

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





AWE's Residential Water Use Calculator:

Helping Consumers Accurately Measure Their Water Use and Become More Efficient

2021 Water Smart Innovations Conference



History of the Calculator

- Home Water Works Website launched in 2011 to help consumers understand their home water use
- User-friendly education tool to provide water efficiency tips for both indoor and outdoor water use
- Central feature of the website is an accurate water use calculator based on data from the 1999 and 2016 Residential End Use Studies
- Consumer provided an analysis of their home water use and how they compare to a more water efficient home
- 360,000 page views annually, 189,000 calculator runs completed



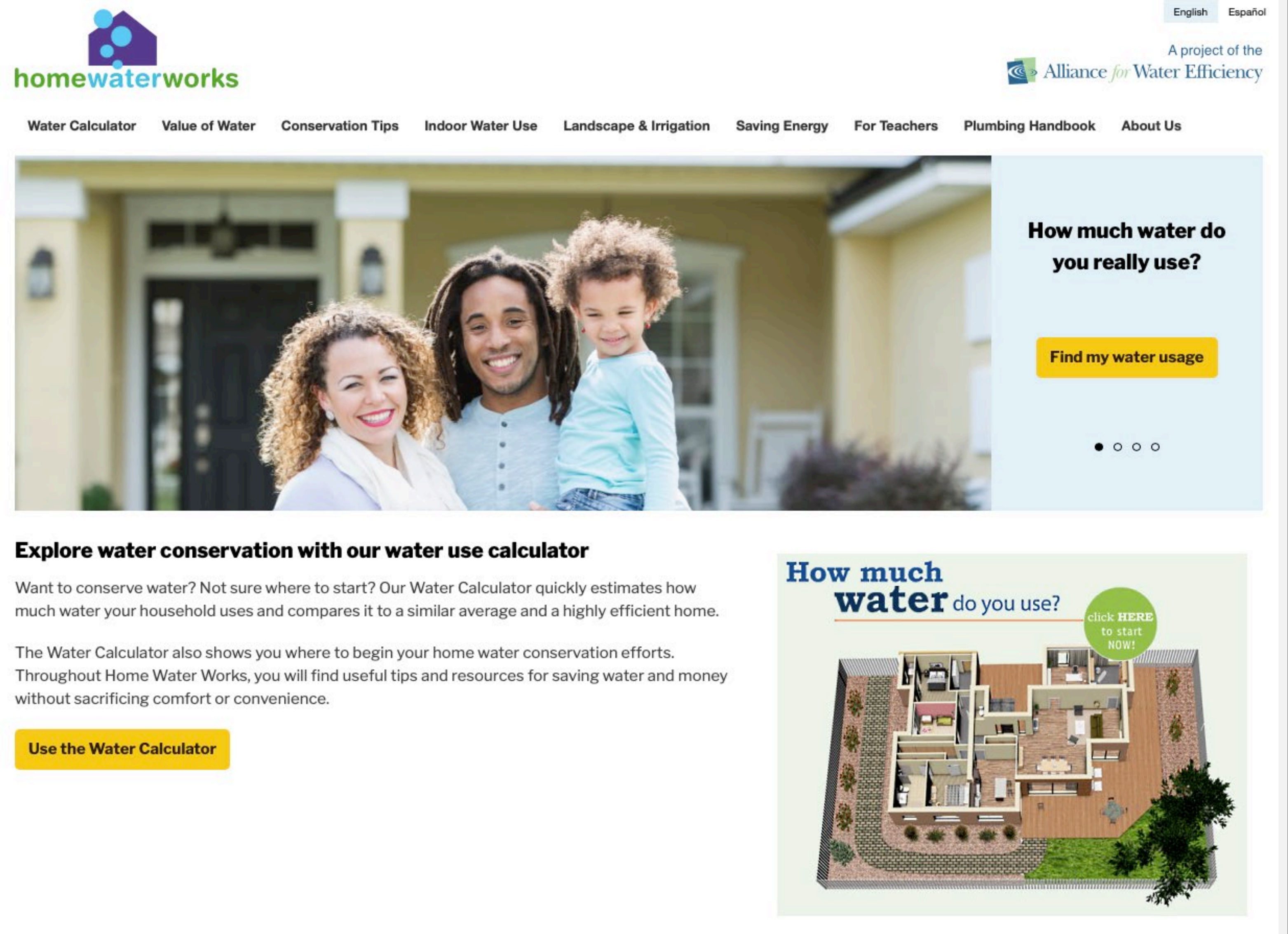
Historical Calculator Issues

- Graphics for the calculator were donated by Chicago's Field Museum and were not mobile responsive
- New, more modern graphics thus needed to be created
- User experience also needed to be made more flexible to allow mobile responsiveness on phones and tablets and easier navigation
- Needed to show low to high water use in the distribution of the 189,000 calculator responses to gauge accuracy
- Text of the calculator needed to be updated, along with the rest of the Home Water Works website



New Site And Calculator

- English and Spanish
- Updated navigation
- Updated content
- Shopping cart for Plumbing Handbook



The screenshot shows the homepage of the homewaterworks website. At the top left is the homewaterworks logo, which consists of a stylized house icon with blue and green dots above the text "homewaterworks". To the right of the logo is a navigation menu with links: "Water Calculator", "Value of Water", "Conservation Tips", "Indoor Water Use", "Landscape & Irrigation", "Saving Energy", "For Teachers", "Plumbing Handbook", and "About Us". In the top right corner, there are language selection buttons for "English" and "Español", and a note stating "A project of the Alliance for Water Efficiency". Below the navigation menu is a large hero image of a smiling family (a woman, a man, and a young child) standing in front of a house. To the right of the hero image is a light blue sidebar with the text "How much water do you really use?" and a yellow button labeled "Find my water usage". Below the hero image is a section titled "Explore water conservation with our water use calculator". This section contains two paragraphs of text: "Want to conserve water? Not sure where to start? Our Water Calculator quickly estimates how much water your household uses and compares it to a similar average and a highly efficient home." and "The Water Calculator also shows you where to begin your home water conservation efforts. Throughout Home Water Works, you will find useful tips and resources for saving water and money without sacrificing comfort or convenience." Below the text is a yellow button labeled "Use the Water Calculator". To the right of this section is another graphic titled "How much water do you use?" featuring a 3D cutaway illustration of a house. A green circular callout bubble with the text "click HERE to start NOW!" points to a specific area within the house illustration.

English Español

A project of the Alliance for Water Efficiency

Water Calculator Value of Water Conservation Tips Indoor Water Use Landscape & Irrigation Saving Energy For Teachers Plumbing Handbook About Us

How much water do you really use?

Find my water usage

● ○ ○ ○

Explore water conservation with our water use calculator

Want to conserve water? Not sure where to start? Our Water Calculator quickly estimates how much water your household uses and compares it to a similar average and a highly efficient home.

The Water Calculator also shows you where to begin your home water conservation efforts. Throughout Home Water Works, you will find useful tips and resources for saving water and money without sacrificing comfort or convenience.

Use the Water Calculator

How much water do you use? click **HERE** to start NOW!

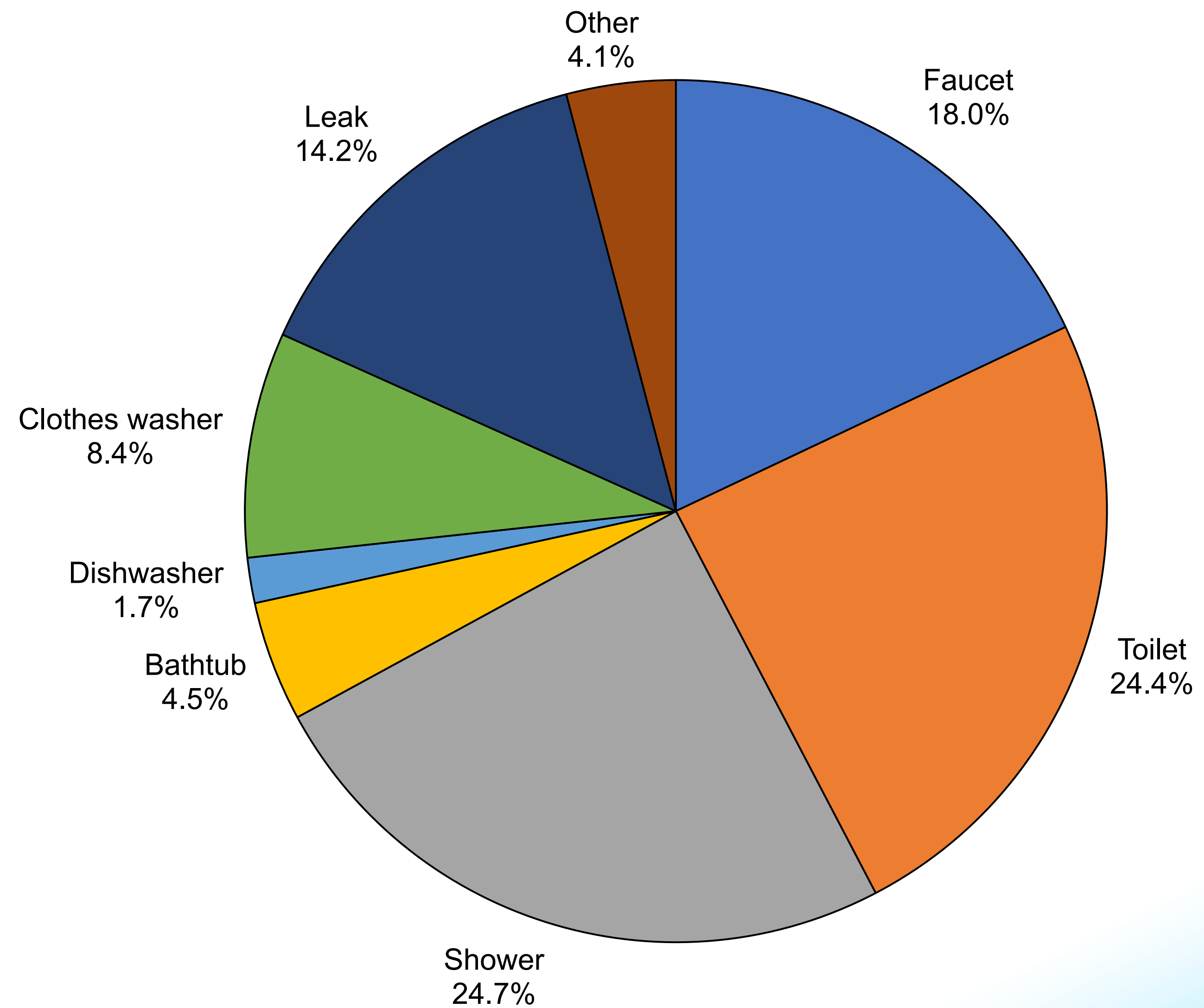


Calculations

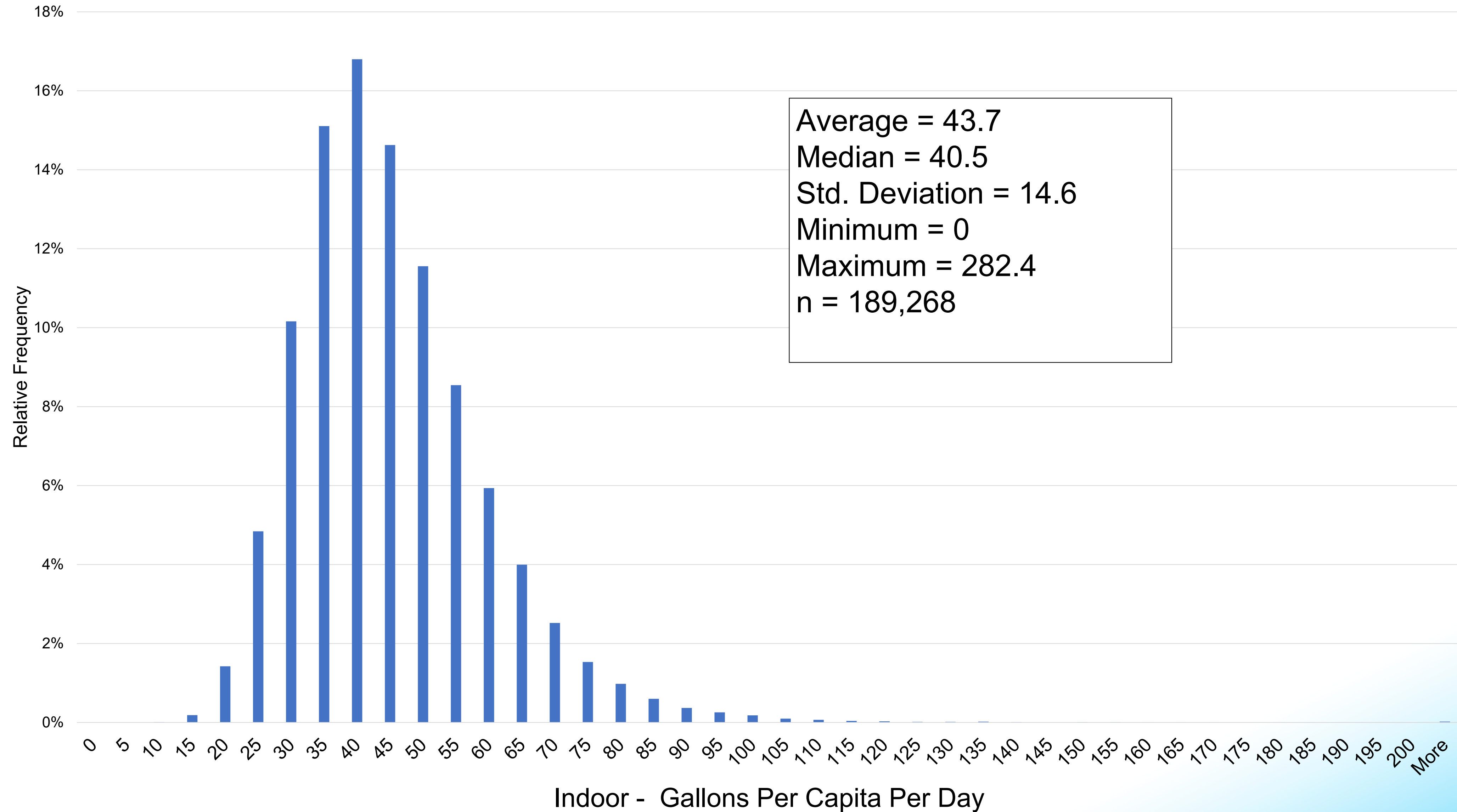
- The indoor water use calculations are based on the REUWS 2016 data sets
- The outdoor water use algorithm uses ET data stored by zip code in the US and postal code in Canada
- The calculator results are very accurate in relation to the REUWS 2016
- The calculator results are also very accurate in relation to Flume data
- Thus the online results are remarkably similar to real-world results



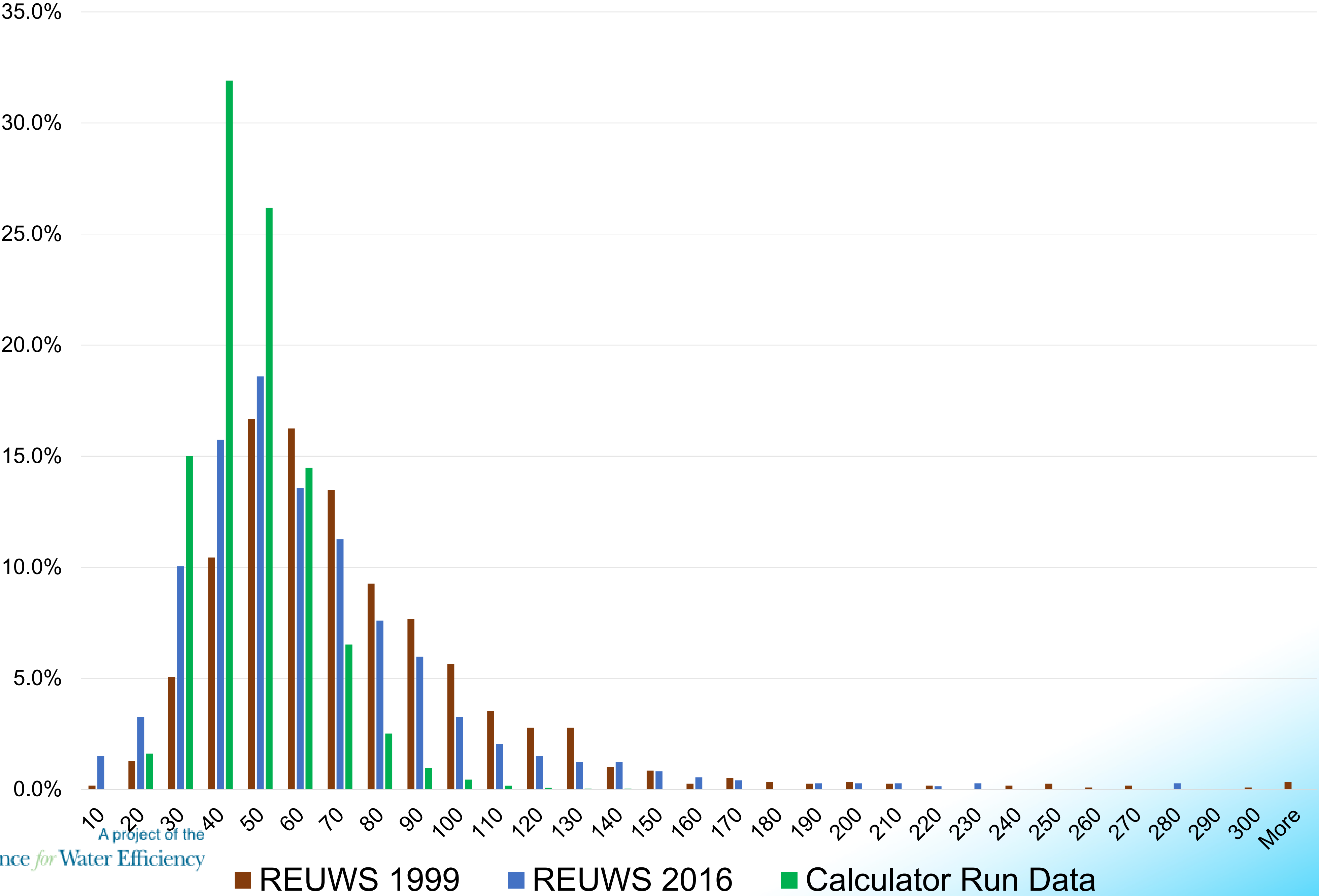
Average Indoor Use Estimates Across 189,268 AWE Water Calculator Runs



AWE Water Calculator - Indoor GPCD Results

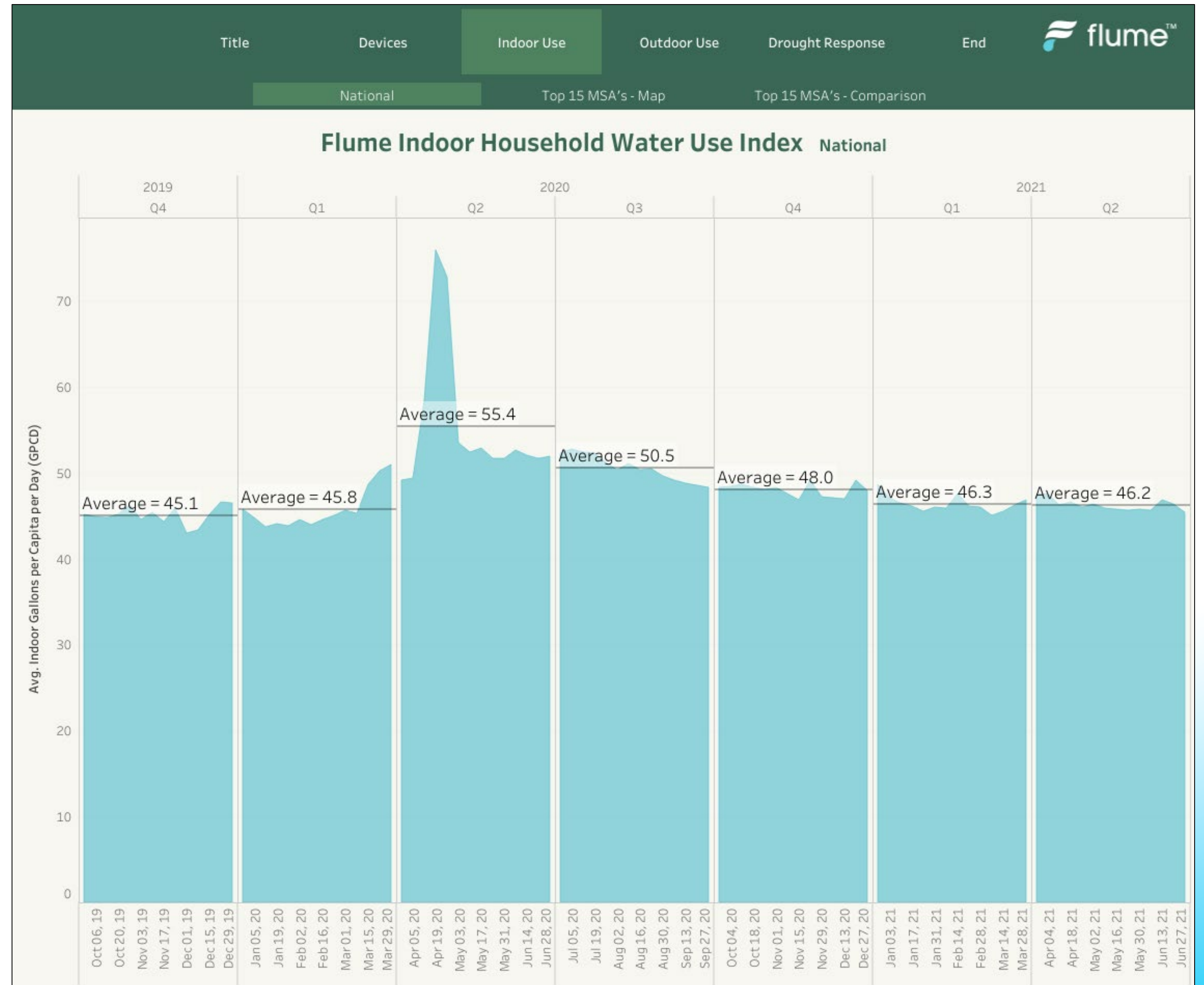


Distribution of GPCD from REUWS 1 & 2 and Calculator Runs



Flume vs HWW Data, GPCD Indoor Average

- Flume: 46.2
- Calculator: 43.7



How Does the New Calculator Work?

- The calculator is now fully mobile-responsive
- English and Spanish versions
- Updated content
- Live demo to run through a high-water-use house, reviewing tips and recommendations to the consumer
- Comparison of a high-water-use house to a low-water-use house



Live Demonstration

Inefficient Home Inputs

- Three people
- Inefficient fixtures
- Known leaks
- Large yard with all turf
- No smart irrigation sensor

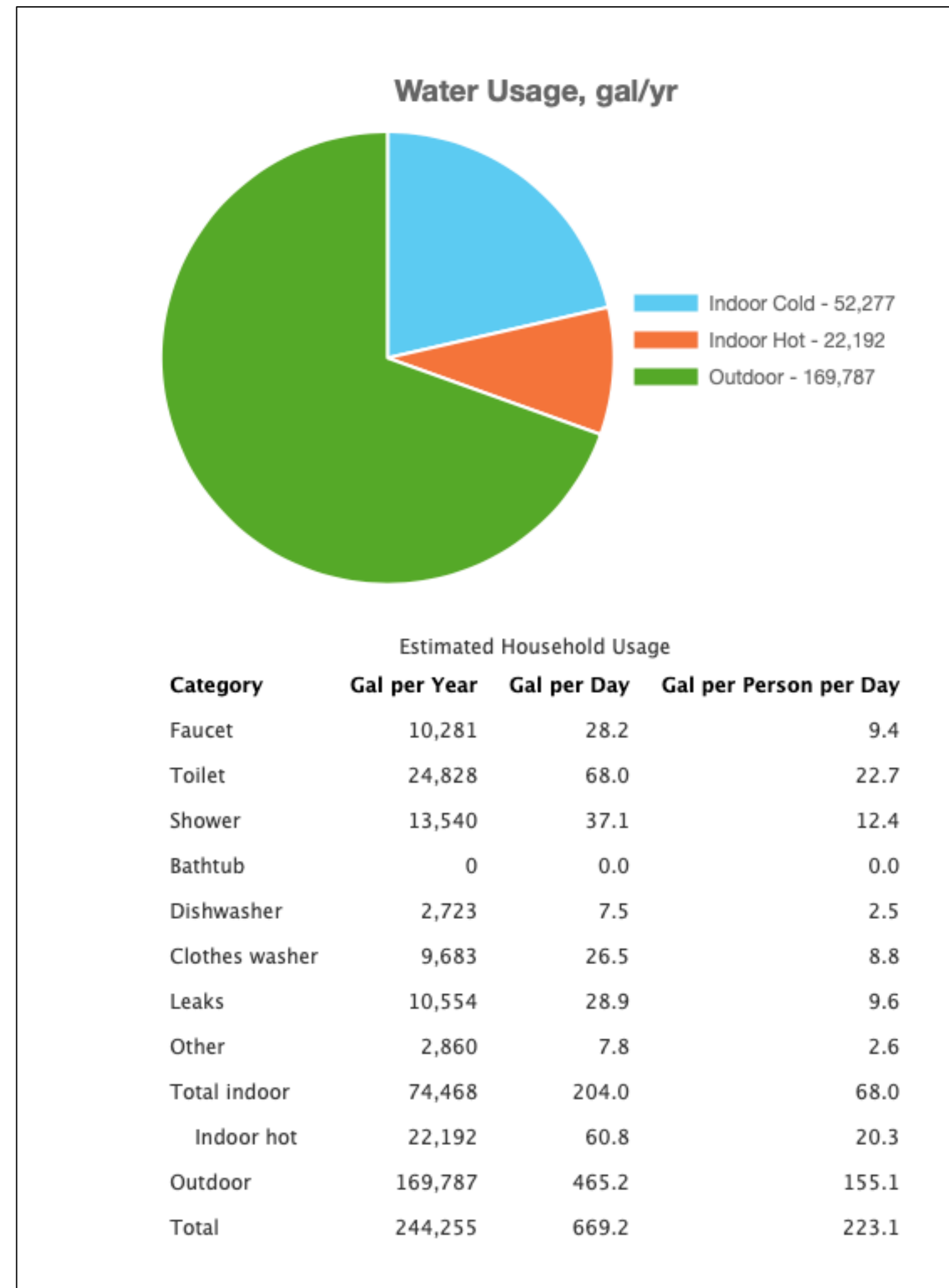
Efficient Home Inputs

- Three people
- Efficient fixtures
- No known leaks
- Large yard with 50% turf
- Smart irrigation sensor

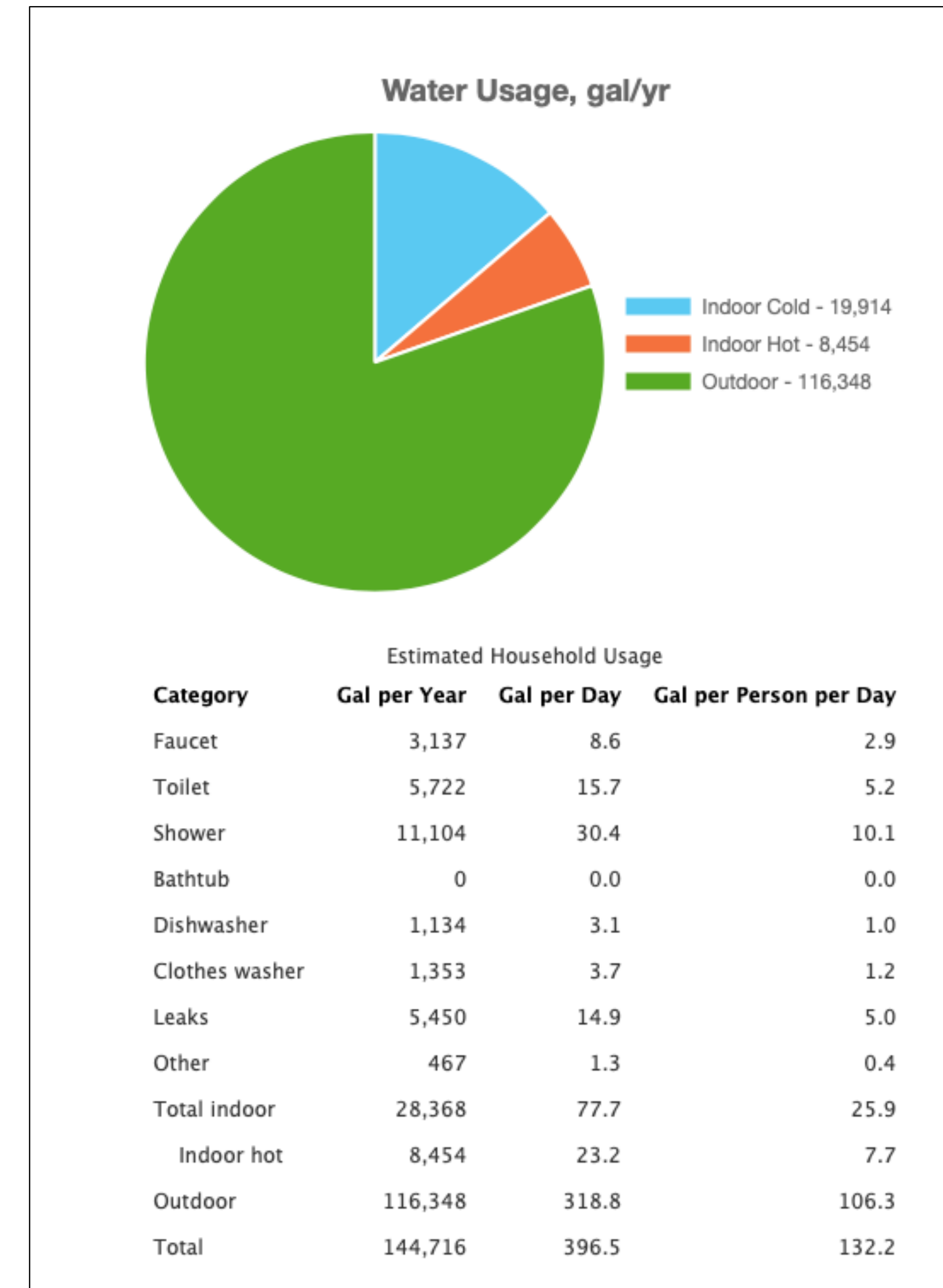


Output Report Comparisons

Inefficient

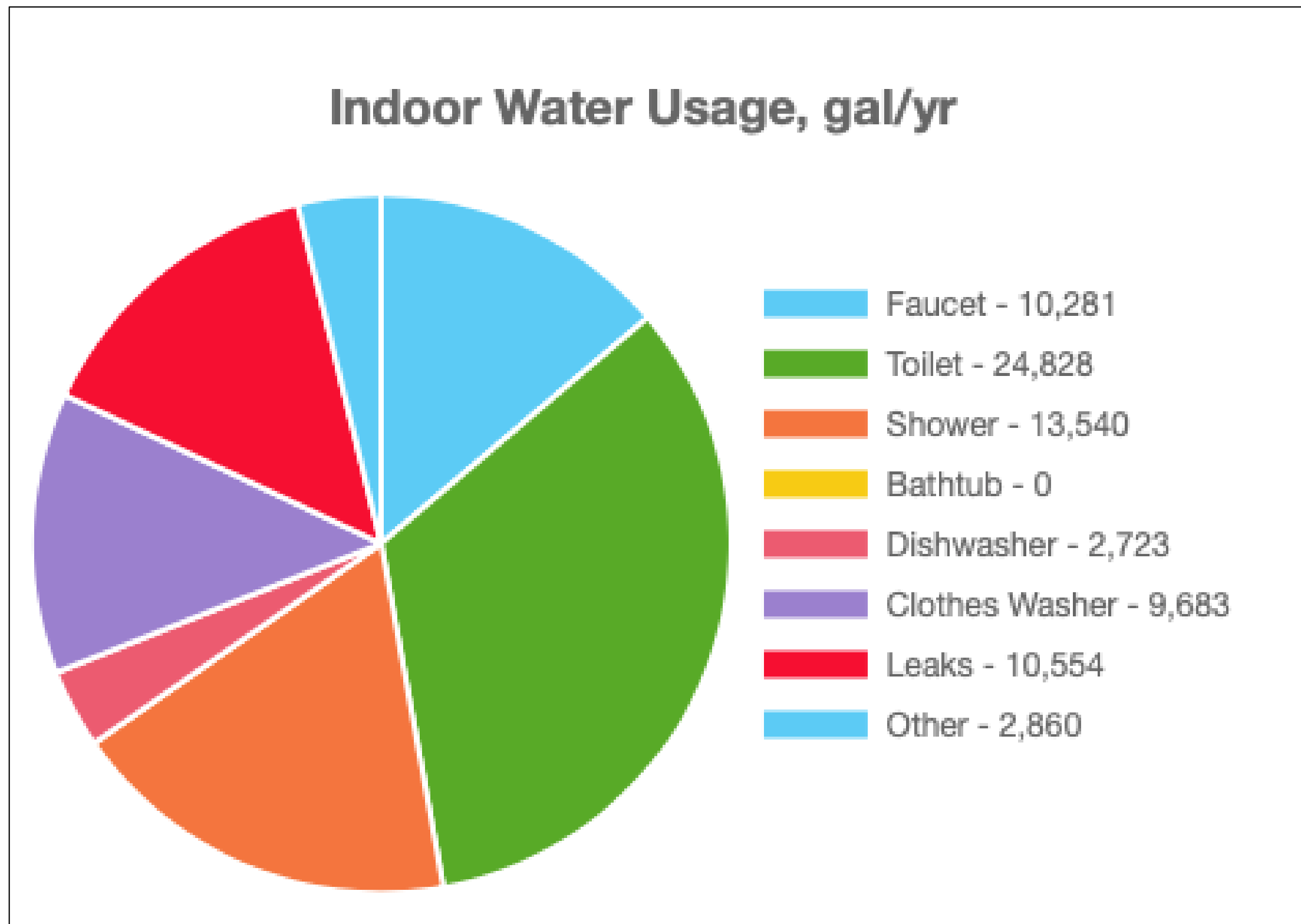


Efficient

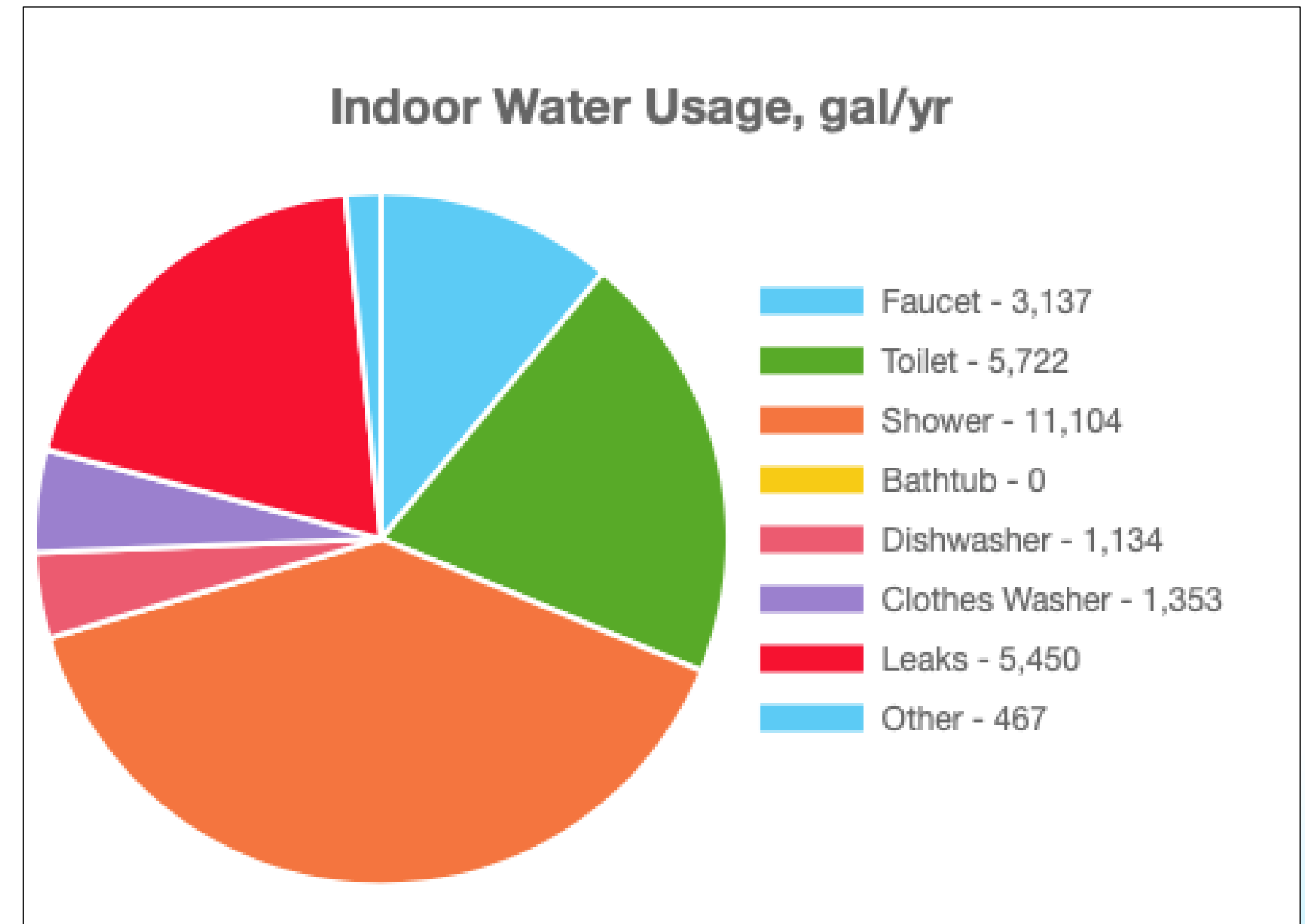


Indoor Water Use Comparison

Inefficient

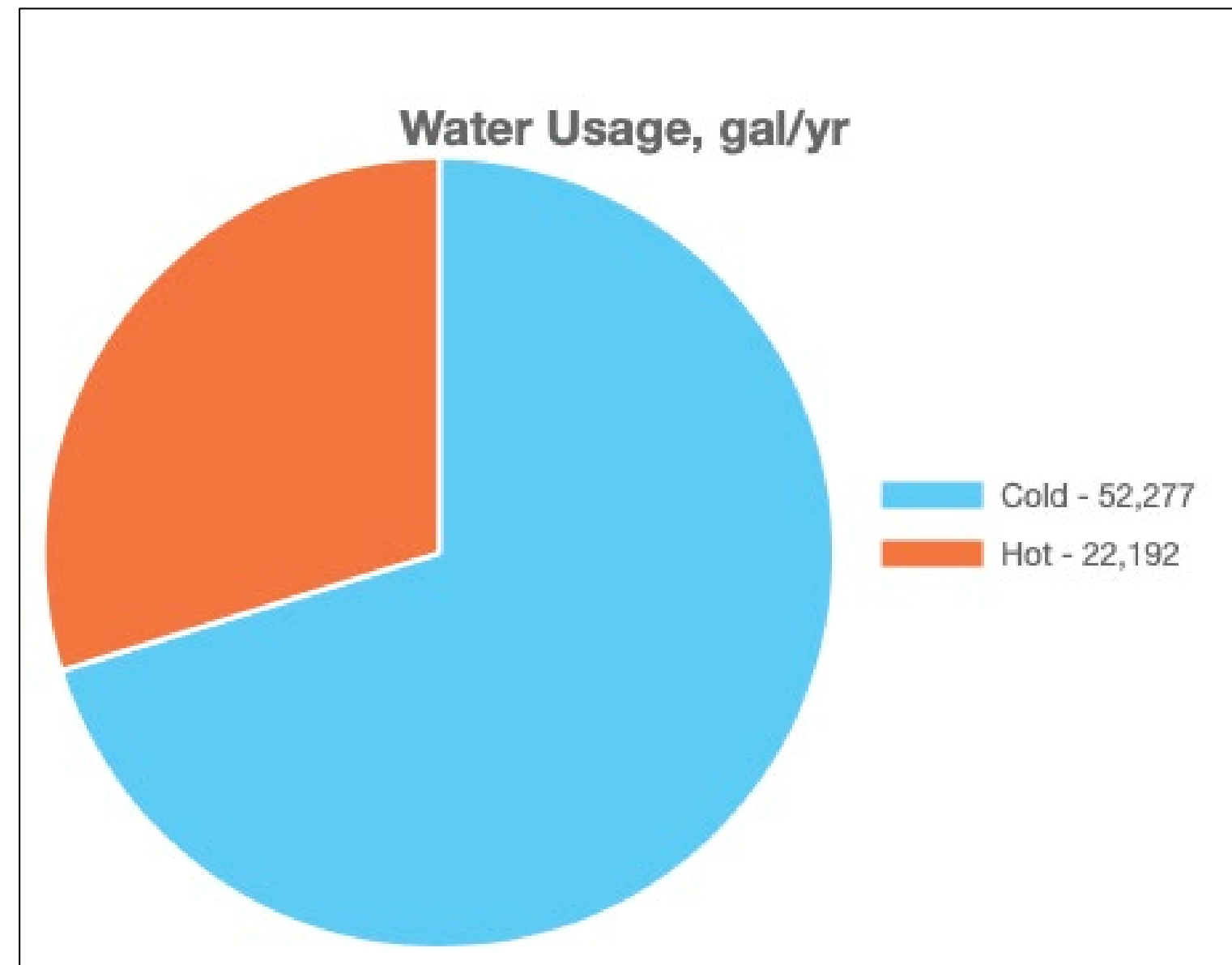


Efficient



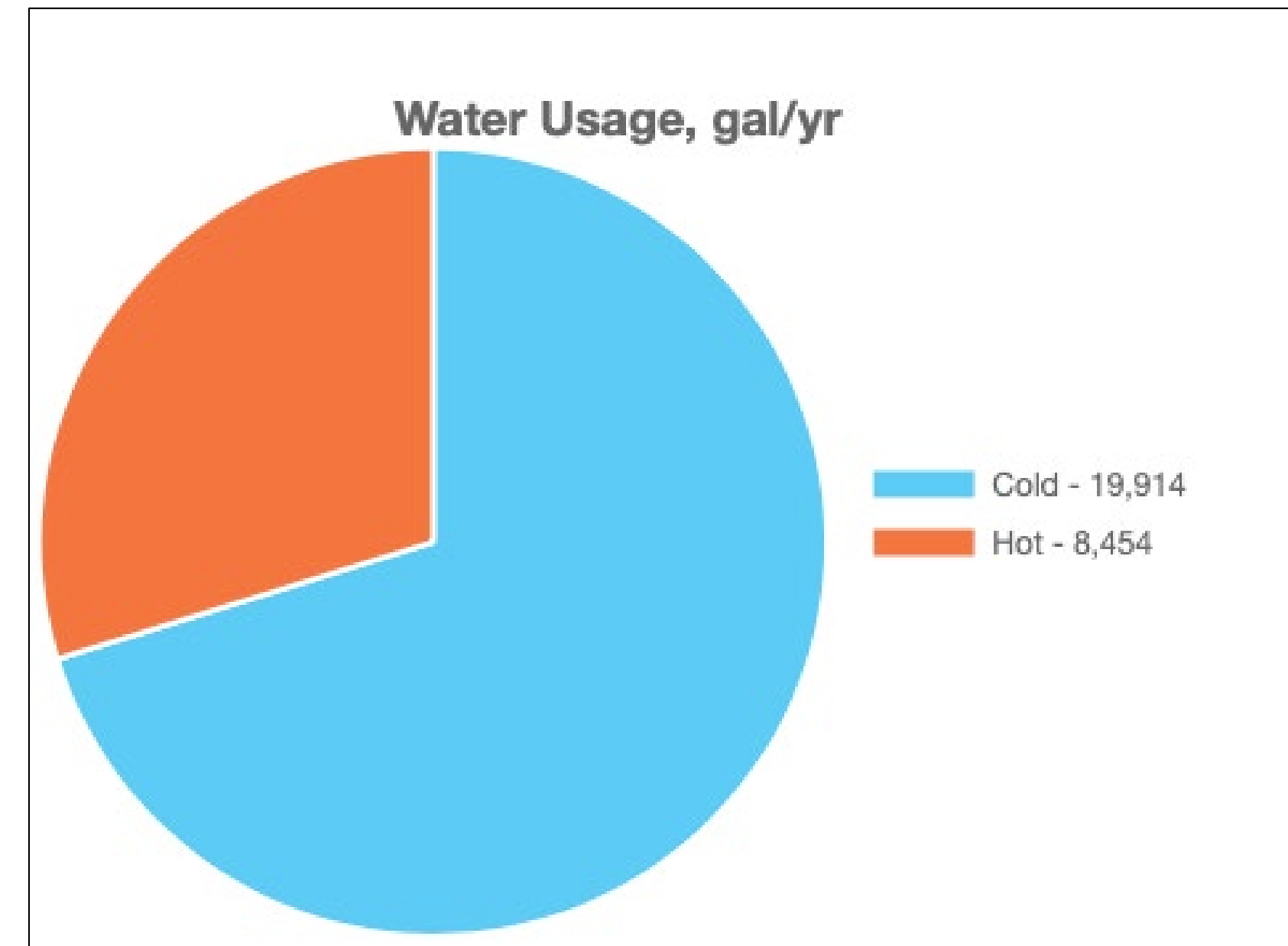
Annual Carbon Footprint

Inefficient



3,631 pounds

Efficient



1,383 pounds

CO2 emissions are calculated based on the quantity and source of energy used to heat water in the home



Comparisons

- My House
- Average
- Water-Wise

Category	Estimated Household Volume (gal/yr)		
	My House	Average House	Water-Wise House
Faucet	10,281	10,982	6,423
Toilet	24,828	18,545	5,723
Shower	13,540	12,655	12,146
Bathtub	–	1,309	–
Dishwasher	2,723	1,091	662
Clothes washer	9,683	16,073	4,204
Leaks	10,554	9,018	6,813
Other	2,860	3,055	467
Total indoor	74,468	72,727	36,437
Indoor hot	22,192	21,673	10,858
Outdoor	169,787	169,787	101,872
Total	244,255	242,514	138,309
Carbon Footprint	3,631	3,546	1,777



Efficiency Plan and Recommendations

- Install aerators
- Replace toilets
- Use full dishwasher loads
- Install ENERGYSTAR clothes washer
- Replace turf

Estimated Usage and Recommendations				
Category	Volume (gal/yr)		My Efficiency Recommendation	Resource How-to
	My House	Water-Efficient House		
Faucet	10,281	6,423	Install WaterSense® labeled faucet aerators. Shut off faucets when not in use.	Learn more
Toilet	24,828	5,723	Replace old toilet(s) with WaterSense® labeled fixtures.	Learn more
Shower	13,540	12,146	Install a WaterSense® labeled showerhead and consider reducing time spent in the shower.	Learn more
Dishwasher	2,723	662	Run only full loads of dishes.	Learn more
Clothes Washer	9,683	4,204	Save water and energy with an ENERGY STAR® labeled clothes washer. Run only full loads of laundry.	Learn more
Leaks	10,554	6,813	Repair leaks. Toilets are often the source of the worst leaks.	Learn more
Outdoor	169,787	101,872	Save the most water outdoors by replacing turf and plants that require a lot of supplemental irrigation water. Savings may also be achieved by tuning up the irrigation system.	Learn more



Calculator Output Report, Summary



- Can be printed or saved
- Displayed in the language selected at the start
- Detailed analysis of indoor and outdoor water usage
- Comparisons to average and Water-Wise homes
- Customized efficiency recommendations




Learn More About How the Calculator Works

<https://www.home-water-works.org/about/calculator>



EnglishEspañol
A project of the
 Alliance for Water Efficiency

Water CalculatorValue of WaterConservation TipsIndoor Water UseLandscape & IrrigationSaving EnergyFor TeachersPlumbing HandbookAbout Us




Home » [About the Alliance for Water Efficiency](#) » About the Water Calculator

About the Water Calculator

How the Water Calculator Works

The Water Calculator takes information provided by the user and estimates indoor and outdoor water use with a series of mathematical models and equations developed by Aquacraft.



INITIAL INDOOR WATER USE ESTIMATE

The initial few questions are used to identify the age of the house to determine which of three basic categories to place it in: "pre-1980 home", "standard home" or "efficient home".

Indoor water use for homes classified as "pre-1980" is initially estimated using this equation:

Indoor water use = $87.41 y^{0.69} \times 365$

Where y = the number of residents in the home.

Indoor water use for homes classified as "1980-2010/standard home" is initially estimated using this equation:

Indoor water use = $67.251 y^{0.6541} \times 365$

Where y = the number of residents in the home.

Indoor water use for homes classified as "post-2010/efficient home" is initially estimated using this equation:

Indoor water use = $59.58 y^{0.53} \times 365$

Where y = the number of residents in the home.

Indoor uses are then estimated using the following table:

Final Observations

- The Home Water Works website with the Calculator is now completely revised and live
- Access to the site is completely free to the public
- Linking Logo available from AWE for AWE members
- Calculator is also customizable for an AWE member water utility, with information providable on individual customer water usage and results
- Contact office@a4we.org for more information on the calculator customization options



Questions?

- Thank you for attending!

Mary Ann Dickinson, AWE maryann@a4we.org

Peter Mayer, Water DM peter.mayer@waterdm.com

Steve Whitesell, Radian Developers sw@radianc.net

