



# RESIDENTIAL INDOOR WATER USE OPPORTUNITIES TO SAVE THROUGH FIXTURES AND APPLIANCES

Liesel Hans, Director of Programs | Alliance for Water Efficiency

[liesel@a4we.org](mailto:liesel@a4we.org) | [www.a4we.org](http://www.a4we.org)

*Alliance for Water Efficiency*



The Alliance for Water Efficiency is a stakeholder-based nonprofit organization dedicated to the efficient and sustainable use of water.

**Collaboration** : Network of colleagues across water providers, governments, business and industry, researchers, nonprofits and other partners.

**Knowledge**: Creating and sharing resources, tools, trainings, expertise and research.

**Change**: Advocacy for funding, policies, and partnerships that advance water efficiency.

Learn more [www.a4we.org](http://www.a4we.org)

# Alliance *for* Water Efficiency

# WHY RETROFIT?

- Cost-effective, reliable demand reductions
- Better fixtures & performance
- Water savings & energy savings
- Can pair retrofits with behavioral education for greater savings
- Homes to target? Pre-1994, even up to pre-WaterSense standards (2007)

# HOW DO HOUSEHOLDS USE WATER?

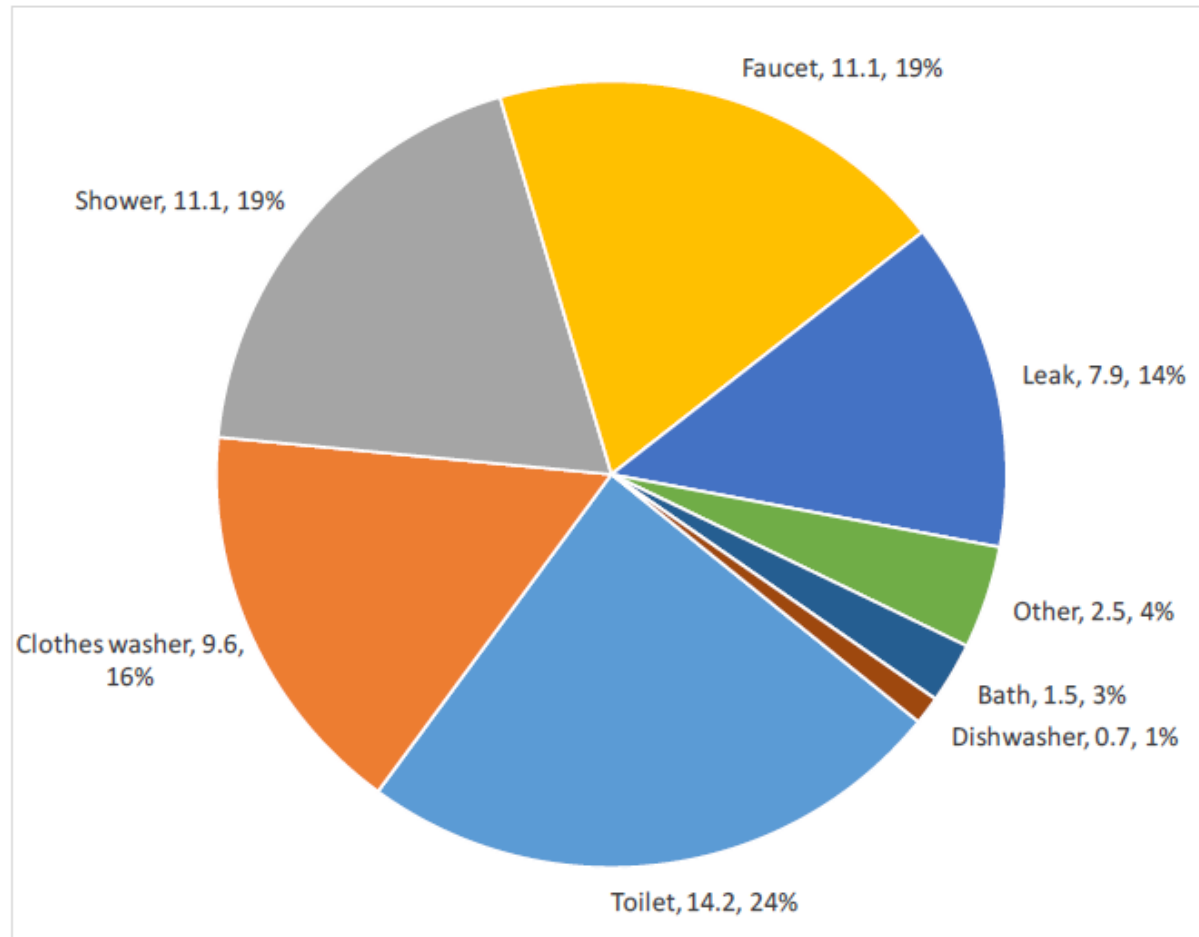


Figure ES.4 Indoor per capita use (gpcd and percent of indoor use) by fixture, 9 study sites, n=737

- Best resource – Residential End Uses of Water, Version 2 (Water Research Foundation, 2016)
- Version 3 will launch in 2024.

# TOILETS, SHOWERHEADS, AND FAUCETS

Fixture	Federal	WaterSense	California	Next Level
Toilets	1.6gpf	1.28gpf	1.28gpf	1.1gpf
Showerheads	2.5gpm	2.0gpm	1.8gpm	1.5gpm
Bathroom Faucets	2.2gpm	1.5gpm	1.2gpm	1.0gpm
Kitchen Faucets	2.2gpm	NA	1.8gpm	1.5gpm

gpf = gallons per flush  
gpm = gallons per minute

Federal government has established a required maximum flow rate / flush volume

EPA WaterSense is a federal, voluntary program that certifies products that perform well and use at least 20% less water than the federal requirement

States can, and many have, established efficiency requirements that go beyond the federal requirements. Some states mandate WaterSense, and others, like California, go beyond WaterSense

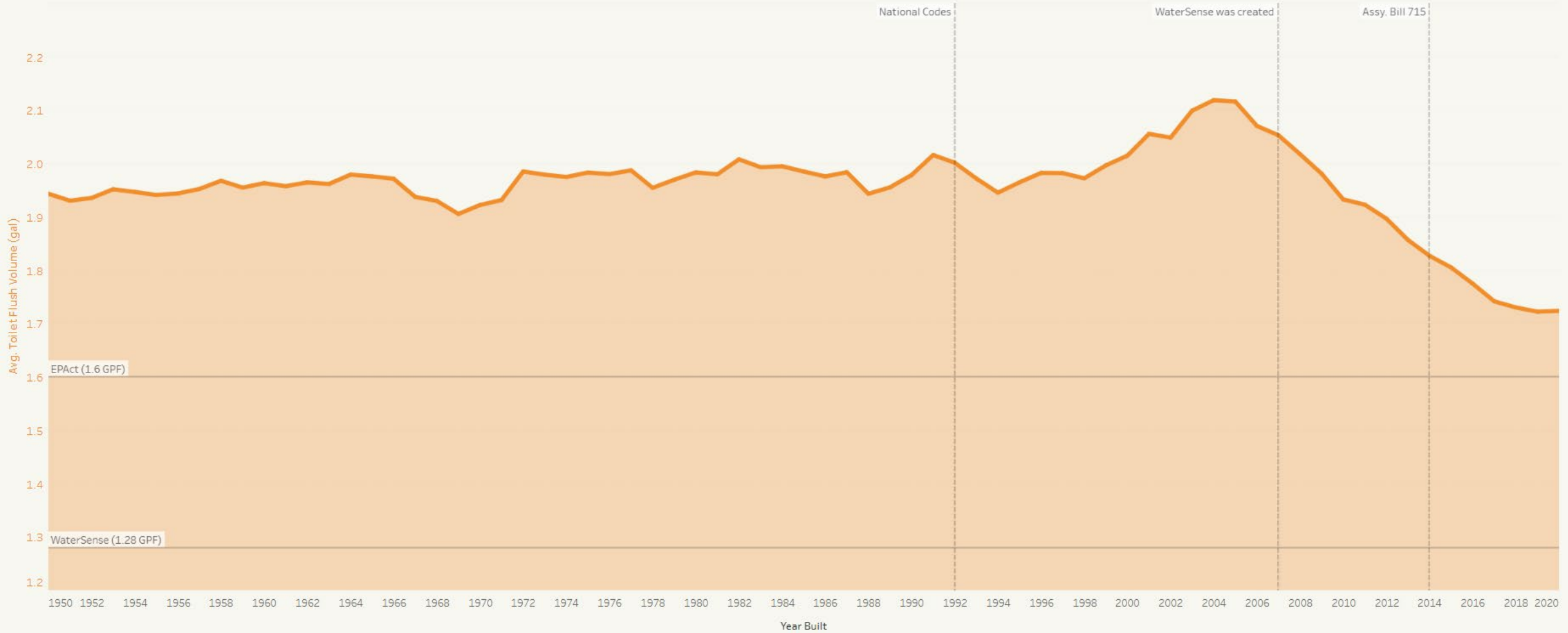


# Toilet Efficiency

Southern California

Overlay Indoor GPCD  OFF

REUS 2016 found average flush volume of 2.6 gal



# CLOTHES WASHERS DISHWASHERS

The Department of Energy (DOE) EnergyStar program is a federal, voluntary label that products earn by meeting even higher efficiency requirements than the general federal requirements.

Even though the program is called EnergyStar, labeled products also save significant amounts of water.

EnergyStar, front loading clothes washer models are the most efficient versus top loaders

EnergyStar dishwashers save modest amounts of water, but they are usually very similar to price as non-EnergyStar models and worth using



# DISHWASHERS & CLOTHES WASHERS

- **Dishwashers:**
  - Must use 3.2 or fewer gallons per cycle for standard dishwashers, and 2 or fewer gallons per cycle for compact dishwashers
  - This is about half as much water as the average dishwasher water use found in the REU2016 Study (6.1 gallons per cycle)
- **Clothes washers:**
  - Integrated Water Factor (IWF) used to standardize
  - IWF must be <4.3
    - => 4.3 or fewer gallons per cubic foot of washer capacity.
  - High-efficiency front loader washing machines have capacity of 2.5 cubic feet
    - => 18 to 19 gallons per load or less
    - This is about 40 percent less than the average clothes washer water use per load found in the REU2016 study (31 gallons per load)





# PREVALENCE OF EFFICIENCY PRODUCTS

- REUS 2016 assessed a relatively low bar for efficiency:
  - 46% of households had a clothes washer using 30 or fewer gallons per load
  - 37% of households had a 2.2 gallons per flush or less toilet
  - 80% of households had a 2.5 gallons per minute or less showerhead
- A 2019 PMI study assessed the prevalence of EPA WaterSense products and estimated:
  - 16.8% of all residential tank-type toilets were WaterSense (1.28 gallons per flush or less),
  - 40.1% of bathroom faucets were WaterSense (1.5 gallons per minute or less), and
  - 45.4% of showerheads are estimated to meet the WaterSense standard (2.0 gallons per minute or less)

There is still a lot of savings possible through retrofits, especially toilets.

# INCENTIVE PROGRAMS

Designed to accelerate natural replacement.

- **Rebates:**
  - Offer a rebate as a check or a bill credit for customers who submit an application with proof of purchase of a qualifying fixture or appliance
- **Direct Install Program:**
  - Utility partners with local plumbers to install high efficiency fixture and/or appliances
  - May be no or a reduced cost to the customer
- **Hybrid:**
  - May require customer to pay for either the toilet or the installation
- **Other:**
  - Host a showerhead or toilet pickup/drop-off day
  - Support plumbing repair services

Don't forget about multi-family!



# CONSIDER PARTNERSHIPS

- Water providers partner with an energy provider to offer joint water and energy efficiency programs.



**Table 8:** Bill Savings Estimates Resulting from Various Water Conservation Measures

Conservation Measure	Annual Savings Estimate Gallons	Monthly Savings Gallons	Annual Bill Savings*	Percent Annual Savings Based on Average Bill**
Toilet Replacements	10,000	833	\$63.58	7.71%
Clothes Washer Replacements	7,000	583	\$44.51	5.40%
Landscape Transformation (turf removal)	12,300	1,025	\$72.34	8.78%
<b>Total</b>	<b>29,300</b>	<b>2,442</b>	<b>\$180.43</b>	<b>21.89%</b>



# AFFORDABILITY

- [Long Beach, CA Report](#) and [Houston, TX Report](#)



Water Conservation or Efficiency Strategy	Annual Water Savings (gallons)	Annual Water and Sewer Bill Savings	Percent Reduction from Average Bill
Toilet Replacement	10,100	\$135.84	-15%
Indoor Retrofit (Toilets, showerheads, and clothes washer)	18,000	\$310.14	-34%
Behavioral Actions	6,000	\$31.09	-3%

# LEAKALERTS, SENSORS AND HOME DEVICES

- REUS 2016 found households had an average of nearly **18 gallons per day** lost to leaks
- Single-family: Smart home devices
- Multifamily: ToiletsensorsFlowActive, sensor industries
- AWE Study:
  - Leaks comprised **25%** of total household water usage during the leak event.
  - Proactiveleak notifications reduced water lost to leaks by **30-50%**.
  - [AWE Report linkere.](#)



# POLICY OPTIONS

Note: Already required for Lake Michigan permittees

## Statewide Options:

- Pass legislation requiring all new fixtures sold in the state to meet WaterSense requirements (e.g. Colorado) [AWE tracks examples here](#)
- Pass legislation requiring that all new fixtures and appliances sold in the state must be both water and energy efficient; model legislation and resources available: <https://appliance-standards.org/states>

## Local Options:

- Adopt efficiency requirements as part of local plumbing codes for new and renovated homes. [Example from Atlanta](#)
- Provide incentives for new homes that meet the requirements of WaterSense homes program. [Example here](#)
- Neutral growth policies

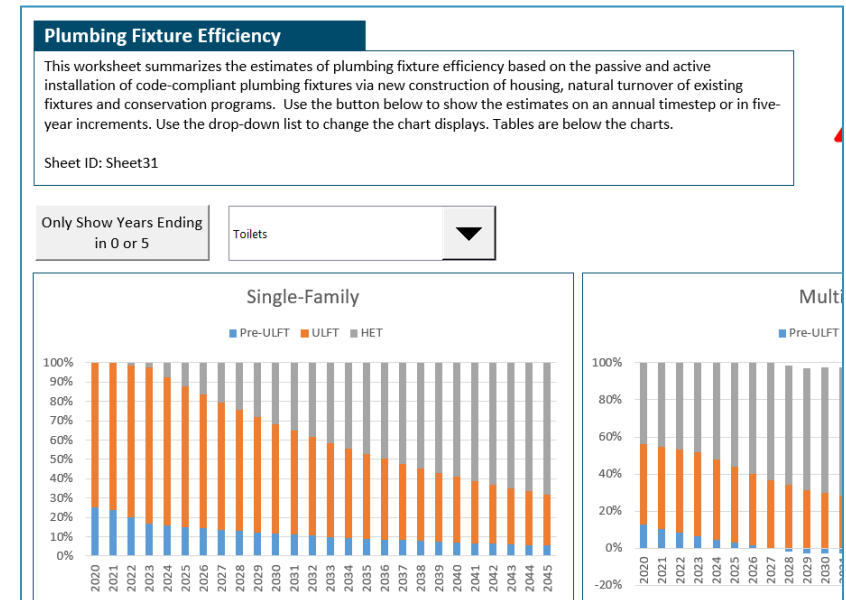
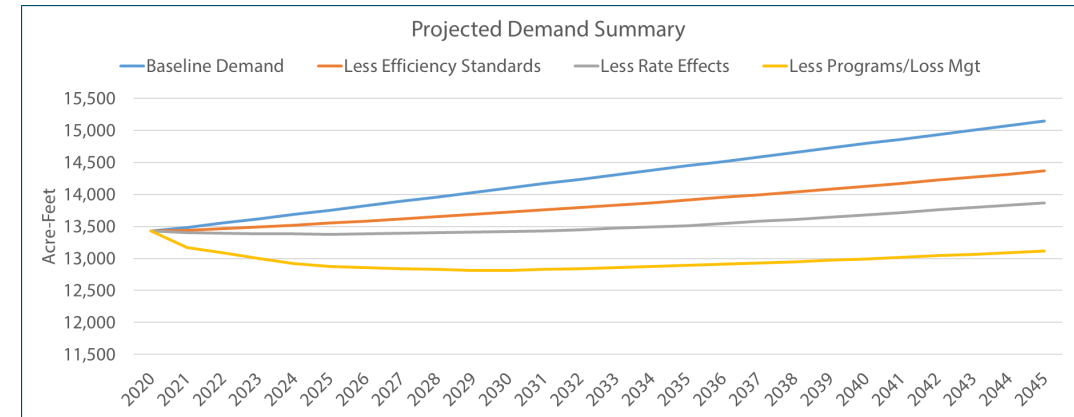
# FLUME DATA LABS INDEX

- States with and without fixture standards in place:



# AWE TOOL & RESOURCES

- AWE Water Conservation Tracking and Demand Forecasting Tool
- Includes a Plumbing Efficiency Module to assess passive savings
- Assess future demand scenarios and forecasts
- Explore savings potential from various conservation and efficiency programs, like indoor retrofits

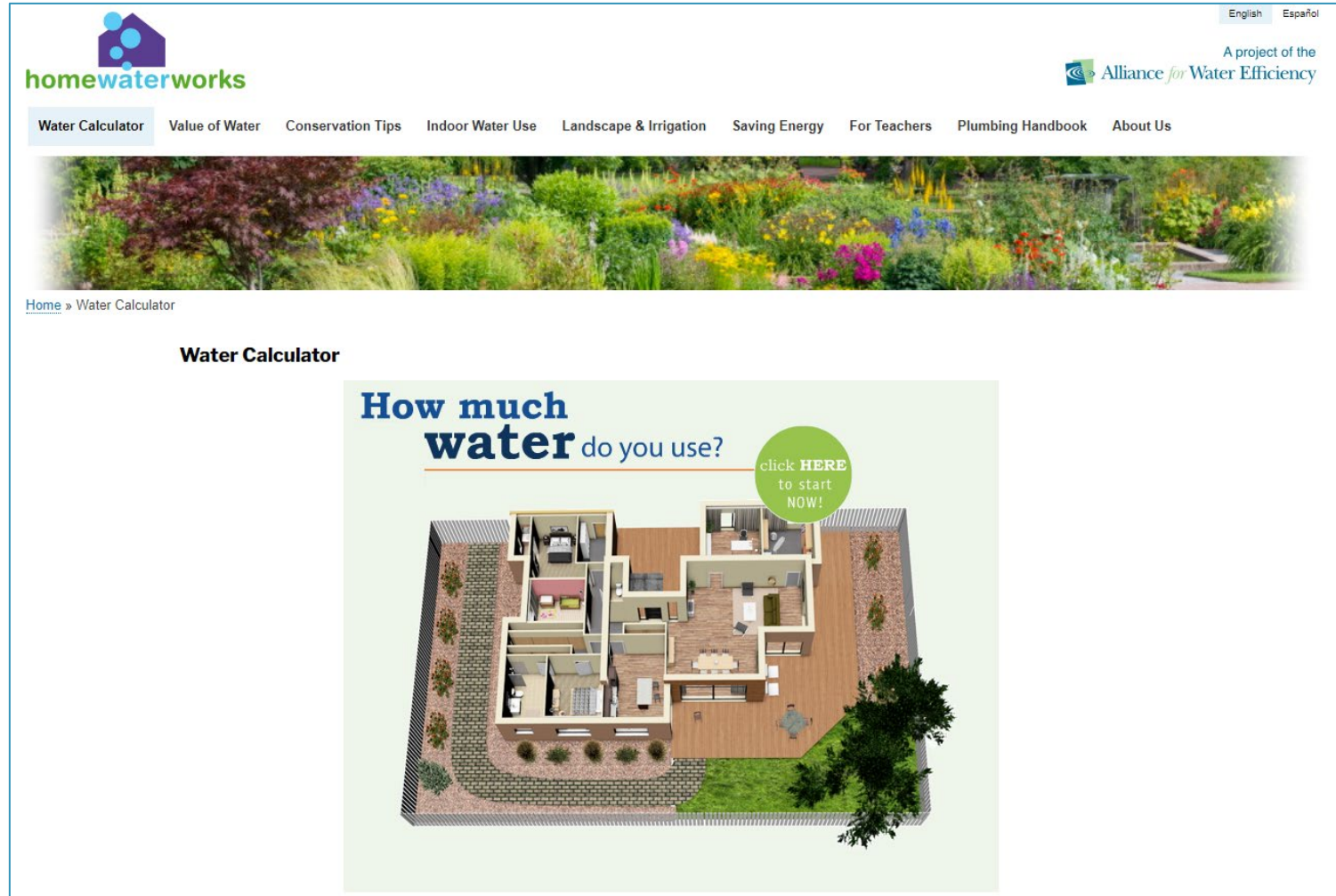


<https://www.allianceforwaterefficiency.org/resources/topic/waterconservationtracking-tool>



<https://home-water-works.org/>

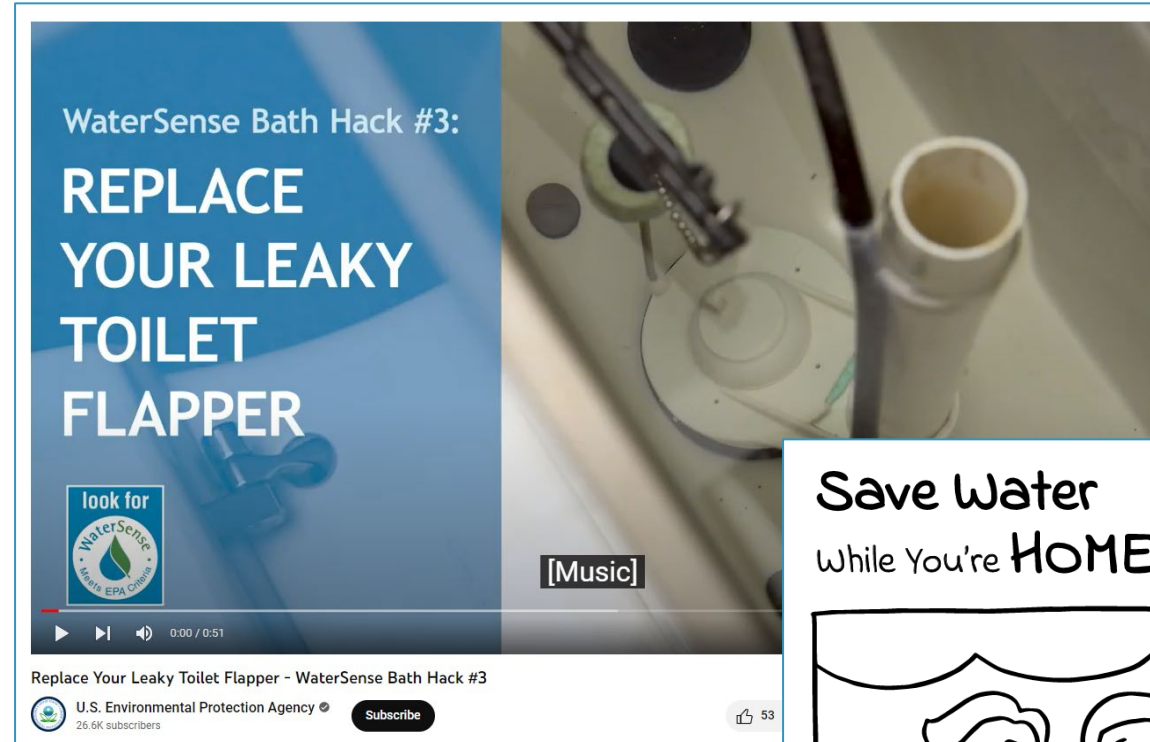
# HOME WATER WORKS CALCULATOR




The screenshot shows the homepage of the Home Water Works Calculator. At the top left is the logo for "homewaterworks" featuring a stylized house icon with blue and green circles. To the right of the logo are language options for "English" and "Español". Further right is the text "A project of the Alliance for Water Efficiency" with the Alliance logo. A navigation menu below the header includes links for "Water Calculator", "Value of Water", "Conservation Tips", "Indoor Water Use", "Landscape & Irrigation", "Saving Energy", "For Teachers", "Plumbing Handbook", and "About Us". The "Water Calculator" link is highlighted. Below the navigation is a large banner image of a vibrant garden. Underneath the banner is a breadcrumb trail: "Home » Water Calculator". The main heading "Water Calculator" is centered. Below this is a large graphic with the text "How much water do you use?" in blue and black. A green circular call-to-action button says "click HERE to start NOW!". The graphic also features a 3D cutaway illustration of a house with a garden and a tree.

# EPA WATERSENSE

- <https://www.epa.gov/watersense>
- Information for kids, households, and businesses
- Educational webinars throughout the year
- Free to become a WaterSense partner
  - Gain access to a variety of public education and outreach materials




WaterSense Bath Hack #3:  
**REPLACE  
YOUR LEAKY  
TOILET  
FLAPPER**

 look for  
[Music]

0:00 / 0:51

Replace Your Leaky Toilet Flapper - WaterSense Bath Hack #3

 U.S. Environmental Protection Agency  
26.6K subscribers

Subscribe

53



**Save Water**  
While You're **HOME**



**A Water Conservation Coloring Book**  
Visit [www.epa.gov/watersense](http://www.epa.gov/watersense) for more kids activities and tips.

# UPCOMING LEARNING AND NETWORKING EVENT

Water Efficiency & Conservation Symposium, August 2-3 in Chicago!

Register here: <https://www.allianceforwaterefficiency.org/members/2023symposium>

[Check out the Full Program](#)



ALLIANCE FOR WATER EFFICIENCY

# WATER EFFICIENCY & CONSERVATION SYMPOSIUM

AUGUST 2-3, 2023 | CHICAGO, IL





# QUESTIONS?

Thank you!

Contact: [liesel@a4we.org](mailto:liesel@a4we.org)

*Alliance for Water Efficiency*