

The First Community of WaterSense® Labeled Homes Continues to Save and Perform Well



More Than a Decade After Construction, Residents Report Their Satisfaction

In 2014, WaterSense partner Cascade Water Alliance in Washington state looked at the impact of newly constructed and occupied WaterSense labeled homes in the zHome community in Issaquah, Washington. At the time, they found that these homes reduced water use by approximately 70 percent compared to typical homes. Just as importantly, residents reported they were overwhelmingly satisfied with their homes, including the WaterSense labeled products and other water-saving features installed. A decade later, not only do these homes still report water savings exceeding 70 percent year over year, residents still say they are happy with the performance of their WaterSense labeled homes and the water, energy, and utility cost savings they provide.

The zHome Community

The zHome neighborhood in Issaquah, Washington, was the first full community of WaterSense labeled homes built in the United States. Finished in 2011 and fully occupied in 2013, the community was completed by builder Ichijo USA and developer Port Blakely Communities. The builder and developer, local water and energy utilities, municipalities, and sustainability and certification programs worked together to make zHome as efficient as possible. The project aimed to build homes that are compatible with modern lifestyles, but also meet rigorous sustainability criteria, such as:



Compared to a typical home in the area, the average zHome in Issaquah, Washington, saves:

- **53,000 gallons of water per year** from WaterSense labeled fixtures and other water efficiency features
- **2,800 kilowatt hours (kWh) of energy per year** from avoided hot water use
- **1,700 pounds of carbon dioxide (CO₂) per year** in reduced greenhouse gas emissions
- **\$600 per year** in combined water and energy utility costs

To learn more about WaterSense, visit www.epa.gov/watersense.

(866) WTR-SENS (987-7367) | watersense@epa.gov



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- Zero net energy use
- High indoor air quality standards
- Use of locally produced, recycled content
- Use of low toxic materials
- Construction recycling
- Minimal stormwater discharge
- A 60 percent reduction in water compared to typical local homes

To earn the WaterSense label and achieve these savings, townhomes in the zHome community incorporated WaterSense labeled toilets, bathroom faucets, and showerheads; ENERGY STAR® certified dishwashes and clothes washers; native landscaping that requires no irrigation; and rainwater collection systems that provide water for flushing toilets and washing clothes. Now that the homes have been occupied for a decade, WaterSense and its partners, Cascade Water Alliance and the City of Issaquah, reviewed the homes' average water use over time and interviewed residents to evaluate their continued satisfaction with their WaterSense labeled homes. This case study aims to update the resident satisfaction survey information presented in a Built Green white paper about the zHome community published in 2015.¹ Overall, residents have remained happy with their WaterSense labeled homes, and the homes continue to save water, energy, and money on utility costs when compared to typical homes in the area.

Residents Agree: WaterSense Labeled Homes Perform Well

WaterSense utility partner Cascade Water Alliance first interviewed residents about overall satisfaction with their WaterSense labeled homes in 2014. In 2023, they interviewed residents again to gauge whether their high opinions about their homes' water-efficient features continued. Their responses were overwhelmingly positive, with a strong majority of residents recognizing the value WaterSense certification brings to their home. A majority of residents surveyed in 2023 also said they are helping to conserve limited water supplies for future generations by living in a WaterSense labeled home and would recommend these homes because they have a lower environmental footprint than typical homes in their area.

86 percent of residents surveyed strongly agreed they are satisfied with their WaterSense labeled home.

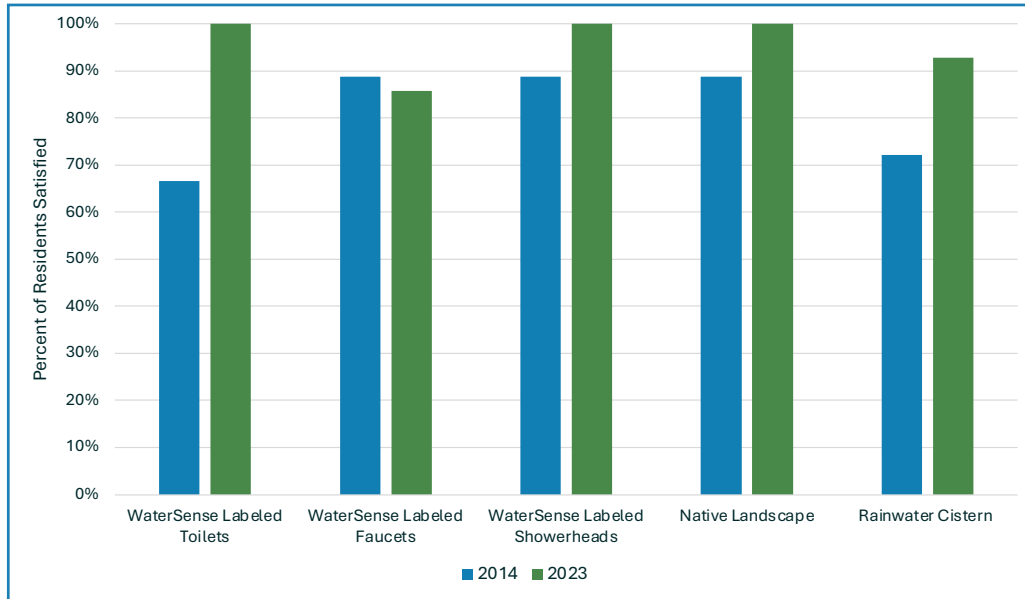


When evaluating their contentment with specific features of their WaterSense labeled homes, residents were generally even more satisfied in 2023 than they were in 2014, as illustrated in Figure 1 on the next page. In 2014, 67 percent of residents interviewed were satisfied with their WaterSense labeled toilets, while all the residents interviewed in 2023 either agreed or strongly agreed they were satisfied. Likewise, satisfaction with WaterSense labeled showerheads increased from 89 percent in 2014 to 100 percent in 2023, while overall contentment with WaterSense labeled bathroom faucets remained high at 86 percent. Residents also reported more positive opinions about their native landscaping and rainwater cisterns,

¹ Built Green. 2015. *zHome: Setting a National Net Zero Energy and Green Building Precedent Outcomes and Lessons Learned*. www.builtgreen.net/docs/librariesprovider2/resources/zhome-white-paper.pdf?sfvrsn=b52e5d4f_4.

which supply water to toilets and clothes washers. More than 75 percent of residents surveyed said they would recommend a WaterSense labeled home to family, friends, or neighbors because they have saved water, energy, and money on utility bills.

FIGURE 1. zHOME COMMUNITY RESIDENT SATISFACTION SURVEY RESULTS (2014 AND 2023)



Surveys, Data Show That zHomes Save Water, Energy, and Money

As the data shows, residents are correct—these homes do save water, energy, and money. In fact, using data from the *Residential End Uses of Water, Version 2* (REUWSv2), EPA found that the average water use of a typical home in nearby Tacoma, Washington, is 69,000 gallons per home per year.² As shown in Figure 2, based on observed water use data for these homes provided by the City of Issaquah, the zHomes used just 15,600 gallons of water per home per year on average between 2014—the first full year of occupancy—and 2023, resulting in a savings of approximately 77 percent when compared to typical homes over the last decade.

Since faucets, showers, dishwashers, and clothes washers all use hot water, the average zHome saves an estimated 2,800 kWh per year from reduced water heating needs,³ which translates into approximately

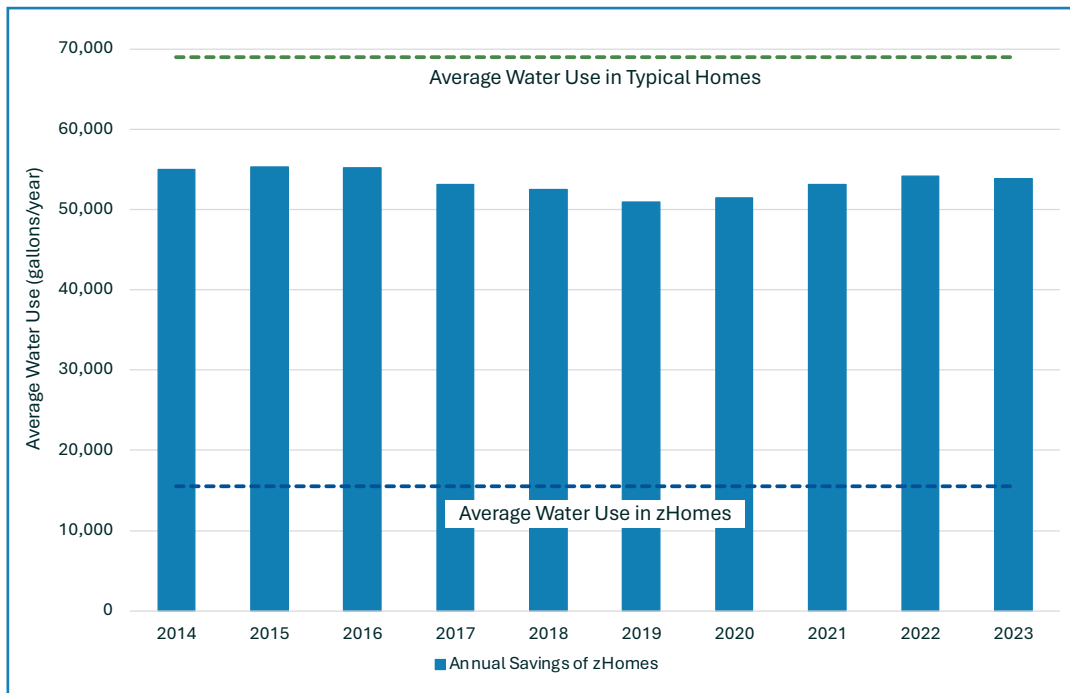
² Data from Water Resource Foundation. 2016. *Residential End Uses of Water, Version 2* (REUWSv2). www.waterrf.org/research/projects/residential-end-uses-water-version-2. REUWSv2 found that the average home in Tacoma, Washington, used approximately 69,000 gallons of water per year. Residential water use is highly variable and is influenced by a wide array of factors, including—but not limited to—home and landscape size, occupancy, climate, and design and technology choices. While Tacoma shares a local climate with Issaquah, residential water use data from Tacoma from REUWSv2 and the average water use of the zHome community from this study have not been normalized for any additional factors, because there was not sufficient data to do so.

³ EPA assumed 33 percent of each zHome’s water use water was hot water based on the average daily hot water use per household nationwide from REUWSv2. EPA assumed it takes 160 kWh to heat 1,000 gallons of water in the Pacific Northwest, per data found on WaterSense’s Data and Information Used by WaterSense web page at www.epa.gov/watersense/data-and-information-used-watersense.

1,700 pounds of CO₂ emissions avoided per home per year.⁴ These water and energy savings add up, resulting in utility cost savings of approximately \$600 per home per year when compared to a typical nearby home.⁵

From the time the homes were built to a decade later, the zHome community is a model for sustainability—using significantly less water and energy, reducing greenhouse gas emissions, and saving its residents money on their utility bills. Even after living in these homes for years, residents are still seeing significant savings compared to their neighbors and are satisfied with the features their WaterSense labeled homes offer!

FIGURE 2. AVERAGE WATER USE OF A TYPICAL HOME AND THE AVERAGE zHOME



Acknowledgements

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⁴ EPA assigned a value of 0.6021 pounds of CO₂ emitted per kilowatt hour in the Pacific Northwest per data found on EPA’s Emissions & Generation Resource Integrated Database (eGrid) web page at www.epa.gov/egrid/summary-data.

⁵ EPA used actual costs of water and wastewater provided by the City of Issaquah and energy prices from the U.S. Energy Information Administration from 2014 through 2023 and translated each year’s dollar values into 2023 dollars to calculate these utility cost savings.