

# Greywater Goes Mainstream

“Water Use Innovation: On-site  
Water Reuse”



Heather McPherson P.E. [Heather.McPherson@nexusEwater.com](mailto:Heather.McPherson@nexusEwater.com)  
(714)658-5574

# Energy: Centralized vs. Decentralized



The Solution to most sustainability issues is *On-Site Solutions*

# Centralized Water/Wastewater Plant



# On-site Water Resources

- a. *Harvested rainwater*
  - a. *Precipitation*
  - b. *Rainfall pattern*
  - c. *Roof size*
  - d. *Cistern size*
- b. *Untreated greywater*
  - a. *Occupants*
  - b. *Consistent production*
  - c. *No storage*
- c. *Treated Greywater*
  - a. *Storage*
  - b. *Any irrigation*
  - c. *Toilets too*
- d. *Black Water*



# On-site Water Reuse: Recent History in California

1. *Prehistory: The “Greywater Guerillas”*
2. *2008 - Legislature puts Greywater into Code*
3. *2013 - “On-site treated grey water” debuts*
  - *California adopts NSF-350 standard for home recycling of greywater*
4. *2015 - The Drought Emergency*
  - *Drought imperatives for more use of On-site Water Resources*



# Where does “grey water” come from?

\*No toilet or kitchen waste



- ◆ *2 out of every 3 gallons of indoor water*
- ◆ *Rule of thumb: 40 gallons / person /day*
- ◆ *Adds up quickly to 50,000 gallons annually*

# Greywater - 40+ years of “potential”

## A remarkable, but little-used resource:

- Found in *every* home
- ‘Motherlode’ of relatively clean water (2,000,000 acre-feet/year in California alone)
- Relatively easy to treat

## The Obstacles:

- Older technology, hard to maintain
- *No* consistent standard or regulatory framework....*until* NSF-350 became standard in California

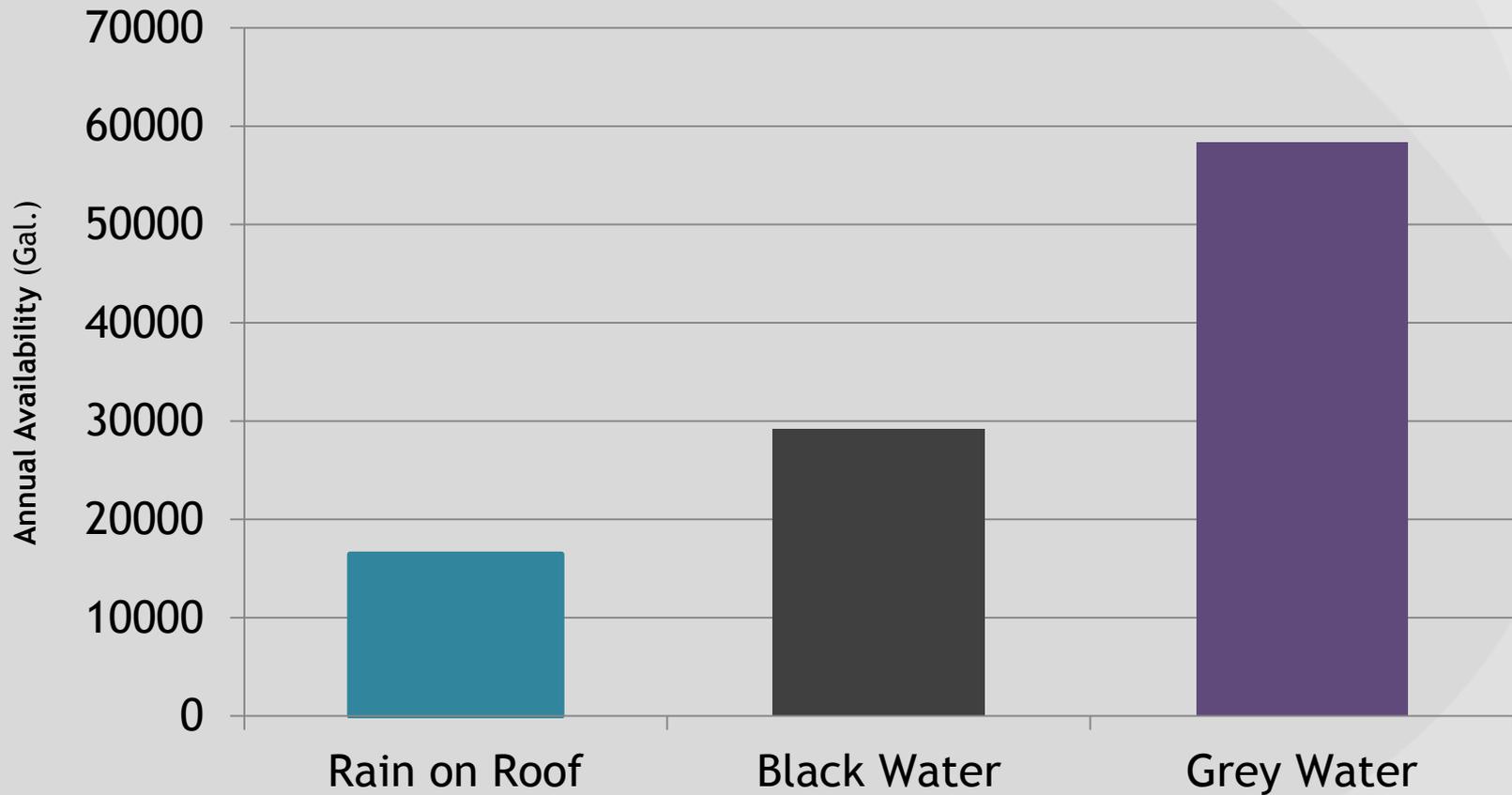
# High Quality NSF-350 Certified Treated Greywater

- Looks like tap water
- Very high water quality
- Approved in California as of January 1, 2014 for above ground lawn watering
- Only Certified greywater system by NSF/ANSI 350



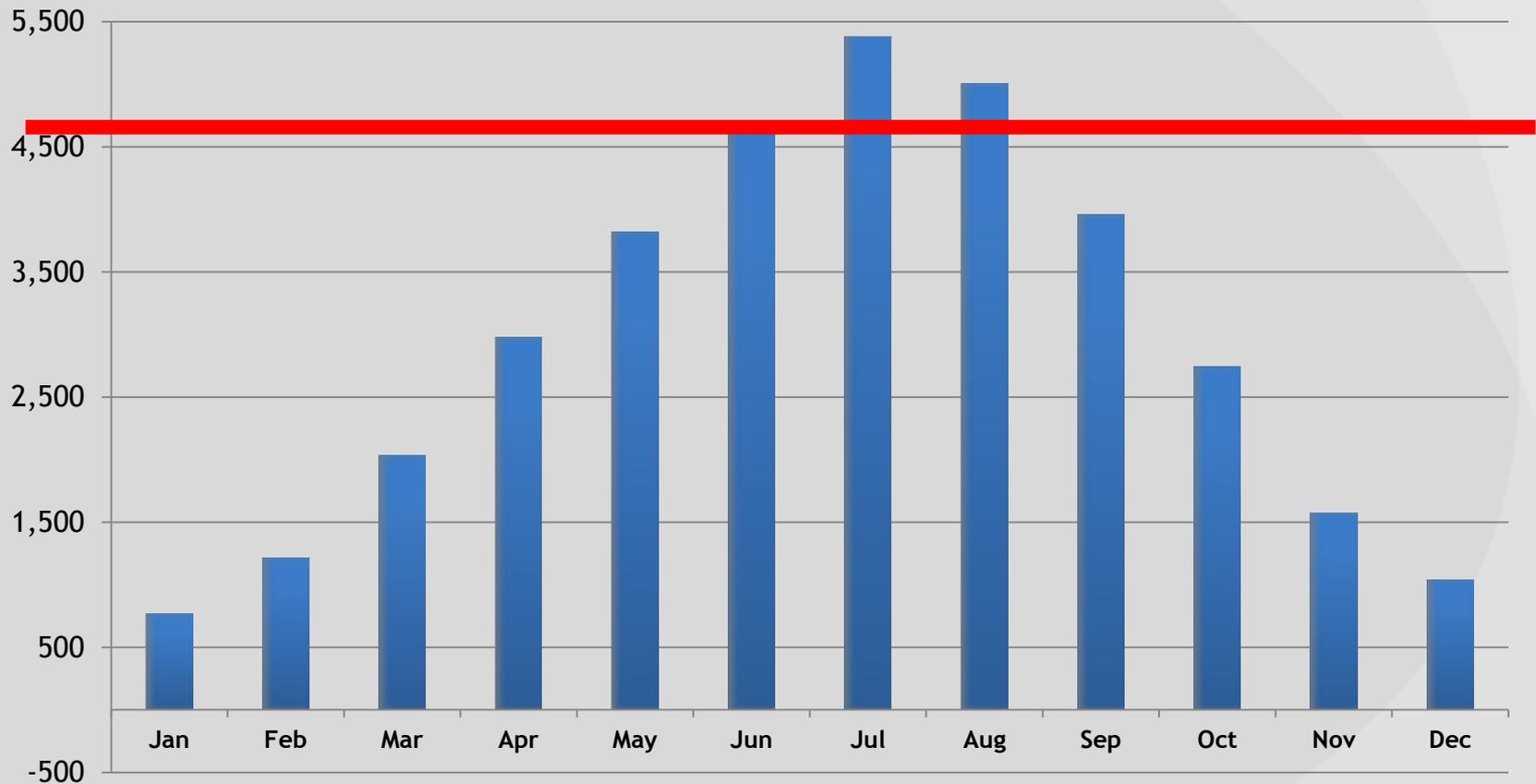


# Your On-Site Water Sources



# San Bernardino - Recycling Impact

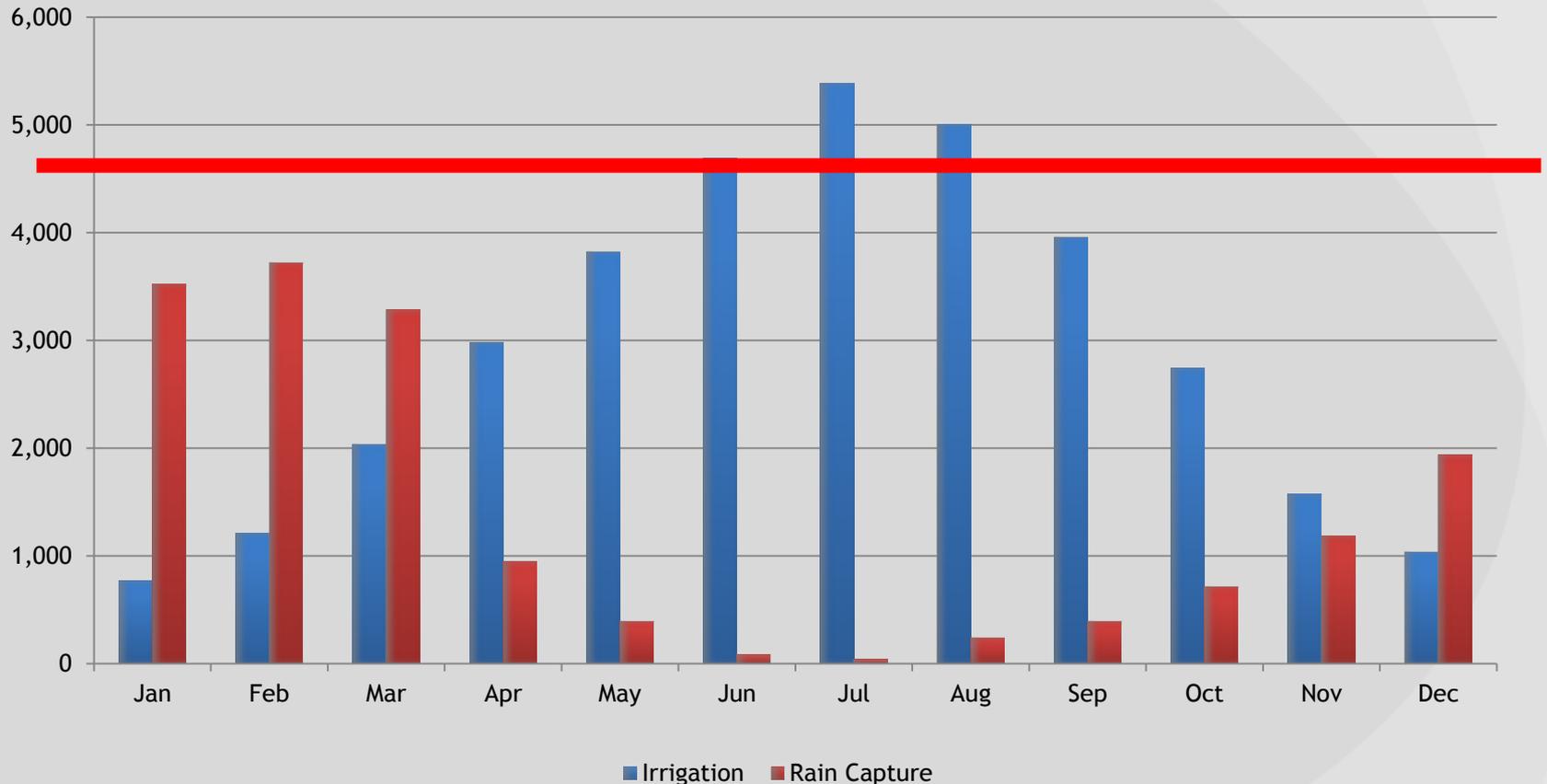
## 2000 sq ft landscape, 4 persons



# San Bernardino - Water Balance

2000 sq ft landscape, 4 persons

Water Balance: Irrigation, Greywater, Rainwater

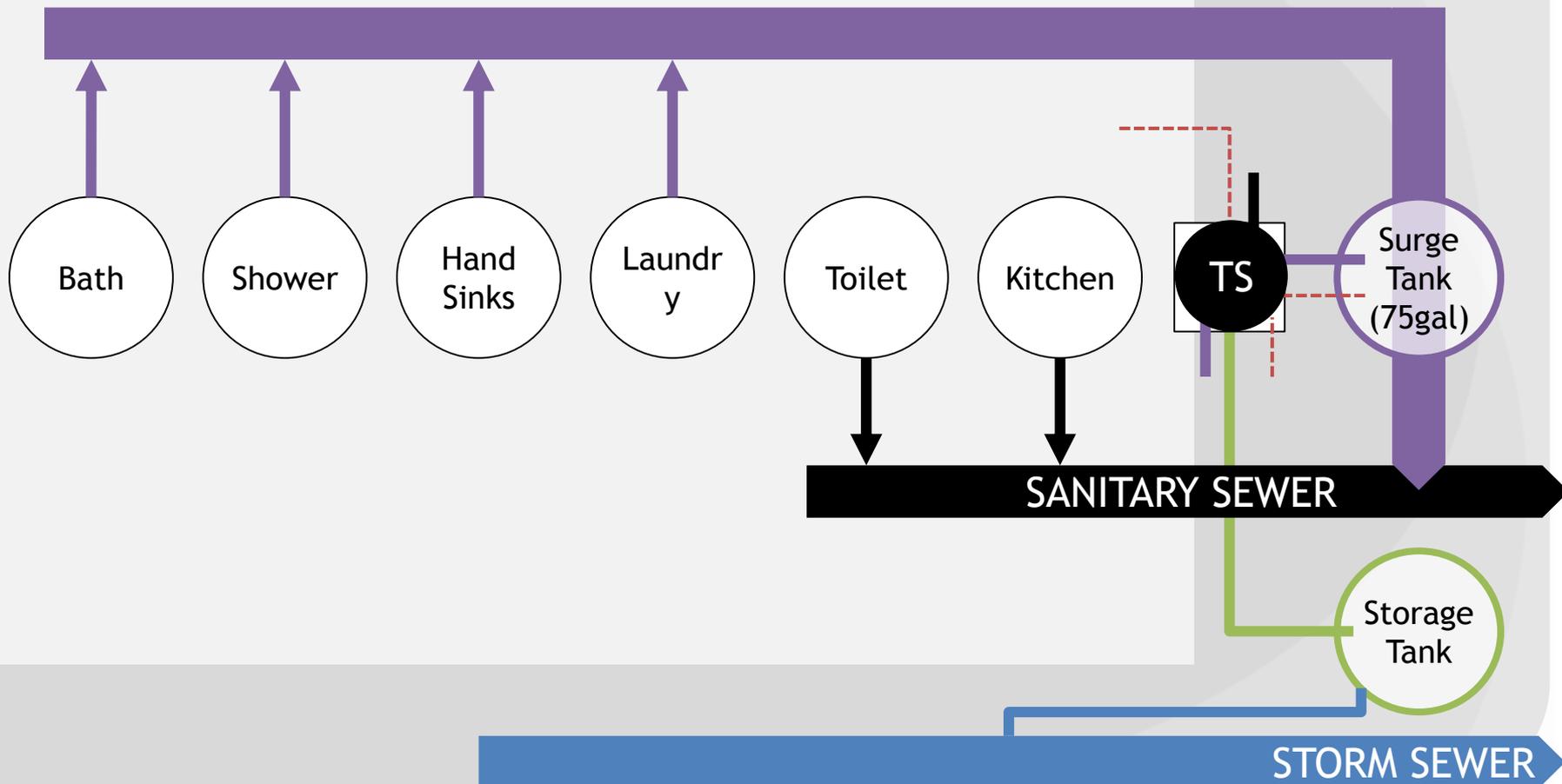


# City Water Budget -- Zero

	Water Budget	Greywater	Rainwater	City Water
January	767	4,960	3,519	0
February	1,211	4,480	3,720	0
March	2,034	4,960	3,287	0
April	2,977	4,800	945	0
May	3,821	4,960	392	0
June	4,692	4,800	80	0
July	5,381	4,960	40	0
August	5,006	4,960	241	0
September	3,957	4,800	392	0
October	2,743	4,960	714	0
November	1,572	4,800	1,186	0
December	1,035	4,960	1,940	0
ANNUAL	35,196	58,400	16,457	0

# Designing “Recycle Ready”

## 1. Carry grey water out of house in its own pipes



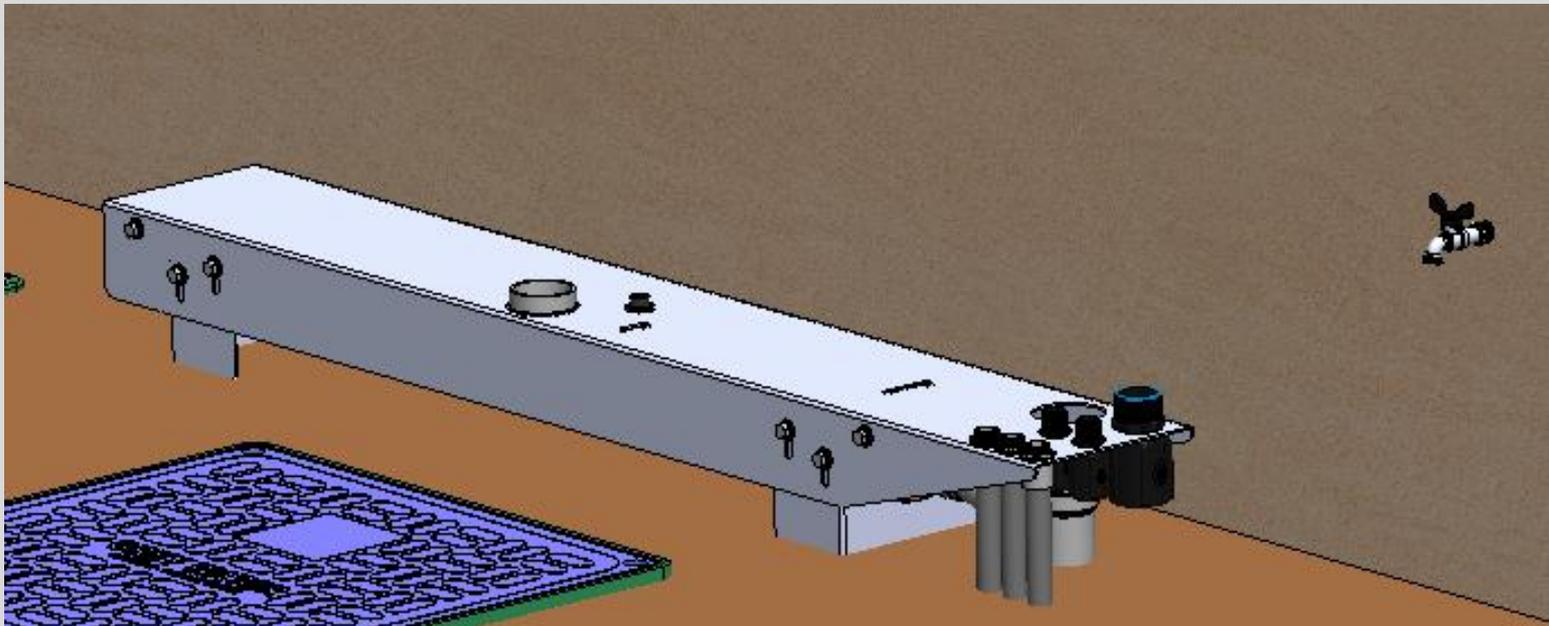
# “Recycle-Ready Plumbing” - the new Best Management Practice (BMP)

- All *private* sewers combine blackwater sewage with relatively clean greywater
- New homes in arid communities should be built with separate ‘recycle-ready’ plumbing - not “combined” sewer

# Designing “Recycle Ready”

## 2. Preconfigure plumbing and electrical

- Dedicated electrical circuit and nearby disconnect
- Potable water for top-up
- “Surge tank” to collect grey water
- Converge with sewer line



# Recycling Appliance can be added anytime



# Homes Built “Recycle Ready” Totally Green & Drought Resilient

**Nexus  Water**