



• August 15-18, 2010 • Dallas, Texas •
• Dallas Convention Center •

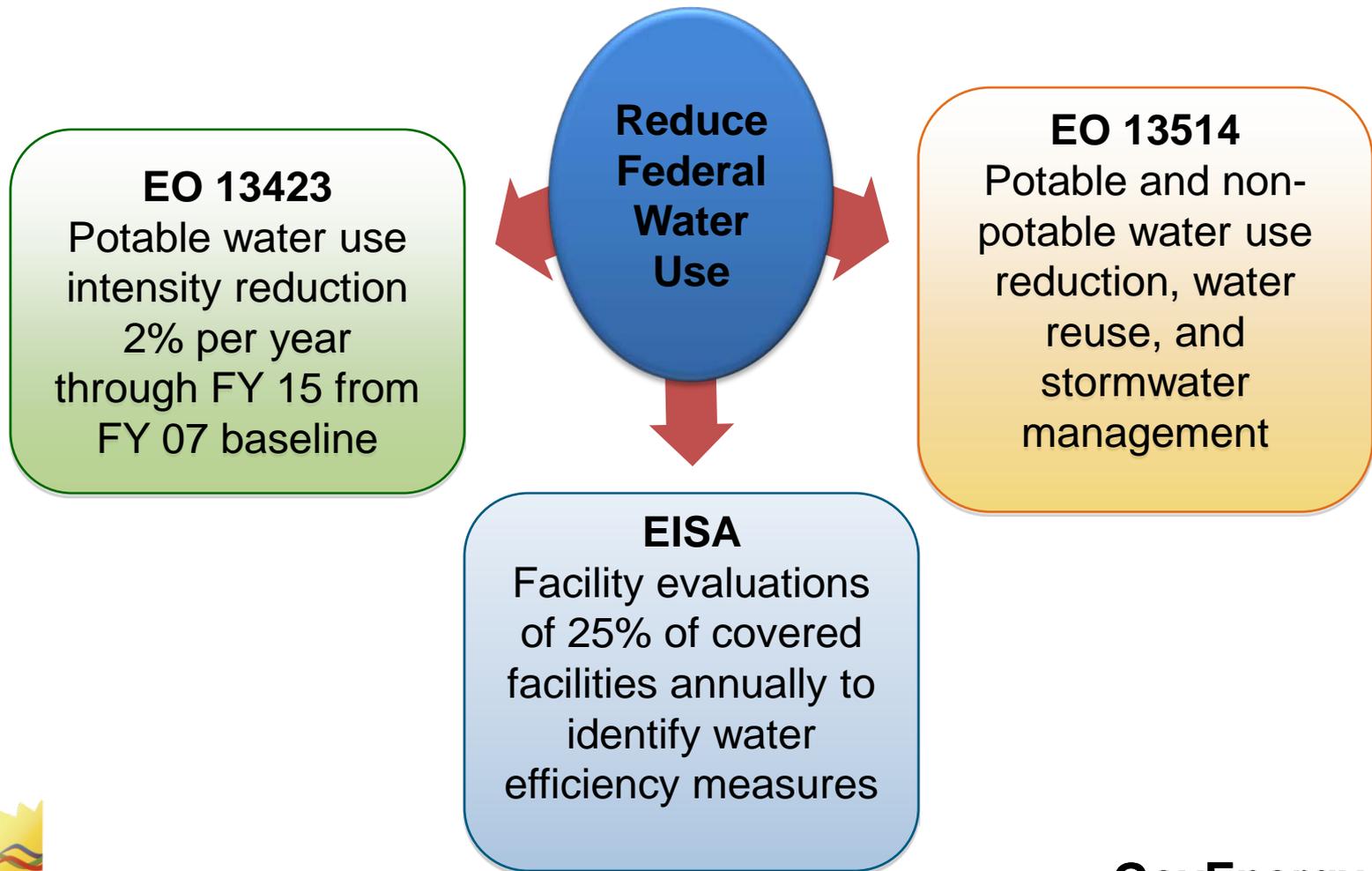


Federal Water Efficiency Requirements

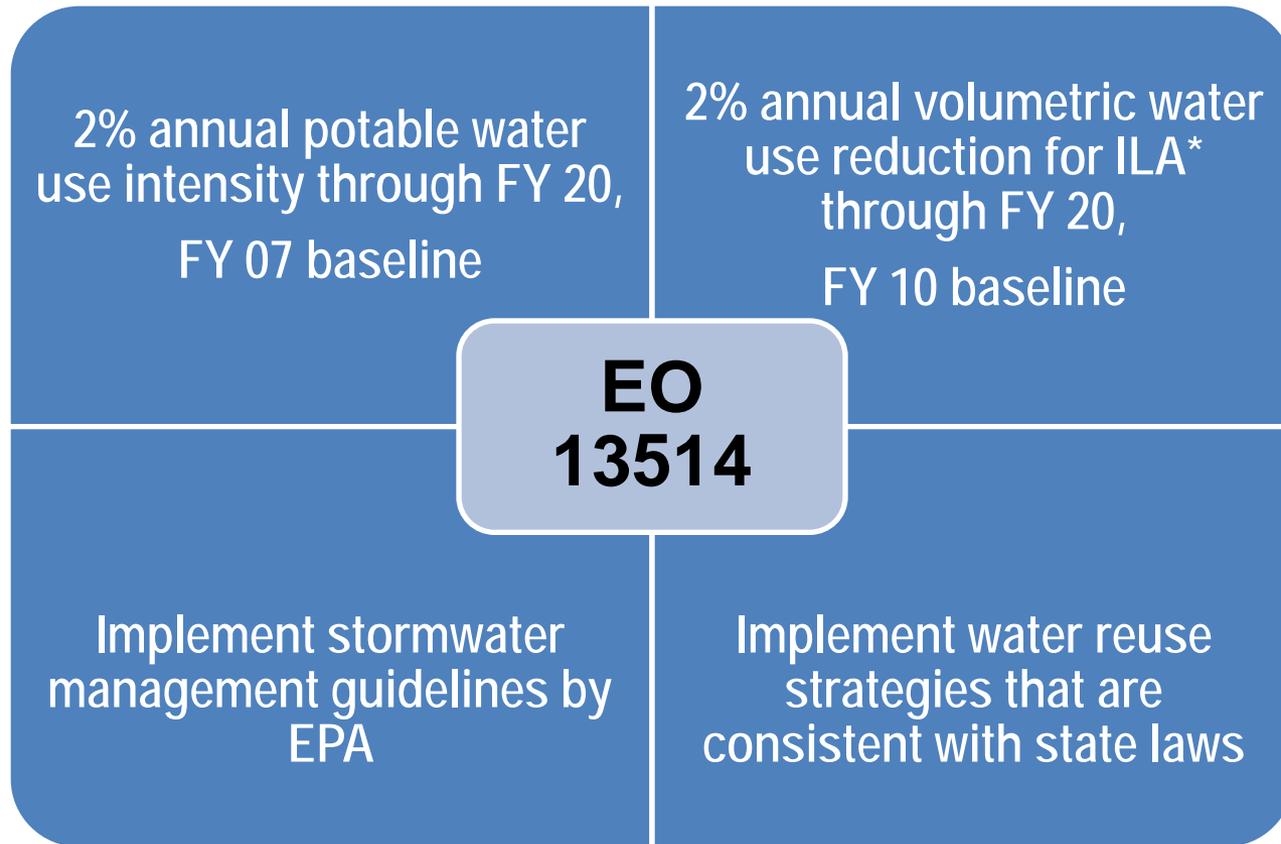
Kate McMordie Stoughton

Pacific Northwest National Laboratory

Federal Water Efficiency Legislation



EO 13514 Water Provisions



* ILA = Industrial, Landscaping, and Agricultural

Federal Water Use Baselines

What are agencies required to track?

Potable Water Use



Water Use Intensity Baseline
gallons/sqft



“ILA” Water Use



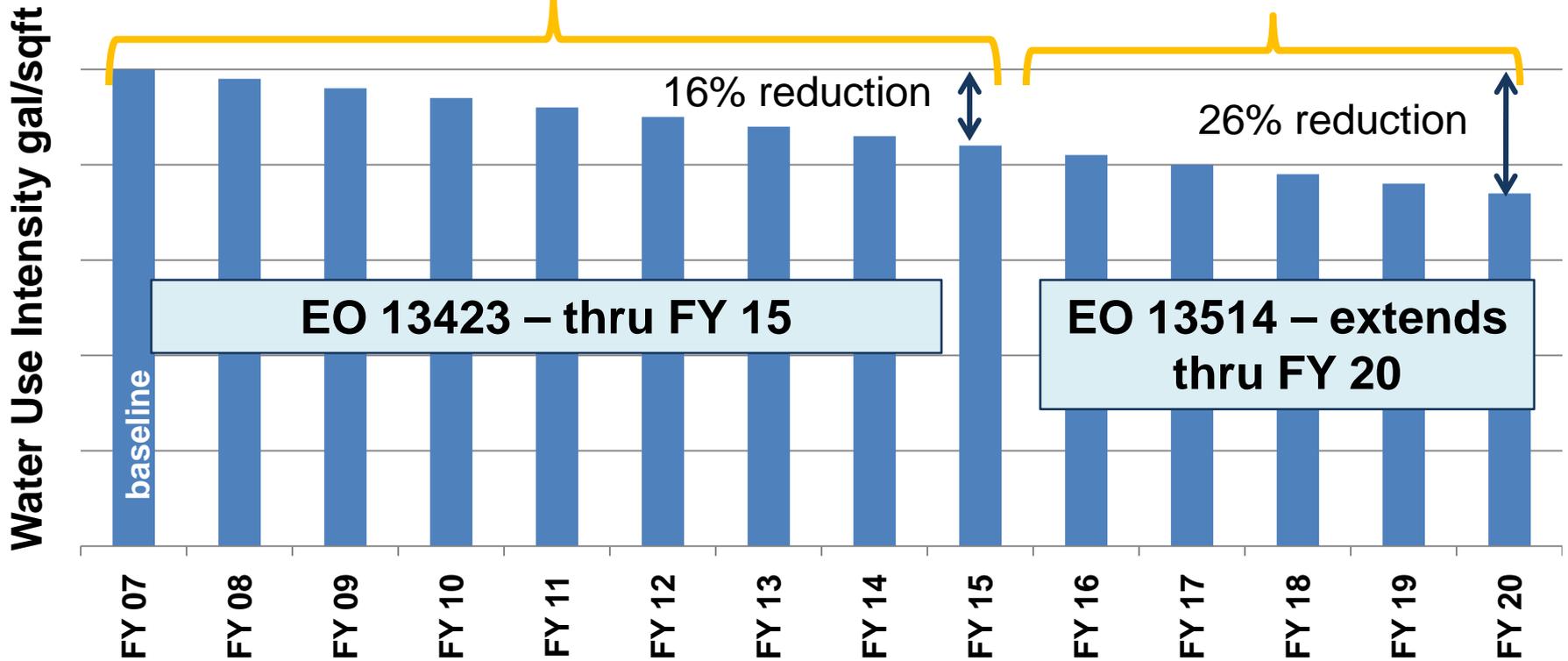
FY 10 Metric Water Use Baseline
gallons



Gross facility sqft – same sqft used for energy reporting

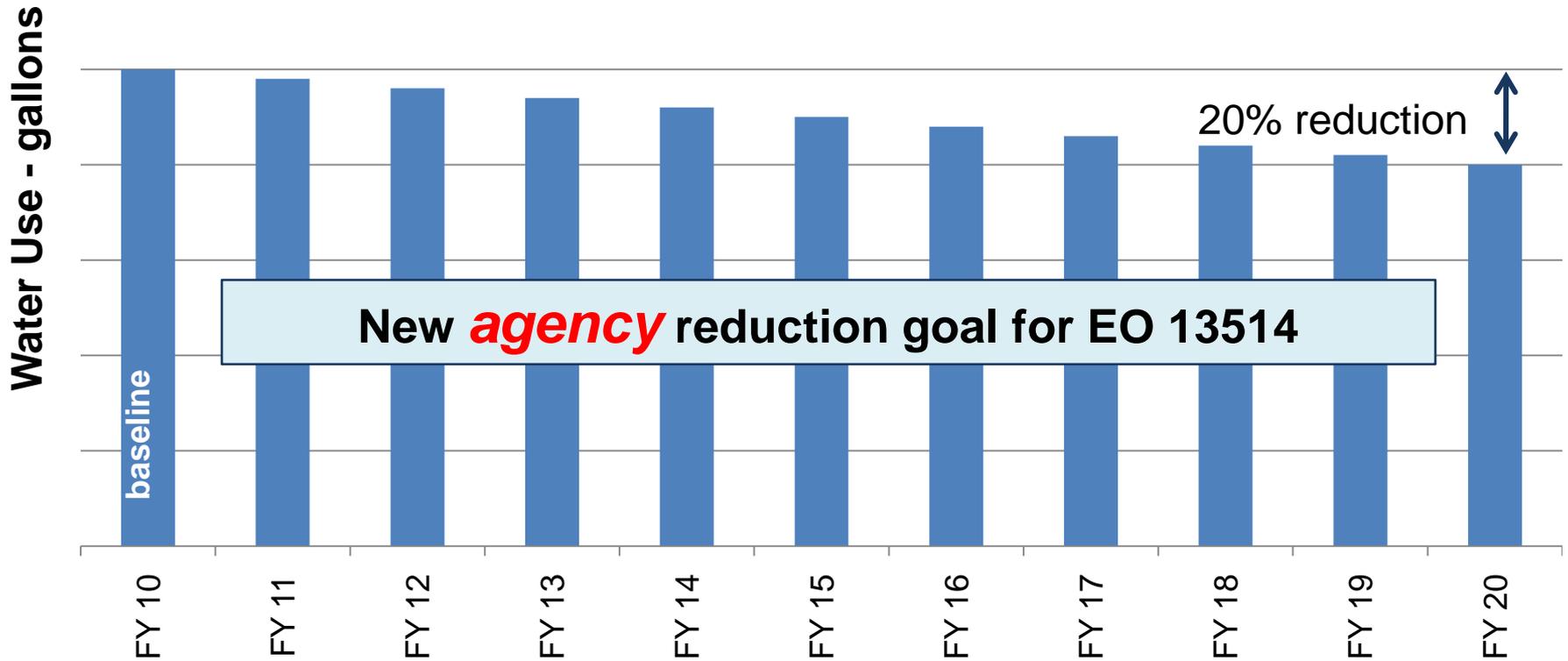
Potable Water Reduction

Water Use Intensity Reduction -- gallons/sqft
2% per year from FY 07 through FY 20



Industrial, Landscaping, and Agricultural Water Use Reduction

Volumetric Reduction -- gallons
2% per year from FY 10 through FY 20

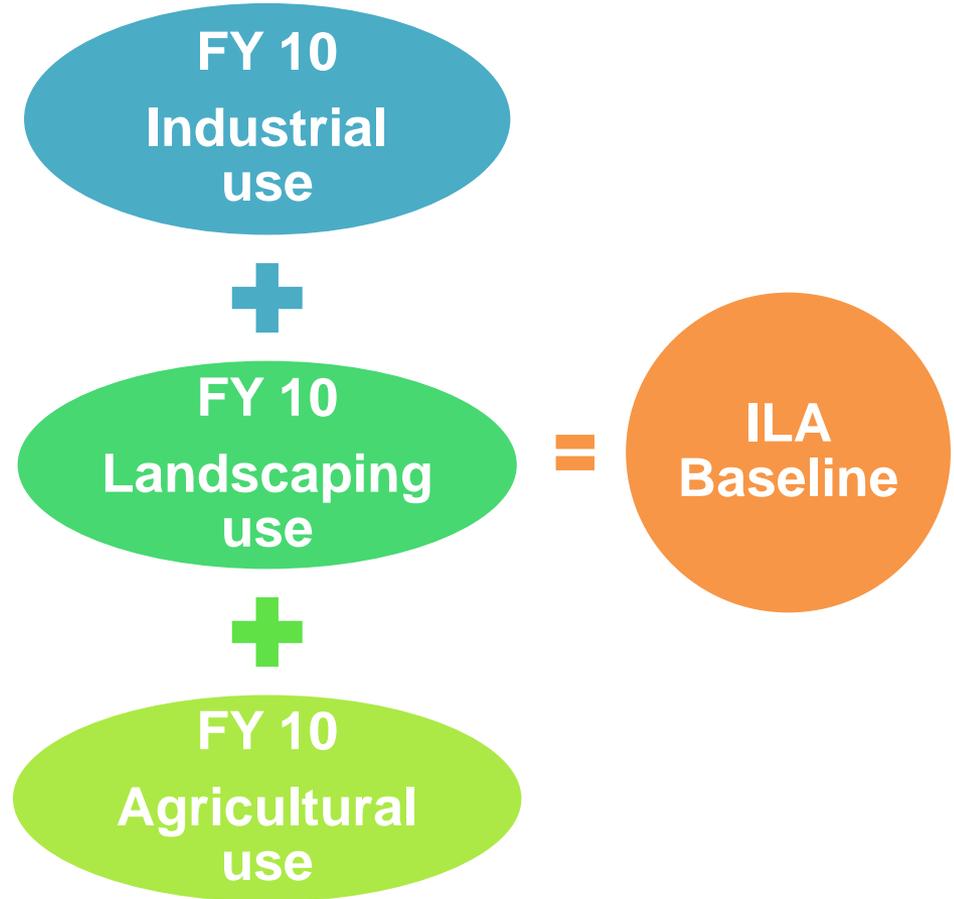


ILA FY 2010 Baseline

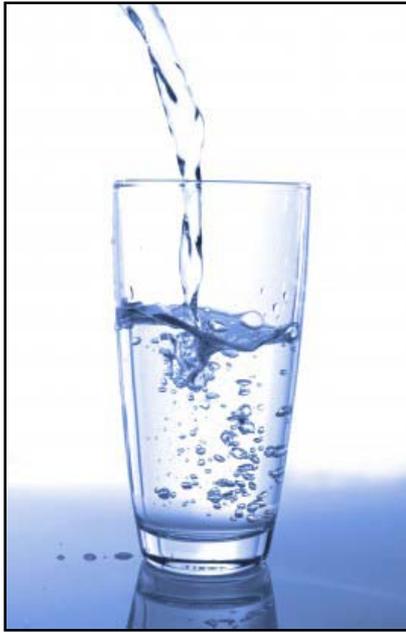
How will agencies develop the new ILA FY 10 baseline?

~~FY 07 Potable Water Use Intensity Baseline gallons~~

No duplicate tracking!



Potable vs. Non-potable



Potable: Sufficient quality and permitted for human consumption



Non-Potable: *Not* sufficient quality nor permitted for human consumption

Industrial Water Use



Industrial Water Use: *fresh* water used for the purposes of aiding in processes such as cooling, heating, washing, and manufacturing.

Examples:

- cooling tower make-up
- washing
- steam generation



Landscaping Water Use



Landscaping: Controlled application of *fresh* water on outdoor spaces for socio-behavioral, environmental, or aesthetic outcomes to supplement water requirements not satisfied by rainfall

Examples:

- recreational and athletic fields
- parks
- golf courses
- building landscape beds

Agricultural Water Use



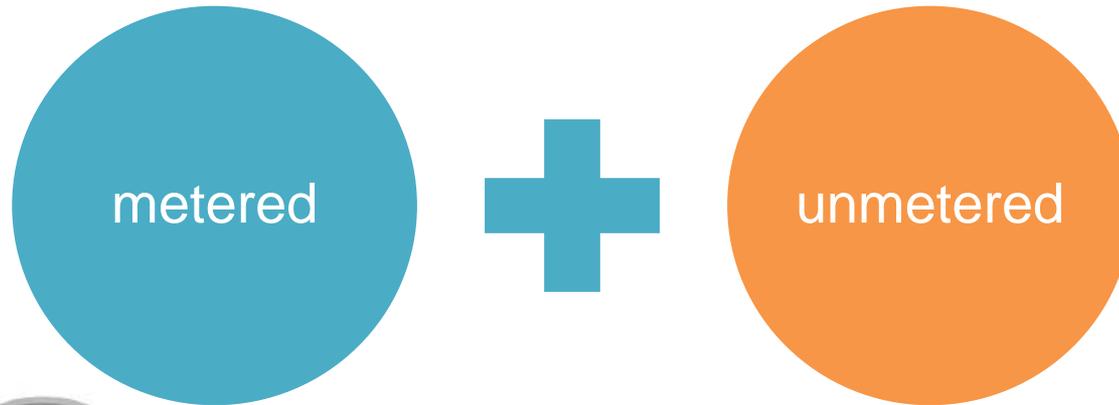
Agricultural Water Use:
fresh water used in production of agricultural products including food and goods through farming and forestry, related to animal and livestock operations, and agricultural research and development

Examples:

- crop irrigation
- greenhouse operations
- dairy operations
- livestock operations

ILA FY 2010 Baseline

How should agencies collect data for the baseline?

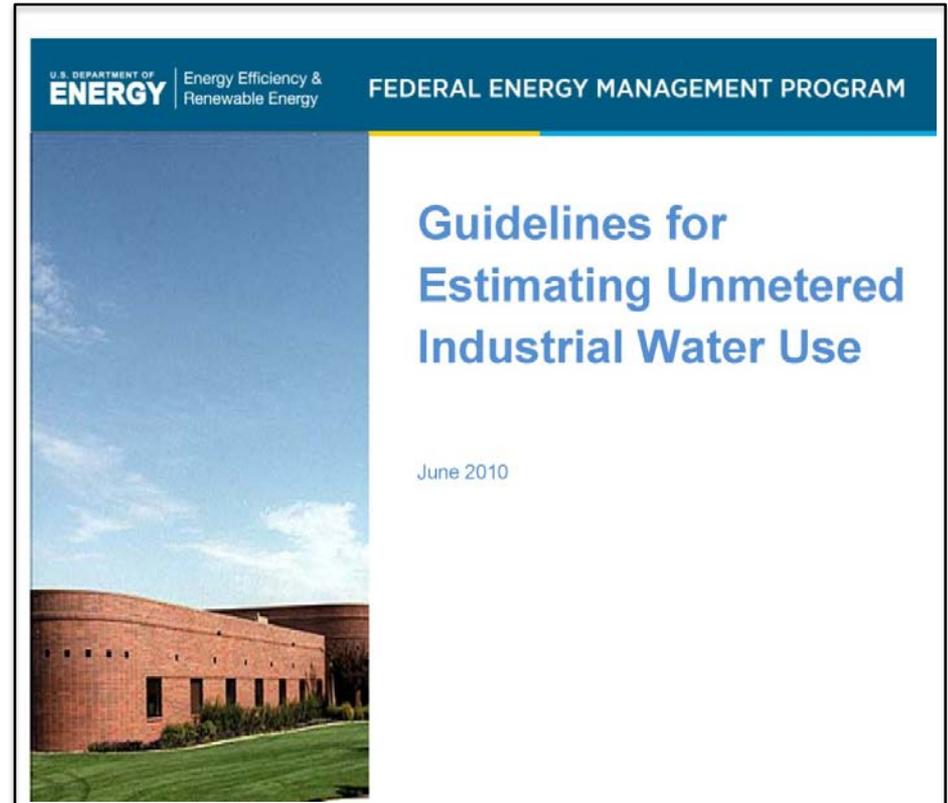


How will agencies estimate unmetered uses?

ILA FY 2010 Baseline

Estimating Techniques:

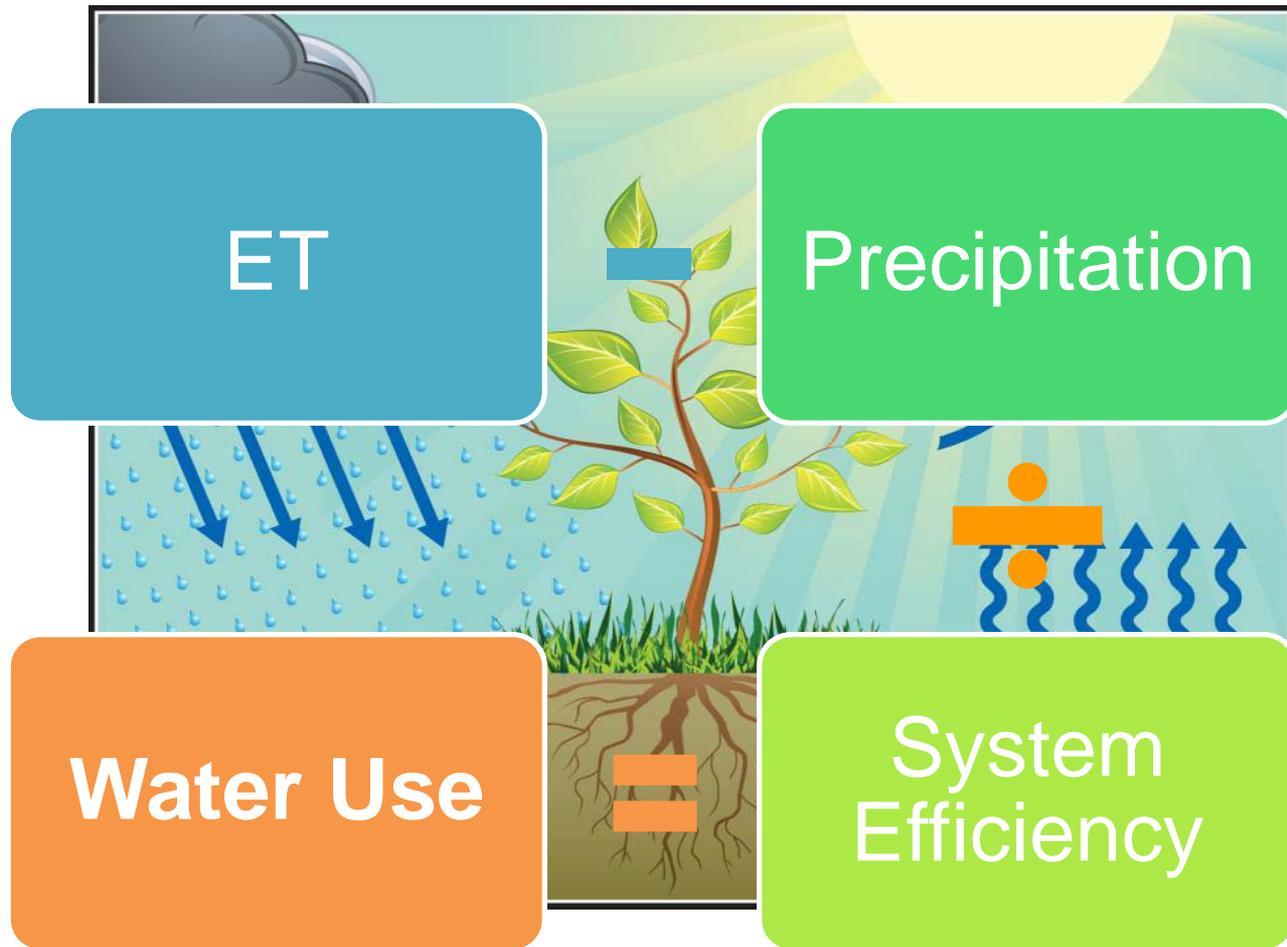
- **Landscaping:**
evapotranspiration method or irrigation audit
- **Industrial Uses:**
engineering estimates for open re-circulating cooling, steam, and wash systems



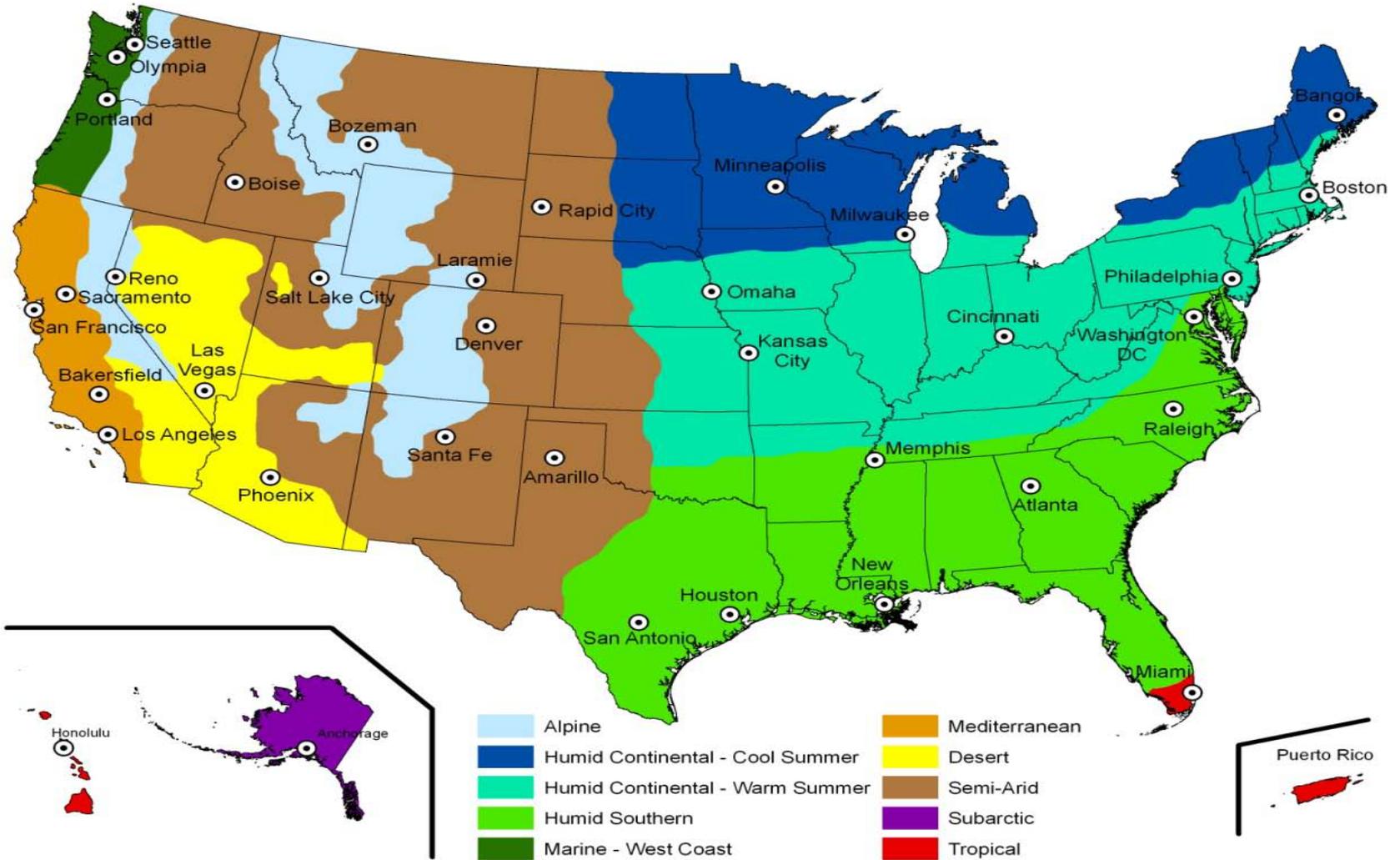
Find documents at:

http://www1.eere.energy.gov/femp/program/waterefficiency_baseline.html

Estimating Landscape Irrigation



Estimating Landscape Irrigation



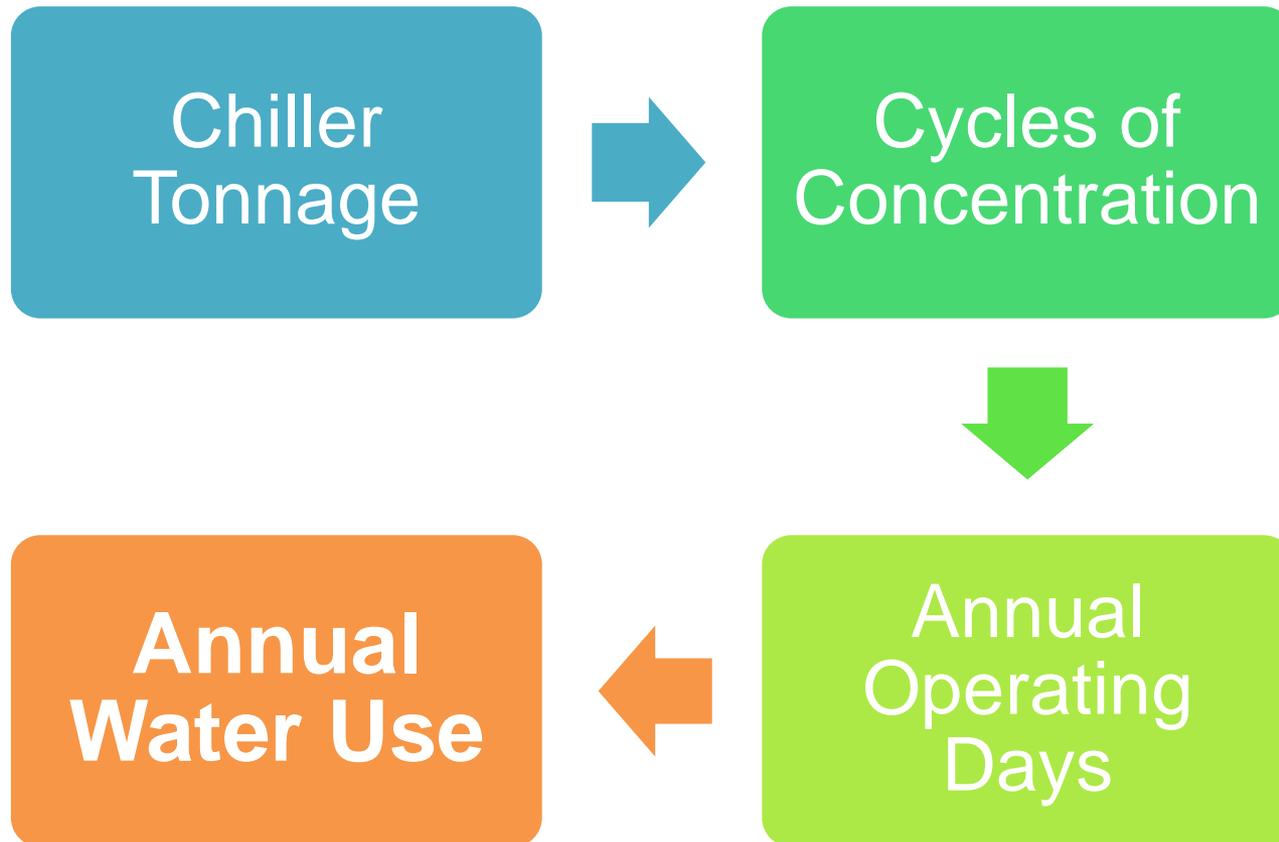
Estimating Landscape Irrigation

Irrigation Audit Method



Estimating Industrial Water Use

Open Re-Circulating Cooling Systems



Exemptions

Exemptions covered in Section 18 of Executive Order

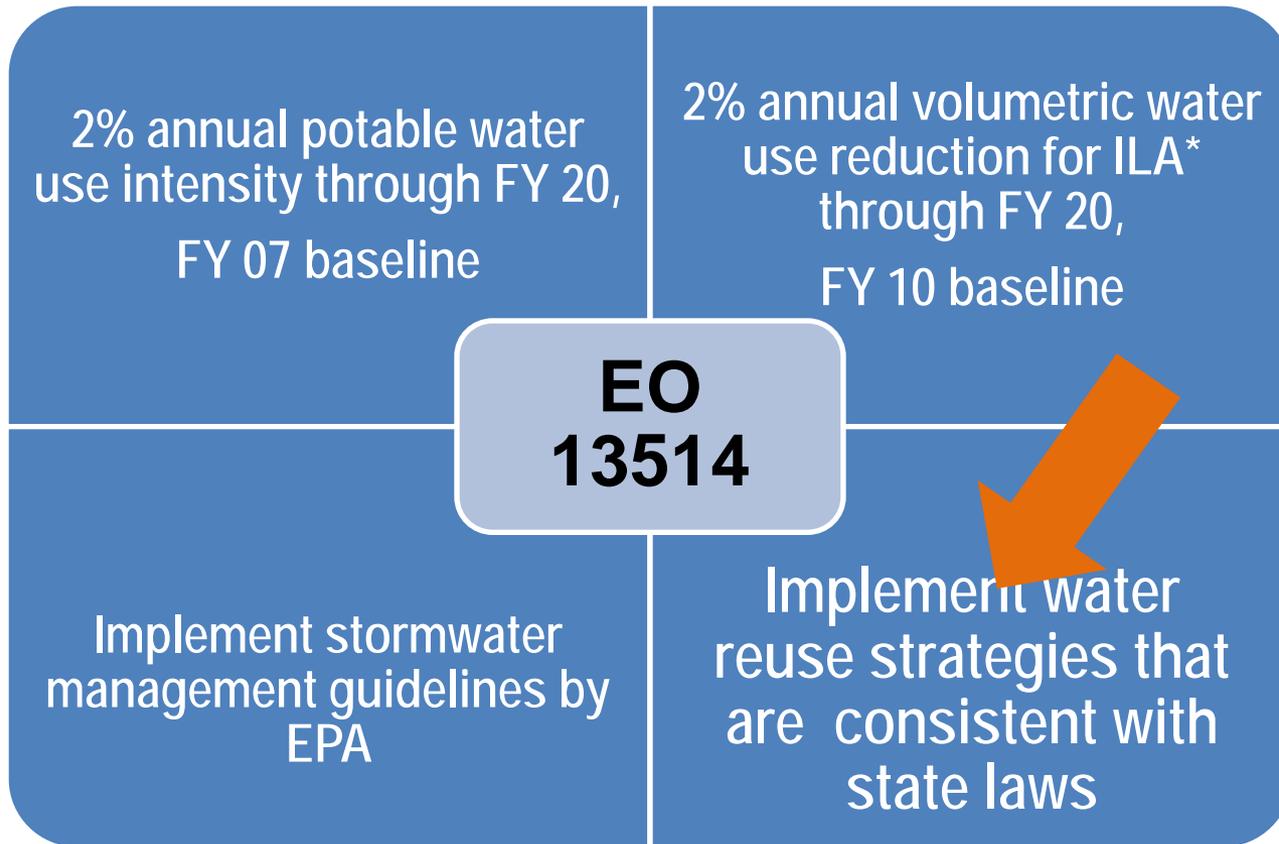
Exemptions granted to:

- National intelligence
- National security
- Law enforcement
- Emergency response



For all other activities, Federal agencies must submit formal request for exemptions to the Chair of the Council On Environmental Quality (CEQ)

EO 13514 Water Provisions



Water Reuse

Three general types of water reuse

Recycle

- discharge water from an application or process used again in the same application

On-Site Reuse

- discharge water from one application that is captured, minimally treated, and utilized in another application

Reclaim

- effluent generated by a wastewater treatment facility that is treated to a level that is appropriate for use in

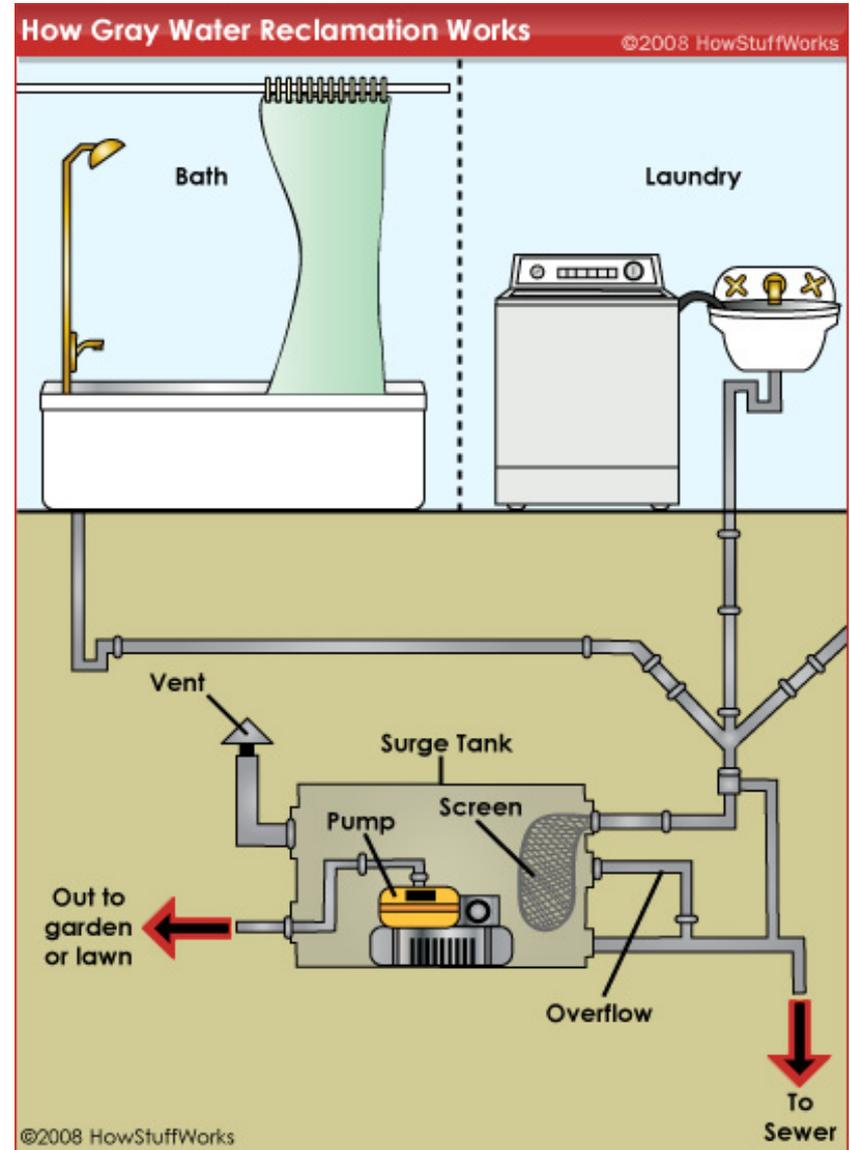
Water Reuse

On-Site: Gray Water Reuse

Domestic wastewater composed of wash water from bathroom showers, tubs, and sinks and laundry.

It *DOES NOT* include:

- Toilet & urinal water
- Dishwashers
- Kitchen sinks



Water Reuse - Examples

Recycle

Sandia National Laboratory – Microelectronics Plant, New Mexico

- Recycles spent rinse water in reverse osmosis system



**Results: over 6 million gallons of
water recycled every year**

Water Reuse - Examples

On-Site Reuse

Pacific Northwest National Laboratory – Washington

- Reuses cooling pond water for irrigation



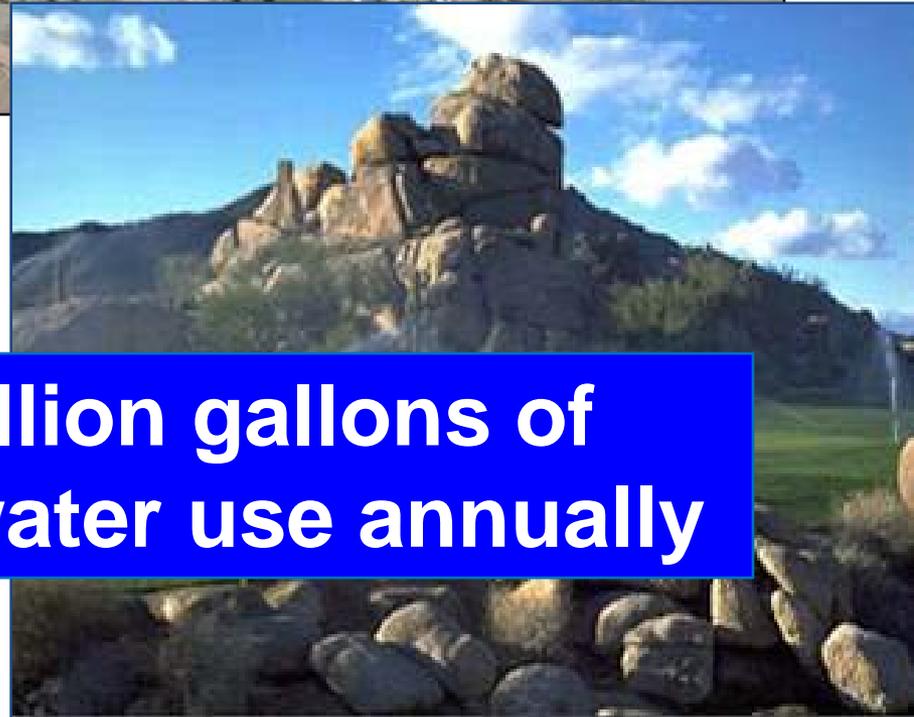
**Results: 15 million gallons of
reduced fresh water use annually**

Water Reuse - Examples

Reclaim

Fort Carson, Colorado

- Reclaims wastewater effluent from treatment plant to irrigate golf course



Results: 100 million gallons of reduced potable water use annually

Where to get more information

Water Reclaim Fact Sheet:

Step by step guide on how to get started on a water reclaim project

<http://www1.eere.energy.gov/femp/program/waterefficiency.html>

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy | FEDERAL ENERGY MANAGEMENT PROGRAM

Methodology for Use of Reclaimed Water at Federal Locations



A traditional use of reclaimed water is irrigation. Using native plants such as these with irrigating with reclaimed water will reduce a site's potable water and water demand in general.

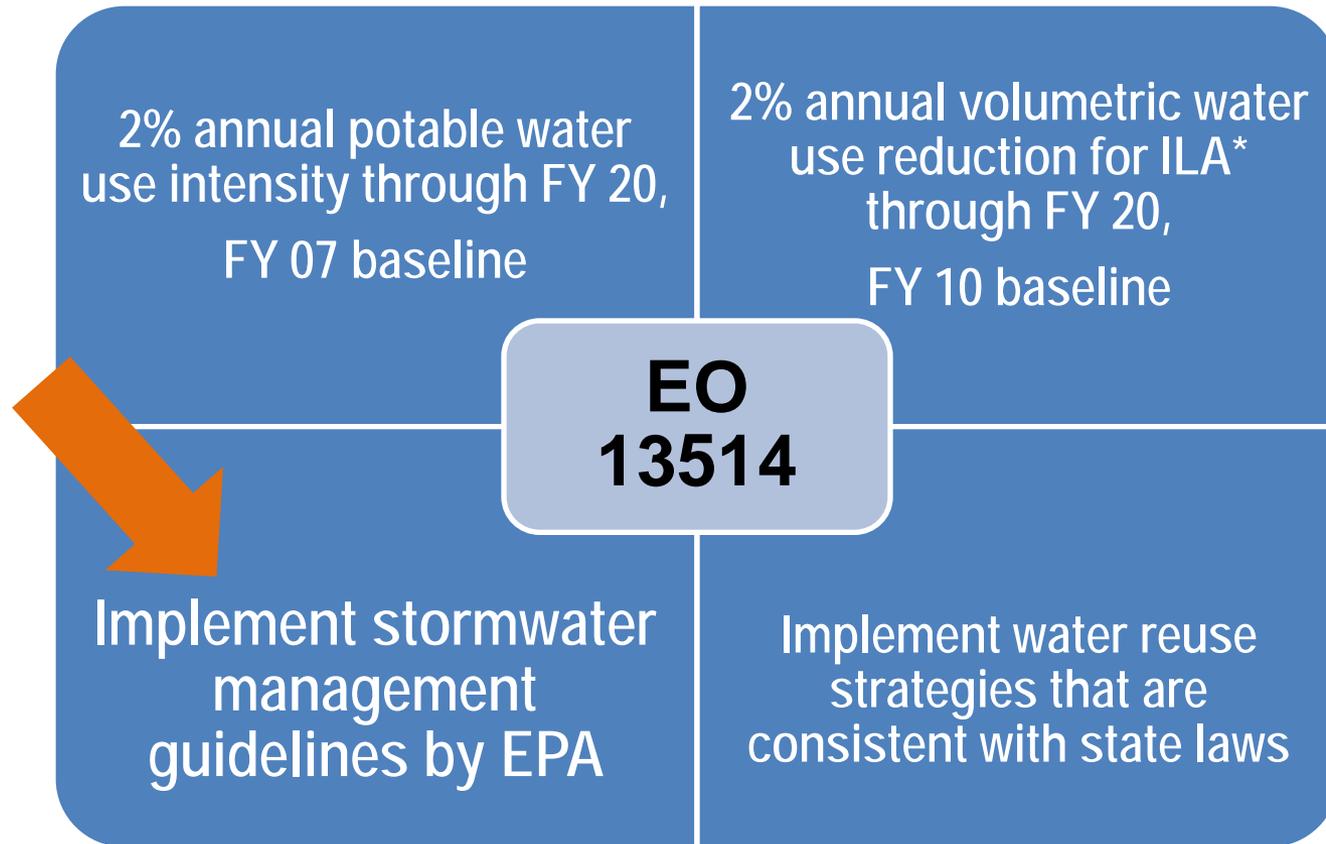
The supply of freshwater has become a resource of concern on a global scale, whether because of future availability or

Water can be reused in three main ways:

1. Water Recycle: Discharge water from an application or process is

There are other legislative acts that Federal sites must comply with that do not delineate water reuse as a water source. To learn

EO 13514 Water Provisions



Stormwater Management

Agencies required to follow EPA guidelines:

- Applies to development and re-development projects
- Retain groundwater on-site
- Replenish groundwater
- Find alternative uses (if allowed by law)
- Implement green infrastructure (e.g. green roofs)

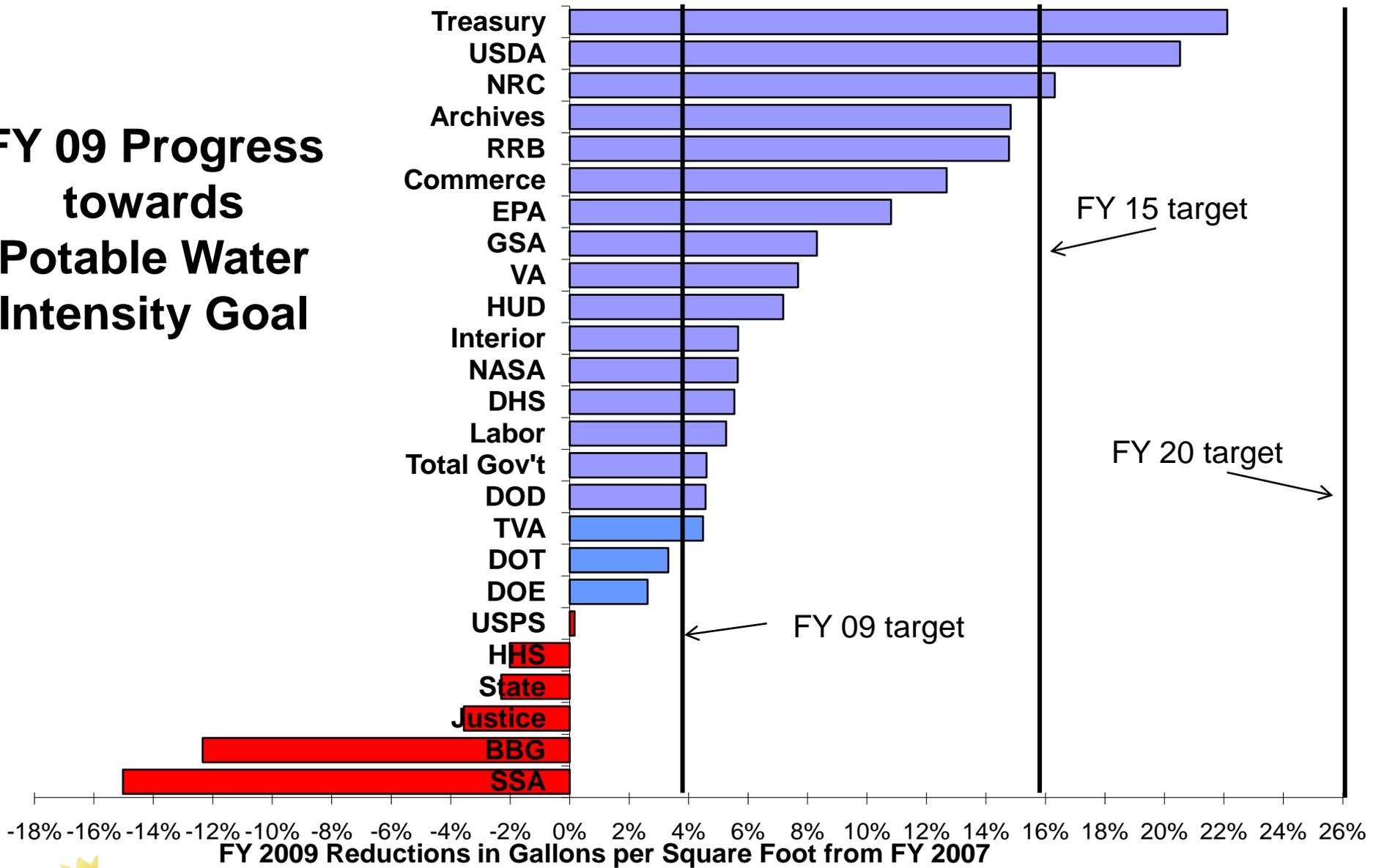


For more information:

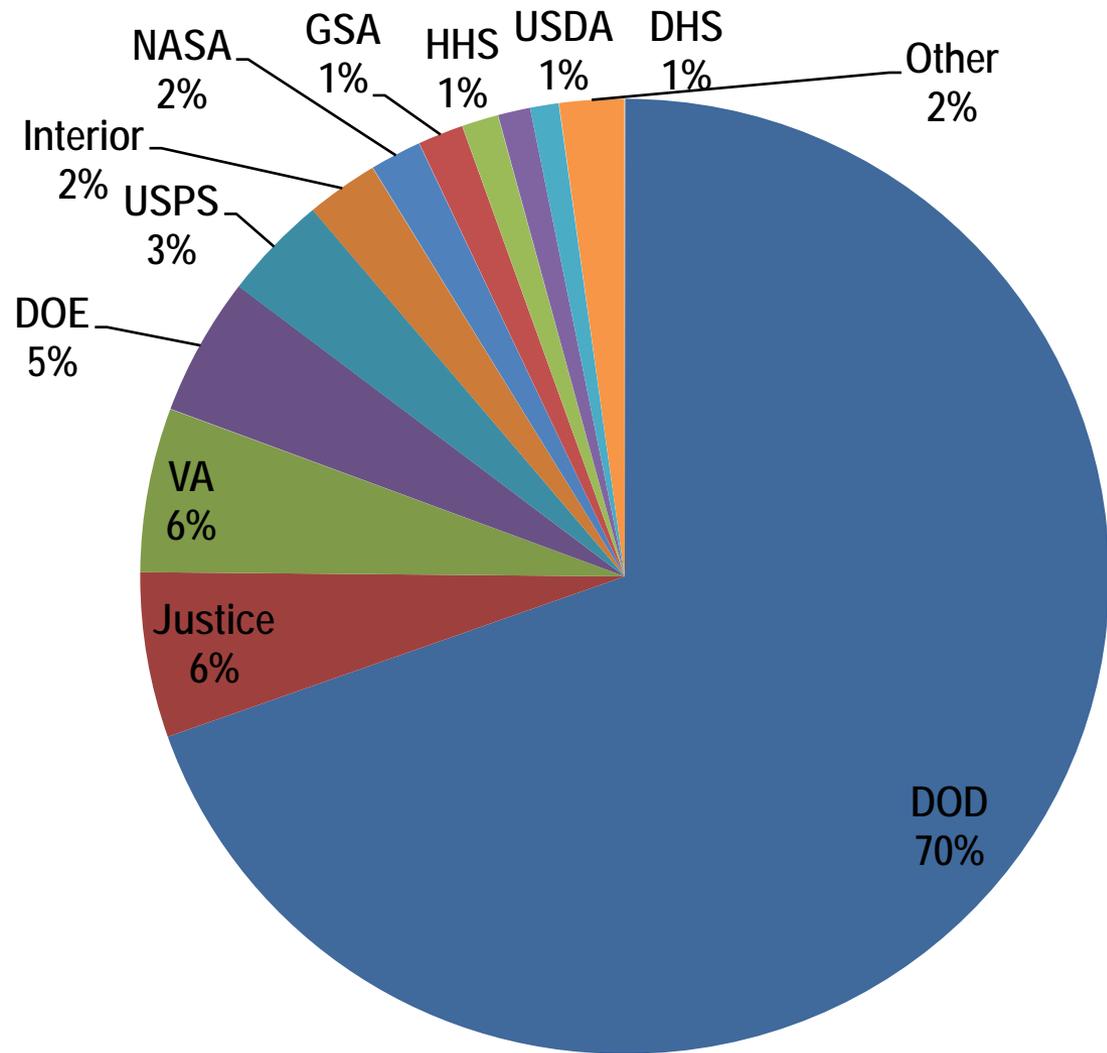
<http://www.epa.gov/owow/nps/lid/section438>

How is the Federal Government doing so far?

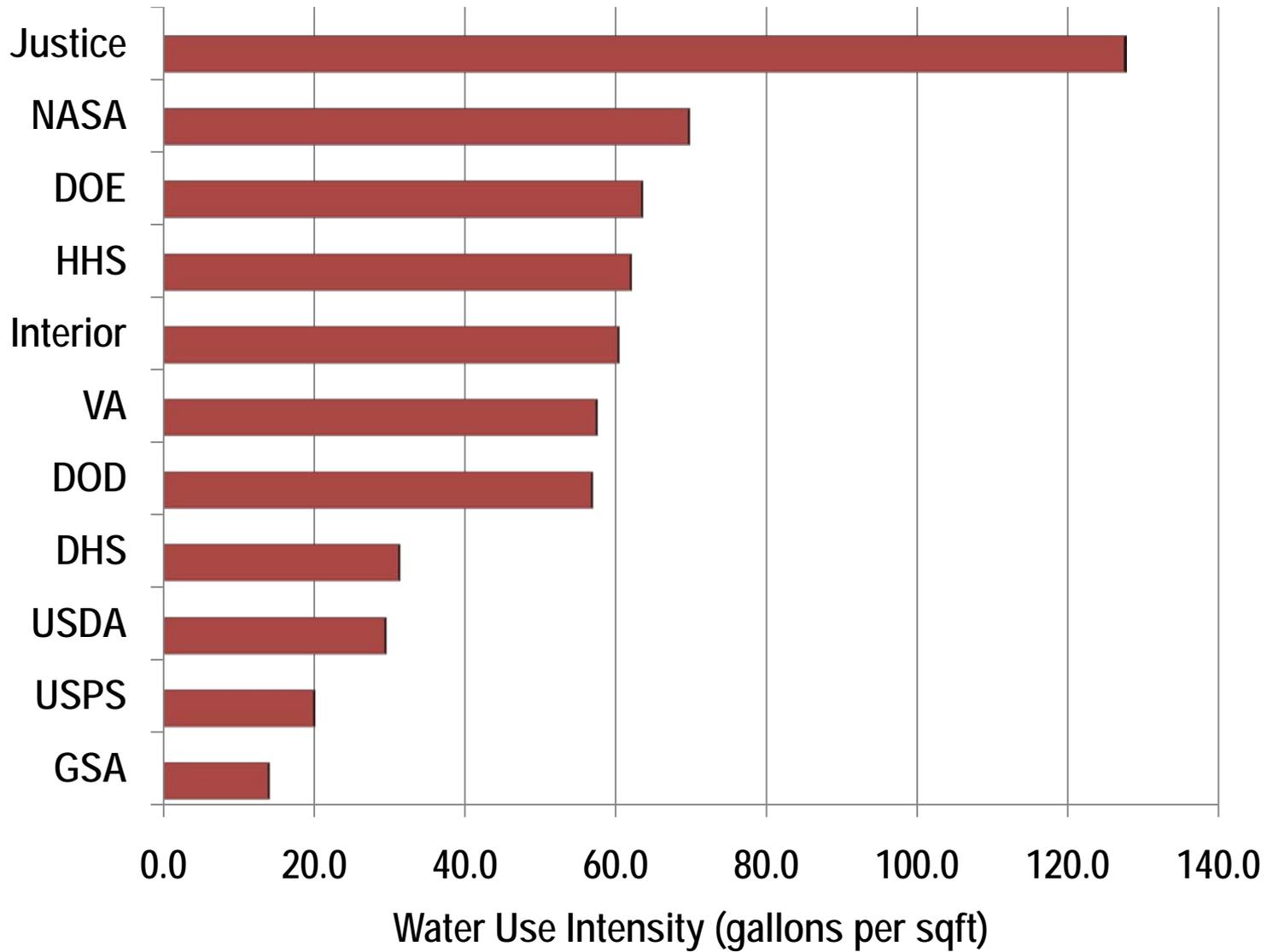
FY 09 Progress towards Potable Water Intensity Goal



FY 09 Federal Potable Water Use



FY 09 Federal Potable Water Use Intensity



Where to get more information

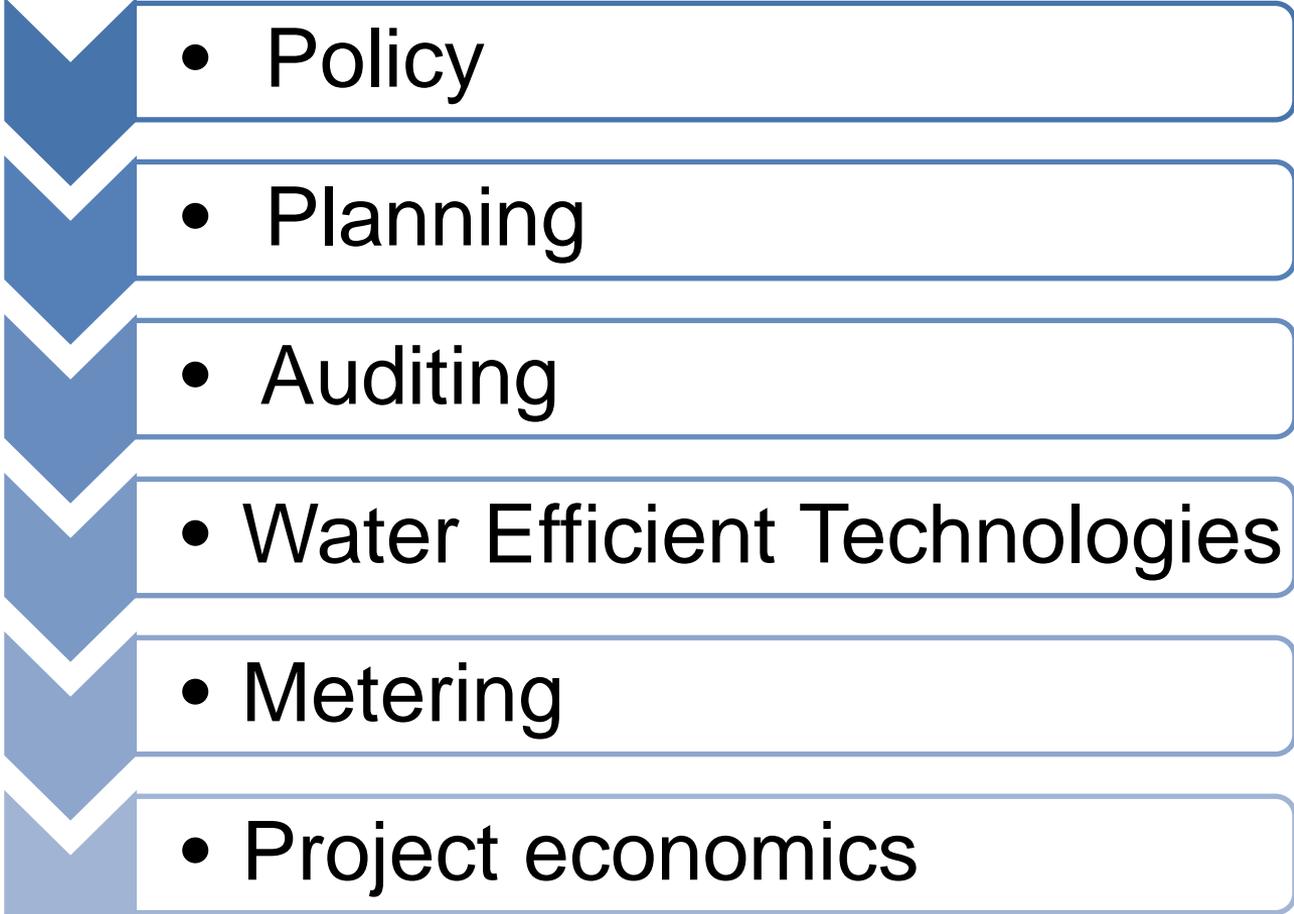
FEMP:

<http://www1.eere.energy.gov/femp/program/waterefficiency.html>

- Federal directives and guidance
- Best Management Practices
- Training
- Resources
- Case Studies

Web-Based Water Management Training

<http://femptraining.labworks.org/>

- 
- Policy
 - Planning
 - Auditing
 - Water Efficient Technologies
 - Metering
 - Project economics

FEMP's 14 Best Management Practices:

1 • Water Management Planning

2 • Information and Education

3 • Leak Detection

4 • Water-Efficient Landscape

5 • Water-Efficient Irrigation

6 • Toilets & Urinals

7 • Faucets & Showerheads

8 • Boiler/Steam Systems

9 • Single Pass Cooling

10 • Cooling Towers

11 • Commercial Kitchens

12 • Lab/Medical Equipment

13 • Other Intensive Equip.

14 • Alternate Water Sources

Questions?

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