

24%

# Saving Water One Building at a Time

Susan Heinking, AIA, LEED Fellow  
Pepper Construction Company

# How Buildings Consume Water:

Domestic Water Use

Mechanical Equipment

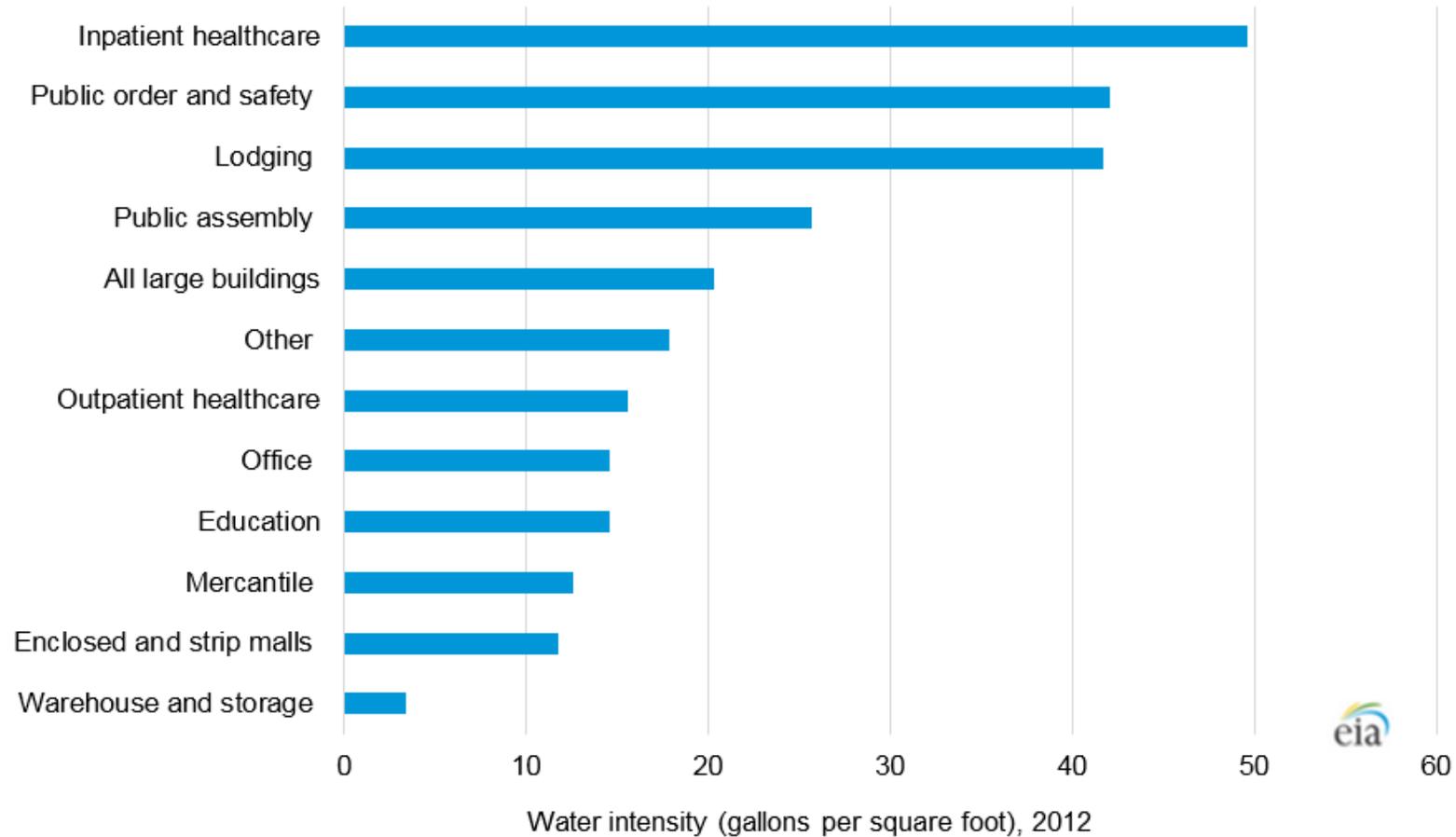
Landscaping

Distribution Systems / Piping

Embodied Water Footprint

# Which buildings use the most water?

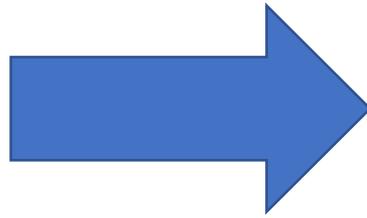
Figure 1. Inpatient healthcare buildings were the most intensive users of water among large commercial buildings in 2012



U.S. Energy Information Administration , CBECS 2012 survey



46,000 buildings greater than 200,000 SF use 980 million gallons of water per day

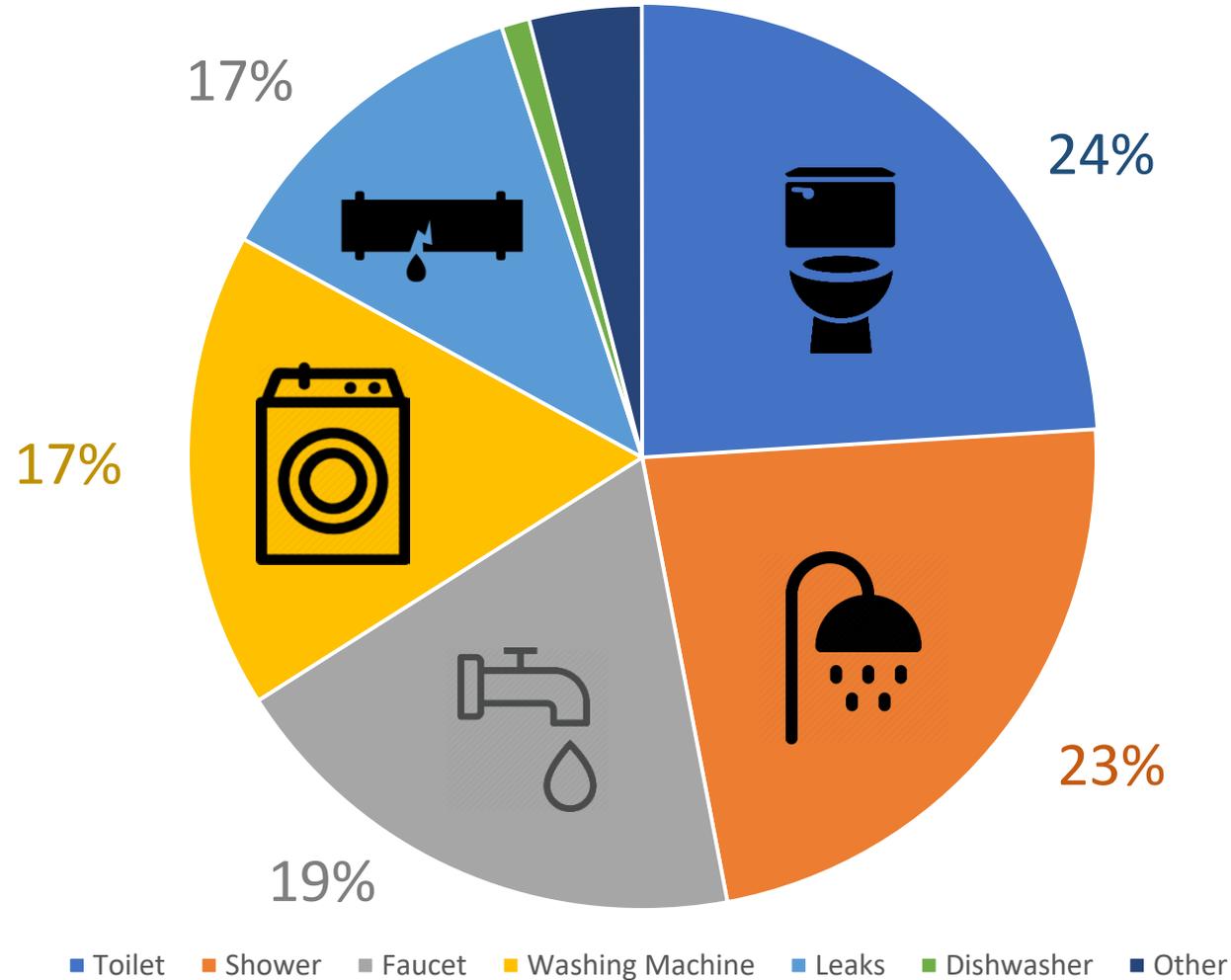


- 2.3% Total Public Water Supply
- 22,000 gallons per building
- 50.1 gallons per worker

1,485 Olympic Sized  
Swimming Pools a day

## US Indoor Water Use per Household

Average daily indoor water use in the US is around 60 gallons per person per day



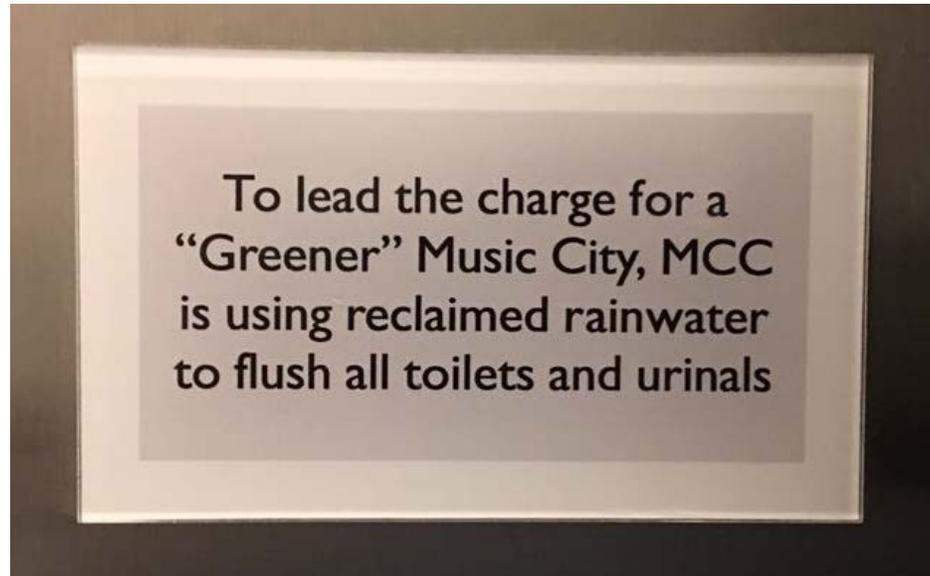
# Water Conservation: Domestic Use

Fixture Type	Conventional Rate	WaterSense Rate	Ultra Low Options
Toilets	1.6 gpf	1.28 gpf	1.1 gpf or 0 gpf
Urinal	1.0 gpf	0.5 gpf	0 gpf
Lavatory Faucets	2.2 gpm	1.5 gpm	.5 gpm
Kitchen Faucets	2.2 gpm	n/a	1.5 gpm
Showerheads	2.5 gpm	1.5 -2.0 gpm	1.25 gpm



*WaterSense-labeled products are certified to use at least 20 percent less water, save energy, and perform as well as or better than regular models*

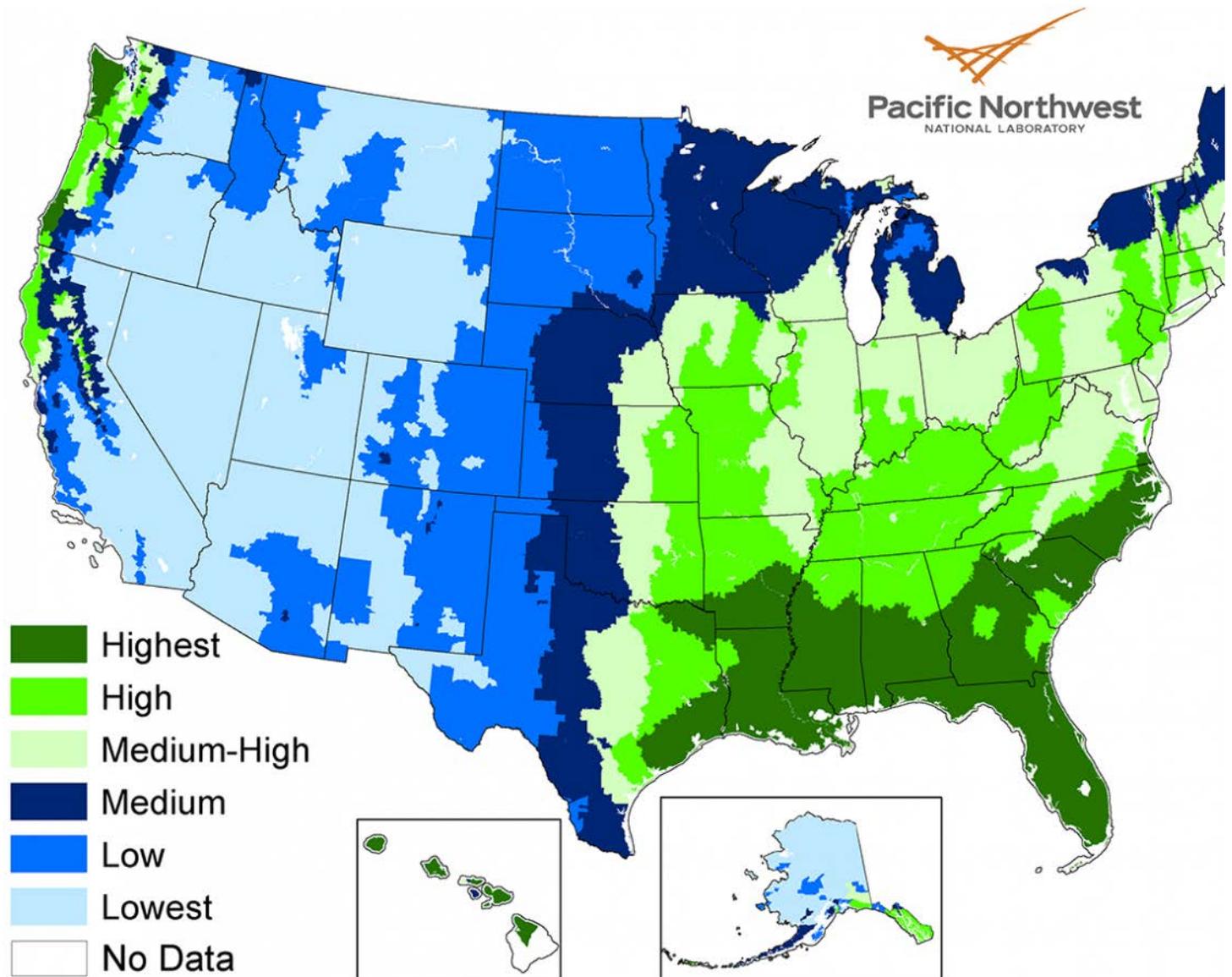
# Water Conservation: *Domestic Use Cont.*



# Rainwater Availability Map

- **Highest:** 28 inches of precipitation or more during frost-free months and have 9 months or more with at least 1 inch of rain
- **High:** 23-27 inches of total precipitation during frost-free months
- **Medium-High:** 19-22 inches of total precipitation during frost-free months
- **Medium:** 13-18 inches of total precipitation during frost-free months
- **Low:** 8-13 inches of total precipitation during frost-free months
- **Lowest:** less than 8 inches of total precipitation during frost-free months.

*Federal Energy Management Program*



# Water Conservation Mechanical



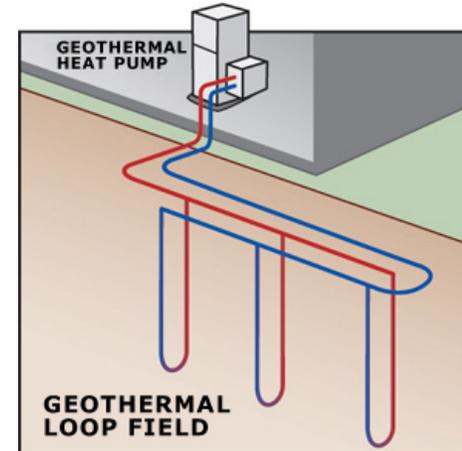
*COOLING TOWERS*



*BOILERS AND STEAM SYSTEMS*



*CHILLERS*



*GEOHERMAL WELLS*

# Water Conservation Landscaping

The screenshot shows a web browser window displaying the 'Native Plant Information' page of the McHenry County Conservation District. The page features a navigation menu with categories like 'About', 'Sites', 'Recreation', 'Education & Special Events', 'What's New', 'Get Involved', and 'Discover Nature'. A search bar is located in the top right corner. The main content area is titled 'Native Plant Information' and includes a photograph of a yellow and orange spotted flower. Below the photo, there are sections for 'Garden Friendly Native Plants' and a list of plant categories: 'Prairie Plants', 'Woodland Plants', 'Wetland Plants', and 'Shrubs, Trees, and Vines'. The page also contains a mission statement and contact information for the district.

Native Plant Information

**Garden Friendly Native Plants**

Plants have been divided into three categories depending on where they grow best. Other information, including flower color, bloom time, height, and potential sources have been provided.

SOURCES: The list of sources is by no means an inclusive list and many of these species may be available at your local garden center. Some of these species, however, will be difficult to find.

A note on Species: The scientific name has been included for all plants included on this list. Many species have been hybridized and are commercially available. However, these hybrids and cultivars are not truly native species. Depending on your goal this may not matter to you; however, if you are attempting a restoration, it is important to acquire only plants with the exact scientific name listed. The reason for this is that many hybrids will not reproduce and spread.

Aggressive Species: In the comments column of this list several species have been labeled "aggressive" or "potentially aggressive." If your goal is a tidy formal bed, these species may not suit your needs. On the other hand, if you are planning a restoration or beautification, where rapid spreading is desirable, these plants should not be problematic.

*Mission - McHenry County Conservation District exists to preserve, restore, and manage natural areas and open spaces for their intrinsic value and for the benefits to present and future generations.*

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phone: 815-338-6223 | fax: 815-334-2877 | email: [MCCD@MCCDistrict.org](mailto:MCCD@MCCDistrict.org)

<https://www.mccdistrict.org/rccms/native-plant-information/>

# Water Conservation Distribution



A very typical leak of 10 drips per minute wastes nearly one gallon per day, or 29 gallons per month

# Water Conservation Embodied Water Footprint

WATER FOOTPRINT<sup>®</sup>  
CALCULATOR

Your water footprint:

**1,397** Gallons/Day

Household: **6,984** Gallons/Day

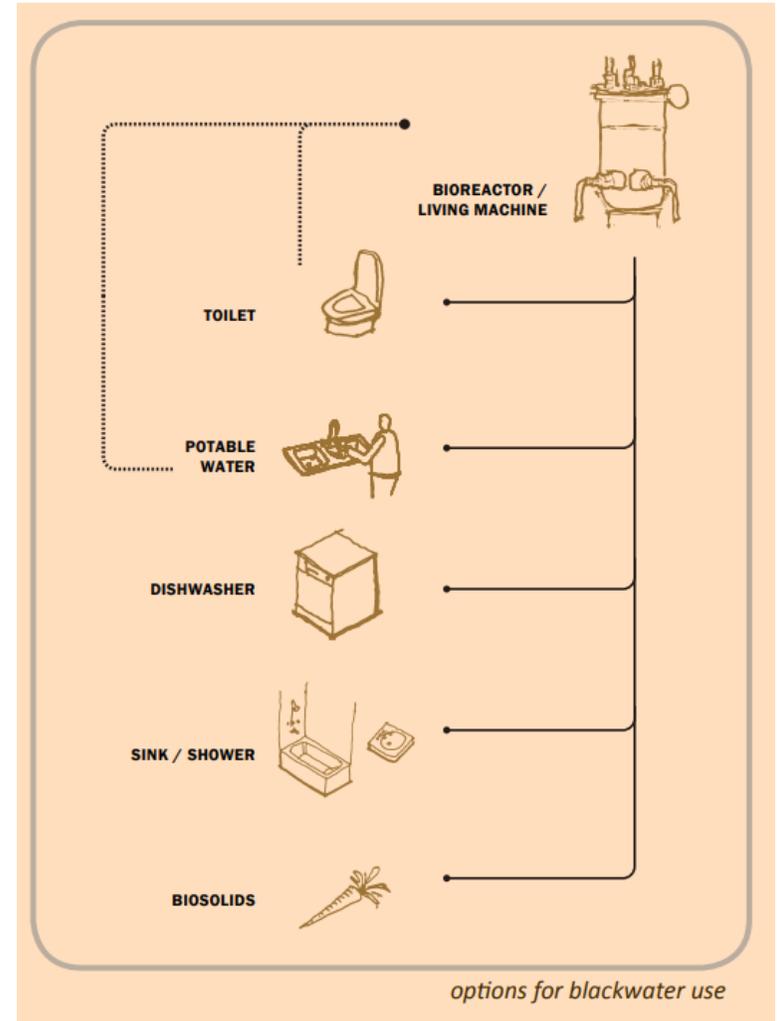
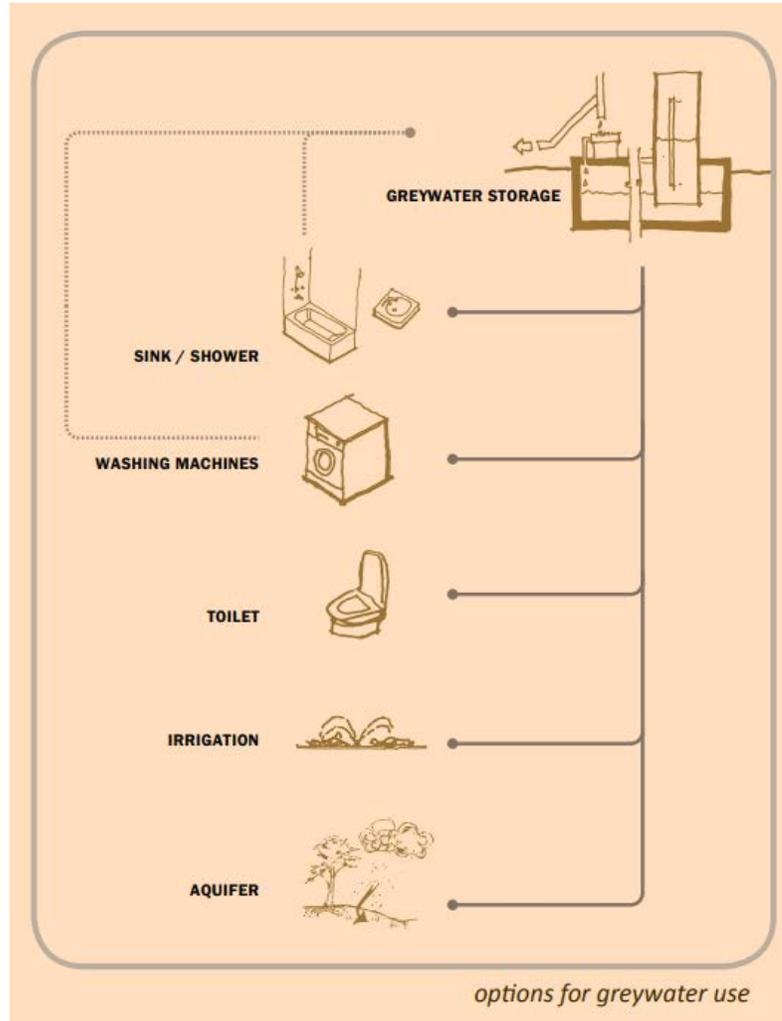
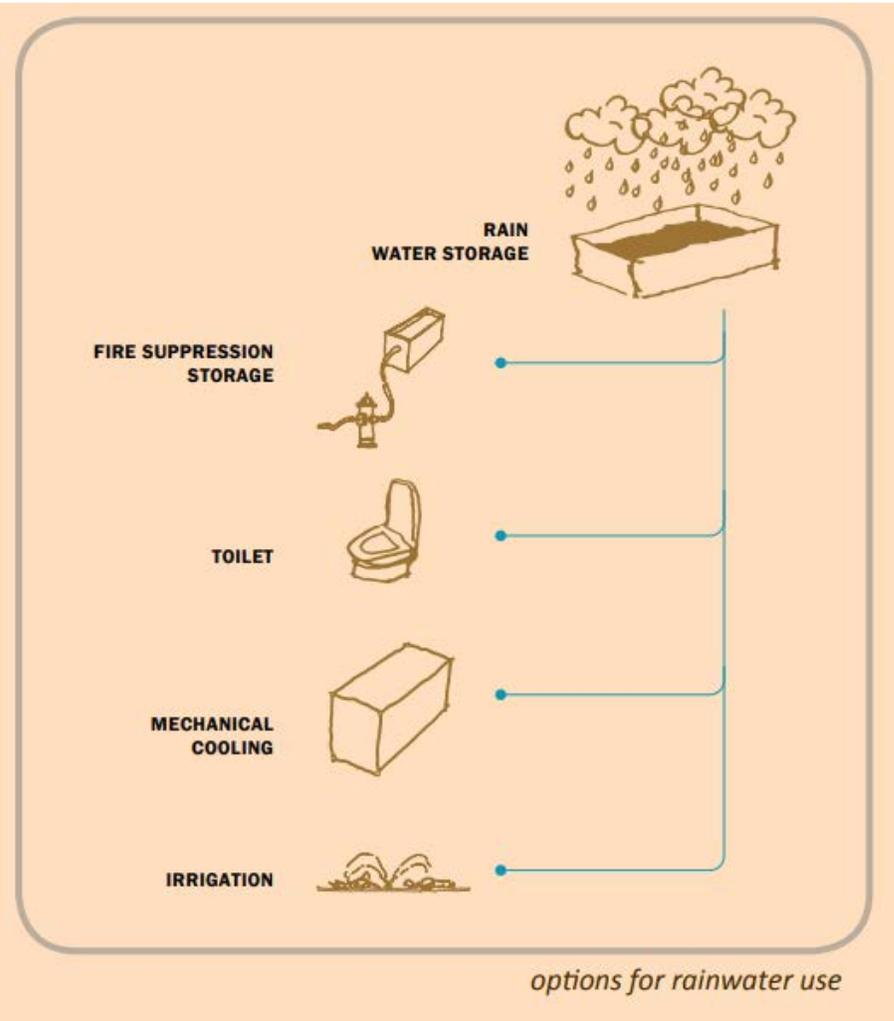
The US Average is **2,220** Gallons/Day

Not bad! You beat the average. Below you can explore your answers and find how to go lower.

[Watercalculator.org](http://Watercalculator.org)



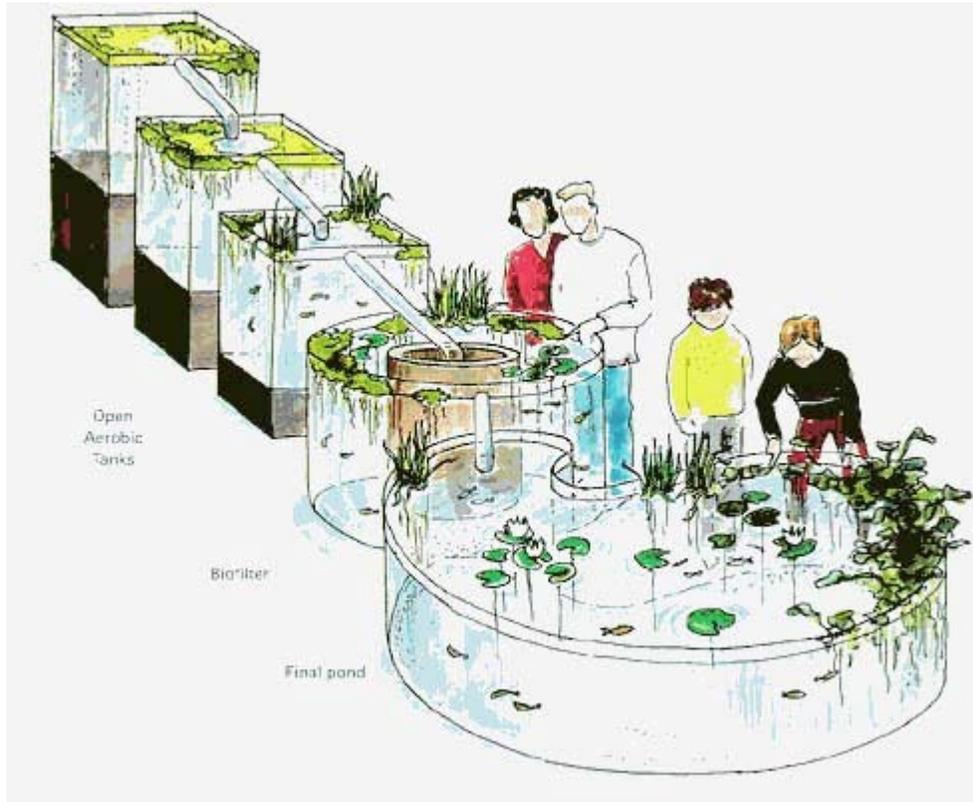
# Achieving Water Independence In Buildings



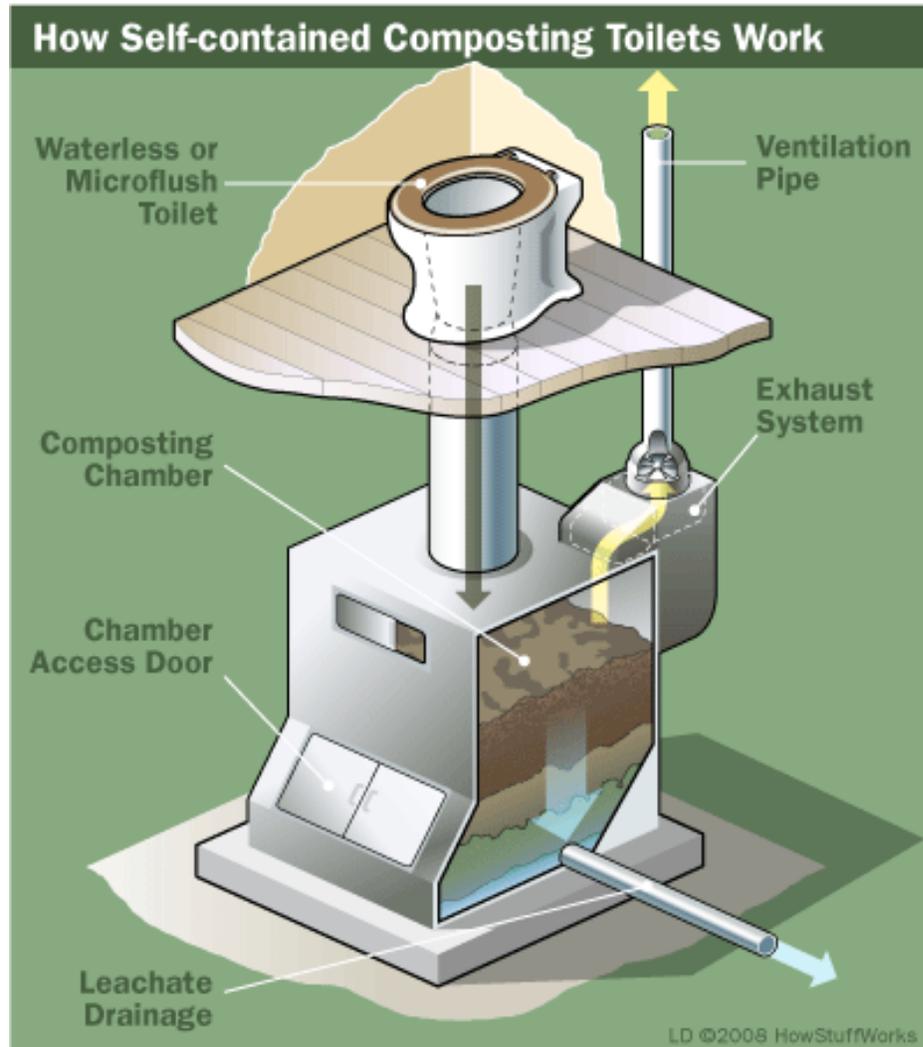
# Cisterns and Rain barrels

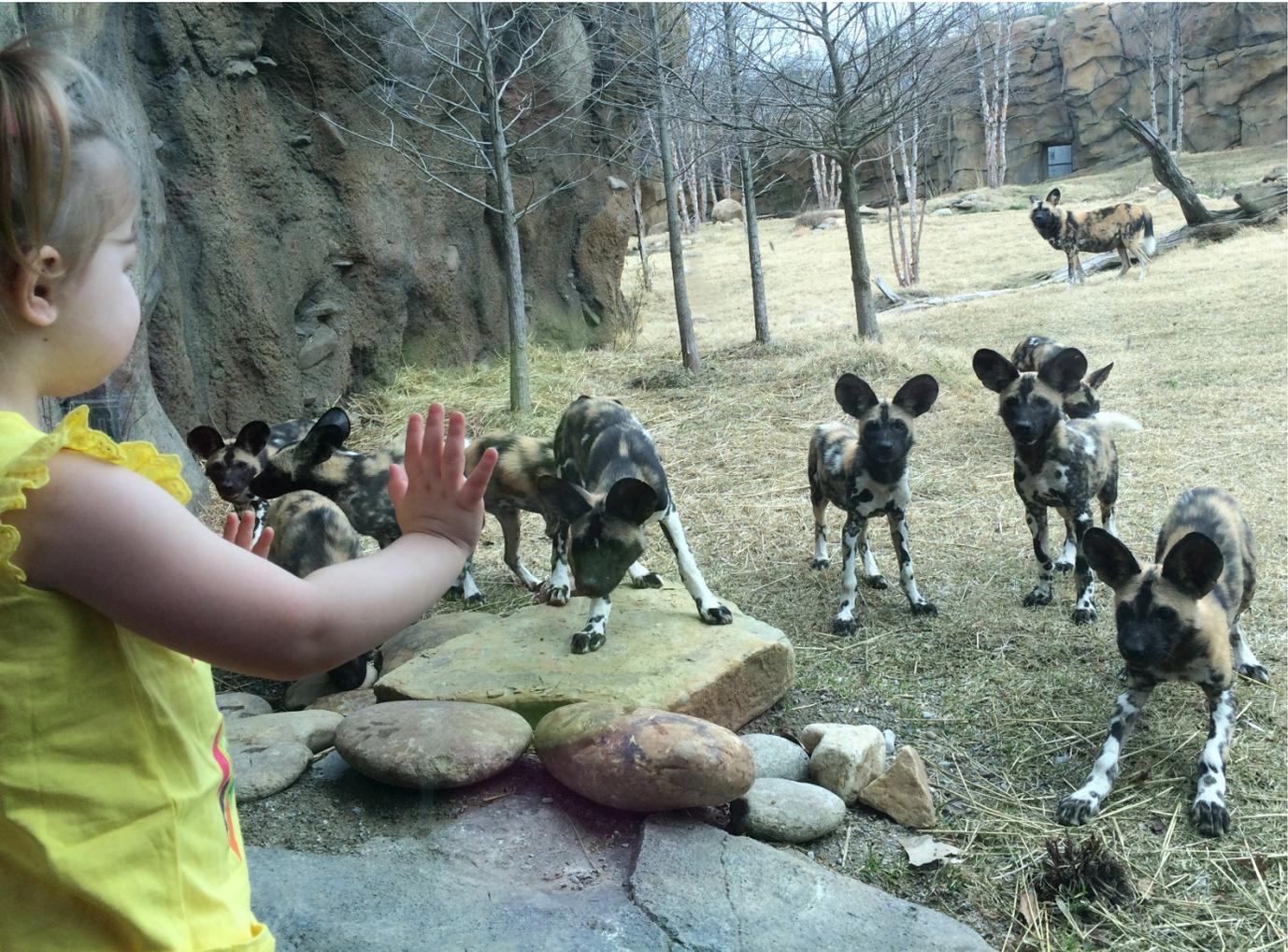


# Living Machines



# Compostable Toilets





# CINCINNATI ZOO takes steps to **REDUCE WATER USE**

#GreenestZooInAmerica

Water usage reduction efforts began in 2006, which have added up to BIG savings.

**HOW** did we do it?



Replaced Pavement with **GREEN SPACE**

Installed **GREEN ROOFS**

Planted **RAIN GARDENS**



Changed Everyday **BEHAVIORS**



Fixed **LEAKS**



Added **PERVIOUS PAVERS**

Installed **RAIN BARRELS**

Installed **LOW-FLOW TOILETS**



and most important...

Buried **3 STORM WATER SYSTEMS**

Beneath the Zoo

All of these efforts have added up to

# 1 BILLION

## Gallons of Water Saved!

