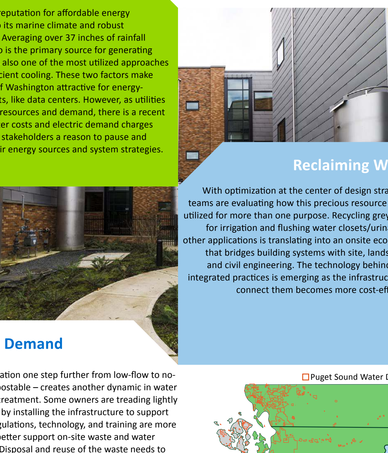
BLUE IS THE NEW GREEN

As the industry looks to what's next, water conservation continues to be topic of discussion with greater focus. Trending as "Blue is the New Green," we are looking at how water and energy conservation compete and contribute to a building's overall performance.

Like many other aspects of conservation measures, location, policy, and available technology influence the adoption of new ideas. Water's inherent stabilizing properties make it a prime candidate for energy conservation, but the limited supply of potable water – especially in arid regions – definition of water rights and the energy/ investment required to optimize its performance can be challenging. So, how can one balance conservation goals after the low hanging fruit of low-flush/flow plumbing fixtures and water source cooling has been plucked?

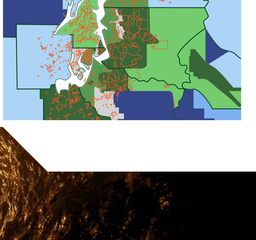
Start With Water Rights



In identifying conservation measures and re-using rainwater, policymakers have been challenged with defining who owns the rainfall and at what point in its natural process. That has since been followed by the ongoing debate around the impacts of interrupting the natural flow, its future availability and the responsibility of treating the water once claimed.

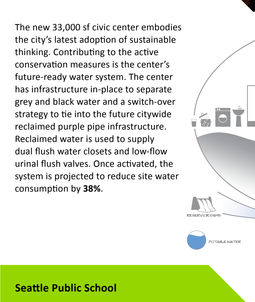
Know The Flow

Washington's reputation for affordable energy is attributed to its marine climate and robust infrastructure. Averaging over 37 inches of rainfall annually, hydro is the primary source for generating electricity. It is also one of the most utilized approaches for energy-efficient cooling. These two factors make certain parts of Washington attractive for energy-intense projects, like data centers. However, as utilities evaluate their resources and demand, there is a recent upsurge in water costs and electric demand charges that are giving stakeholders a reason to pause and reevaluate their energy sources and system strategies.



Reclaiming Water

With optimization at the center of design strategies, teams are evaluating how this precious resource can be utilized for more than one purpose. Recycling grey water for irrigation and flushing water closets/urinals and other applications is translating into an onsite ecosystem that bridges building systems with site, landscaping and civil engineering. The technology behind these integrated practices is emerging as the infrastructure to connect them becomes more cost-effective.



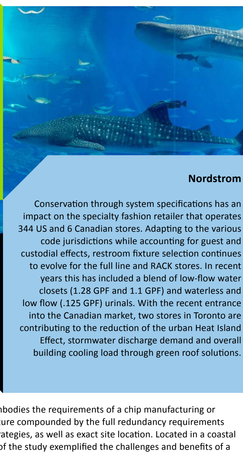
Reduced Demand

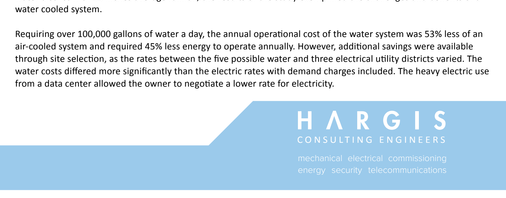
Taking conservation one step further from low-flow to no-flow – or compostable – creates another dynamic in water conservation: treatment. Some owners are treading lightly into this arena by installing the infrastructure to support it, once the regulations, technology, and training are more developed to better support on-site waste and water management. Disposal and reuse of the waste needs to be determined based on current AHJ requirements.

In contrast, the upsurge in demand for water as a cooling strategy for the increasing volume of data centers is driving another conversation around what is truly being conserved. The energy and costs required to treat the water to serve these systems, the impacts of the evaporation process on the system itself and the demand charges associated with the fragmented water districts, are giving owners reason to pause and re-evaluate the trade-offs between water and air-cooled systems.

Drawing from our visibility across multiple operations nationally, and internationally, Hargis has contributed to the advancements in water conservation measures.

Puget Sound Water Districts





Case Study

Sequim Civic Center - LEED® Gold Certified

The new 33,000 sf civic center embodies the city's latest adoption of sustainable thinking. Contributing to the active conservation measures is the center's future-ready water system. The center has infrastructure in-place to separate grey and black water and a switch-over strategy to tie into the future citywide reclaimed purple pipe infrastructure. Reclaimed water is used to supply dual flush water closets and low-flow urinal flush valves. Once activated, the system is projected to reduce site water consumption by **38%**.

Seattle Public School

Seattle School District has a dedicated resource conservation team that tracks and monitors the 100+ site enterprise. In the latest round of major capital projects, the RCM and capital projects teams embraced the latest smart irrigation technologies to improve conservation measures at two schools. The technology utilizes artificial intelligence to predict irrigation needs. The system is tied into the building's water metering and controls systems and programmed to analyze facility use, weather (NOAA feed) and watering schedule to control the actual watering cycle and duration. The programming and zoning of the system also include the types of plants and grass served by the irrigation system to minimize water use. The water conservation measures reduced the site consumption.

Nordstrom

Conservation through system specifications has an impact on the specialty fashion retailer that operates 344 US and 6 Canadian stores. Adapting to the various code jurisdictions while accounting for guest and custodial effects, restroom fixture selection continues to evolve for the full line and RACK stores. In recent years this has included a blend of low-flow water closets (1.28 GPF and 1.1 GPF) and waterless and low flow (.125 GPF) urinals. With the recent entrance into the Canadian market, two stores in Toronto are contributing to the reduction of the urban Heat Island Effect, stormwater discharge demand and overall building cooling load through green roof solutions.

NDA Manufacturing Facility

The precision demanded of this manufacturing facility embodies the requirements of a chip manufacturing or mission-critical data center. Tight tolerances for temperature compounded by the full redundancy requirements gave cause to evaluate energy and water conservation strategies, as well as exact site location. Located in a coastal water district with 44 inches average rainfall, the results of the study exemplified the challenges and benefits of a water cooled system.

Requiring over 100,000 gallons of water a day, the annual operational cost of the water system was 53% less of an air-cooled system and required 45% less energy to operate annually. However, additional savings were available through site selection, as the rates between the five possible water and three electrical utility districts varied. The water costs differed more significantly than the electric rates with demand charges included. The heavy electric use from a data center allowed the owner to negotiate a lower rate for electricity.

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