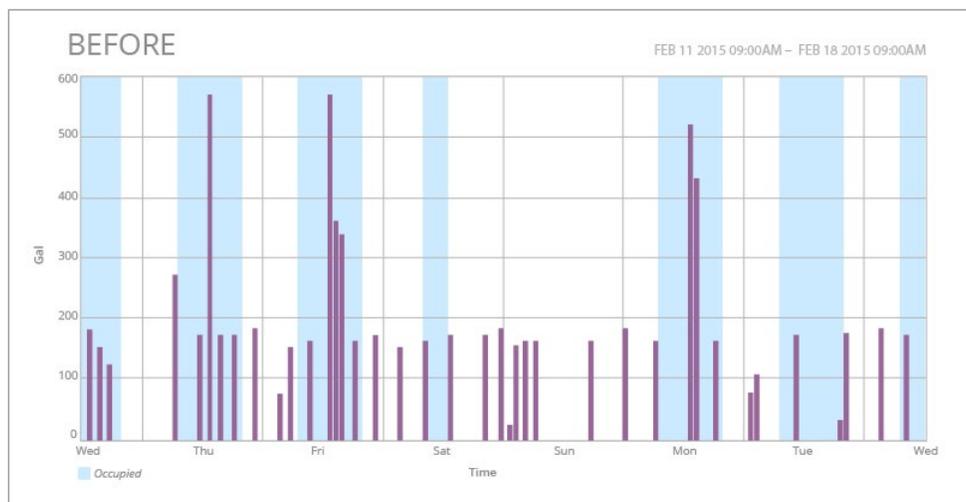
Real-time data provided The Tower Companies with visibility into the operations of the cooling tower system to diagnose a problem with the electronic floats and valves. The engineering team also set up alerts via email after establishing baselines for normal operating hours, nights, and weekends.

In total, the Tower Companies has reduced water consumption by 45% in one year, amounting to an incredible 1.5M gallons conserved. Meanwhile, they have saved approximately \$14,000 in annual water bills. Let's dive deeper to see how they accomplished these incredible results.

REDUCING CONSUMPTION BY 45%

The Tower Building was built in 1999 and is a 280,000 SF multi-tenant commercial office building located in Rockville, MD. This property is owned and managed by The Tower Companies and has earned LEED Gold Certification and ENERGY STAR Certification with a score over 90.

Tower installed an Aquicore submeter at The Tower Building to drill into the details of wasted water, with a focus on cooling tower operation. The building consumes approximately four million gallons of water per year, an annual spend of nearly \$45,000, and the cooling tower water consumption was 66% of total water usage. This is why the cooling tower is a great place to start! The cooling tower's purpose is to help "cool" the building when it's warm outside, and is set to fill water whenever the amount stored in the tower sump goes below a certain level. Tower found great savings by controlling off-hour and weekend usage patterns through real-time investigation and low-to-no cost technical adjustments to help tighten operations.



With [real-time data for this cooling tower's consumption](#), the engineering team identified simple changes that allowed the building to reduce consumption by 45% including, but not limited to, the following:

- Changed float assembly
- Lowered the high water level in the cooling tower
- Relocated water sensors within the cooling tower sump

80,000 GALLONS OF WATER SAVED IN ONE DAY

In addition to systemic problem solving described above, the real-time water monitoring allows the team to identify anomalies. Here's a great example that any building engineer could relate to!

On a Sunday morning, VP of Engineering Jim Lewis received a daily report with higher consumption than typical from Aquicore's software. Jim then asked the engineer on-call to check the water consumption in the cooling tower. When he arrived, the engineer discovered that a faulty electronic float had caused the cooling tower to overflow.

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I sleep better at night knowing that, if anything goes wrong, I will be alerted immediately. The new water monitoring system alleviates stress over events that could cause inefficiency in operations.

– Jim Lewis, Vice President of Engineering for The Tower Companies

Without the real-time report, raw and untreated water would have run across the cooling system and could have caused scaling in the chillers. In addition, there could have been serious water damage had the overflow infiltrated the building into occupied tenant space.

This weekend alert prevented potential building damage and ultimately saved approximately 80,000 gallons of water had the spill been undetected until the following Monday morning. After this incident, the engineering team found that sensors in the float assembly were malfunctioning and fixed the issue immediately.

TAKING WATER USE REDUCTIONS FURTHER

Although the commercial real estate industry has aggressively implemented energy-saving tactics, water only recently entered the spotlight. The Tower Companies is one of the first real estate groups to proactively use real-time water data. When water becomes scarce, as we have seen in California and Texas, many companies will be looking for a cost-effective solution to monitor water in real-time.

A water metering system serves as a preventive measure to avoid major catastrophes that can result in waste water consumption, increased costs, damage to properties, and inconvenience to the building's clients.

The Tower Companies now uses data to adjust equipment operations to improve efficiency and extend the useful life of equipment. With \$14,000 in savings from the pilot cooling tower project and a payback within 6 months, the company is looking forward to eventually scaling this strategy across its portfolio.

Due to the success of this pilot project, The Tower Team has decided to implement real-time water metering at another multi-tenant commercial office building in Washington, D.C., and measure cooling tower, retail, and whole building water consumption. This project launched in later in 2015 and they're starting to brainstorm similar ideas for their multi-family portfolio too. We can't wait to see what they will achieve.

ABOUT THE TOWER COMPANIES



For three generations, the family-owned Tower Companies has maintained a commitment to responsible development and envisions a world where buildings inspire and enrich the lives of their occupants, and create positive social change. The green building leader owns, develops, and manages over 5 million square feet in the Washington, D.C. metropolitan area consisting of office buildings, office parks, lifestyle centers, regional malls, eco-progressive live-work-play communities and hotels with over 8,000,000 SF in the development pipeline. The Tower Companies is recognized as an international authority in the industry, and to have been recognized for its commitment to sustainability and energy independence by numerous national organizations and federal agencies, including US Green Building Council, US Department of Energy and the US Environmental Protection Agency.

Eugenia Gregorio, Director of Corporate Responsibility, contributed to this case study on behalf of The Tower Companies.