

A Case Study

Less is More: Costco Wholesale

By seeing how water is used throughout operations, Costco **reduced use by 22%** and avoided other hidden expenses.¹





Costco Wholesale has cut water use by 22%, and avoided other costs and protected assets with help from Water Efficiency as a Service™. Now deployed across North America and Japan, the solution is guiding efficient operations and protecting water infrastructure like cooling towers, water softeners and irrigation systems from multiple points of failure.

22%



decrease in water use

Costco's journey to fleet-wide deployment began in Mexico. At the time, Costco warehouses were managing water primarily through bi-monthly water bills. Like most places in the built environment, waste events and anomalous use went undetected and undiagnosed for months.

Warehouses in Mexico faced a particular dilemma: excessive water flow increased costs at the wastewater treatment plants.¹ An immediate and practical solution was to eliminate unnecessary water use by optimizing operations and addressing mechanical issues in real time.

The savings were substantial. With their focus on efficiency, Costco wanted to replicate the gains to the broader fleet of facilities. An expanded pilot in the Southwest not only validated the savings but showed positive impacts for cooling towers, water softeners and other systems common in the United States.

CHALLENGE

“ By using less water, less energy is needed to operate water systems, which in turn reduces Costco's carbon footprint and expenses. ”

-Costco Sustainability Report

Phase I

Mexico warehouses were outfitted with the Apana solution. Cloud-based analytics delivered actionable alerts to key operations staff exactly when staff needed to know. Issues were resolved quickly.

In addition, the data provided significant operational insights that allowed unexpected cost reductions and performance benchmarking for future deployments of the Apana solution.

Example: **Cost Avoidance**

Operational practices could be seen through Costco's water use patterns. Unexpected water use usually indicated a waste event. Frontline staff began to suggest changes that not only saved water, they saved staff time, energy, chemical use and avoided other costs like drain line cleaning and unnecessary service provider visits. Hidden costs became controllable. The payback justified the next phases.

Phase II

A representative sample of locations in the Southwest — including those with landscape irrigation, car washes and cooling towers — were selected for enrollment. The results in the initial U.S. test locations were slightly better than the 20% average savings documented in the Mexico locations.

By the end of 2014, some 30 installations had reduced water consumption 20% year over year, saving over 30 million gallons of water, and achieving a return on investment in under one year.

Example: **Waste Elimination**

Through real-time monitoring and alerts, Costco saved 30 million gallons of water across the Southwest U.S. program expansion, equivalent to 40,000 kWh of energy, enough to provide drinking water to 60,000 families for an entire year.²



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=



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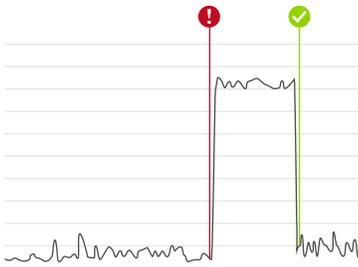
Phase III

With a successful expansion in the Southwest, Costco determined the Apana system was detecting waste, improving operational practices and garnering rapid ROI based on avoided costs. The system was paying for itself, so the decision was made to expand the program to additional Costco warehouses.

Utilizing proven processes, Apana integrated the solution into all locations in the United States, Puerto Rico, Canada, Mexico and Japan. Deployment in Australia is underway. Other countries will be added as Costco Wholesale continues to expand.

The Hidden Becomes Visible

Apana's system detected a 45 gallon per minute waste event on the irrigation system. It was immediately seen, diagnosed, and fixed, saving water and assets.



In parallel, a region-by-region rollout of Apana's landscape irrigation module started. The irrigation module applies the intelligence of Apana's smart water management solution to landscape irrigation. Irrigation is often a large component of a property's water use profile.

Example: Asset Protection

The Apana system detected a 45 gallon per minute waste event on the irrigation system. Water soaked into the sandy soil and under the parking lot. Left unchecked, the 65,000 gallons per day would erode the soil and create costly repairs to the parking lot. Prompt notification to the locations staff avoided a prolonged waste event and the parking lot was saved from destructive erosion and a possible sinkhole.

Waste elimination created a less than one year payback for the entire system.

Based on the successful deployments in Mexico and the Southwestern U.S., Costco expanded Apana's solution to all other locations in the U.S., Mexico, Canada, Japan and Australia. Waste elimination in the form of water, sewer, energy and other directly avoided costs created a less than one year payback for the entire system.

Investing in Values

Using their core values as a guide, Costco's return on investment was achieved through:

- ✓ **Waste elimination**
- ✓ **Asset protection**
- ✓ **Cost avoidance**

Costco has realized significant value from global enterprise-wide deployment of Water Efficiency as a Service™. The direct savings from waste elimination, coupled with the added benefits of asset protection and cost avoidance, has delivered on Costco's core value of sustainable, efficient operations and provided a compelling return on investment. The Apana system is now part of the construction plan of every new Costco Warehouse facility built in North America and Japan.

¹This is how Costco is using data and sensors to cut water use

²The Energy-Water Nexus



Apana offers businesses **Water Efficiency as a Service™** – simple, actionable insight to reduce the total cost of water.

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