

# Green Proving Ground Program & Water Conservation GSA's Sustainability Plan in Action

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Sustainable Water Resources Roundtable

NASA AMES Research Center, Naval Air Station, Moffett Field

Mountain View, California





# What is GSA?

**9,011**

Owned and Leased Assets

**378 million**

RSF across the US

**1.1 million**

Federal employees

**210,000**

Federal Fleet vehicles

**\$55 billion**

Contracting mechanism for product acquisition

# GSA Targets

30%

Reduction in Energy Use Intensity, by 2015

26%

Reduction in Water Use Intensity, by 2020

28%

Reduction in Scope 1 and 2 GHGs, by 2020

Net Zero

All capital project designs starting 2020

Achieve net zero by 2030



Executive Order 13514, 2009

Energy Independence and Security Act, 2007

MOU on High Performance and Sustainable Buildings, 2006

Energy Policy Act, 2005

[www.wbdg.org/references/federal\\_mandates.php](http://www.wbdg.org/references/federal_mandates.php)



## Incorporated into Everything We Do

# Sustainability Plan

GSA will eliminate its impact on the natural environment and use its government-wide influence to reduce the environmental impact of the federal government through:

- Sustainable Solutions
- Proving Ground for Innovation
- Leadership by Example
- National Goals & Local Accountability



# Green Proving Ground Overview

Established in 2010 to maximize sustainability performance of \$5 billion investment to GSA from ARRA funds

GPG leverages GSA's real estate portfolio to evaluate innovative technologies that accelerate GSA's sustainability goals, reduce operational costs and lead market transformation.



Green Proving Ground

# Program Objectives

Innovative building technologies are evaluated in the real world operating environment of GSA's real estate portfolio.

Successful technologies:

- Timely response to advances in the market
- Use data to inform investment decisions
- Improve environmental performance
- Leverage GSA's unique position and mission

What are We Looking for?

# Technology Types

## EFFICIENT COMPONENTS

- Lighting
- HVAC
- Building Envelope
- Water

## ASSESSMENT & DESIGN TOOLS

- Auditing & benchmarking
- Meters and sensors
- Retrofit design tools

## OPTIMIZED OPERATIONS

- Information & management systems
- Behavioral interventions
- Energy management

## SUPPLY & DEMAND INTEGRATION

- On-site generation & storage
- Demand response & ancillary services
- Microgrid

HVAC : Adoption

# Maglev Chillers



- Eliminate heat, noise and vibration with magnetic levitation and improve efficiency with variable speed drive
- Quiet performance allows chillers to be placed closer to occupant spaces
- 42% energy savings, < 5 year payback
- Deploy as end-of-life replacement for rotary screw chillers
- 39 sites installed, 21 pending

## Energy Management : Adoption Advanced Power Strips



- Schedule-based control, where users determine the day and time when a circuit is energized, found to be most effective.
- 26% energy reduction at workstations with advanced computer management already in place, 50% energy reduction in kitchens and printer rooms
- Over 16,000 units deployed at 80 federal facilities across the country
- On GSA Schedule

# Region 9 Water Conservation Efforts

## 2020 Water Reduction Goals



- GSA goal: 26% below 2007 baseline year water consumption
- 2007 Region 9 consumed 339+ million gallons
- 26% reduction would achieve 88 million gallon/year
- Pacific Rim goal is 37% savings or 125 million
- FY 2014:
  - 26.4% reduction achieved (~93 million) across 178 buildings and 22 million sq ft
  - 55 million gallons of water reduction in CA – 60% of GSA portfolio



**don't be a drip**  
turn it off every time

gsa.gov/gogreen



U.S. General Services Administration



**3,000 gallons**

Amount of water wasted per year from a leaky faucet dripping at a rate of 1 drip per second. That's enough water for 180 showers.

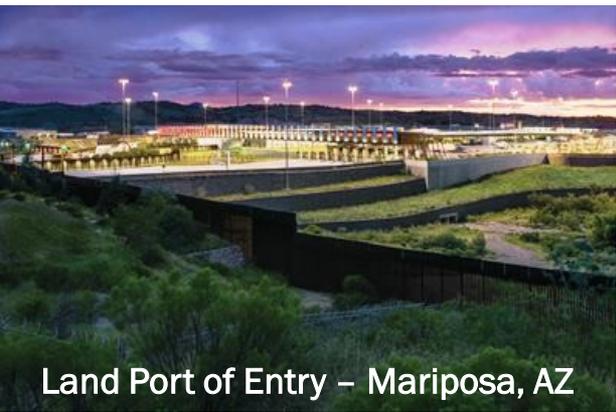
## Region 9 Water Conservation Efforts

# Short Term Drought Response

- Creation of Water Conservation Taskforce
- Designated Water Efficiency Coordinator
- Immediate actions:
  - Education and Outreach Programs
  - Tenant Engagement
  - Adapted Custodial Practices
  - Assessing Plumbing Fixtures, and HVAC Systems
  - Landscape and Irrigation



US Courthouse - Albuquerque, NM



Land Port of Entry – Mariposa, AZ



Living Roof GSA R9 HQ - San Francisco

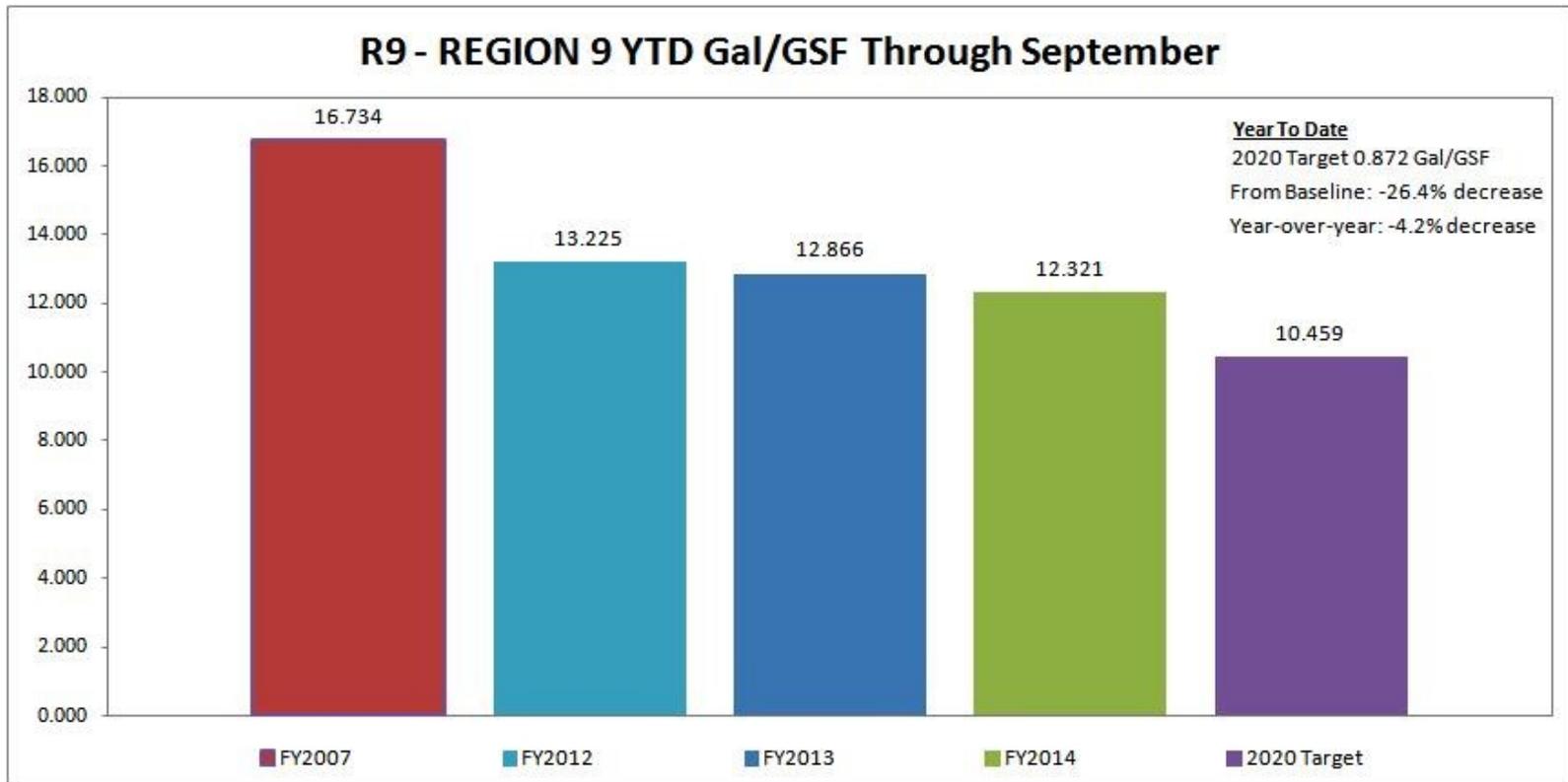
## Region 9 Water Conservation Efforts

# Long Term Drought Response

- Introduction of water efficient fixtures
- Upgrading cooling towers, boiler and hot water systems
- Use of water resistant plants and efficient irrigations systems
- Gray water systems at Land Ports of Entry and other appropriate sites
- Continue to pursue green & living roofs

## Region 9 Water Conservation Efforts

# Water Performance Over Time





Pete V. Domenici U. S. Courthouse , Albuquerque, NM - Before water conservation efforts





PETE V. DOMENICI  
UNITED STATES  
COURTHOUSE

Pete V. Domenici U. S. Courthouse , Albuquerque, NM - Before water conservation efforts



Pete V. Domenici U. S. Courthouse , Albuquerque, NM - Before water conservation efforts



Pete V. Domenici U. S. Courthouse , Albuquerque, NM - After water conservation efforts



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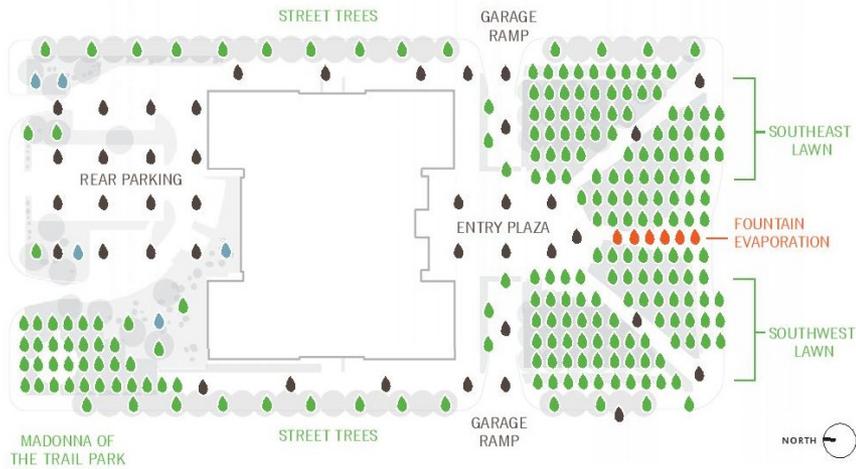
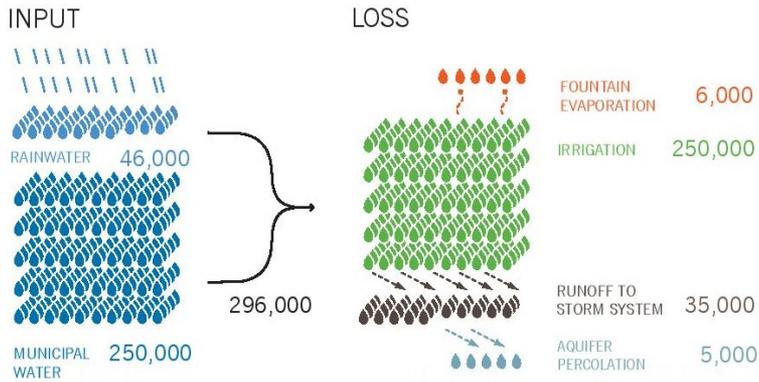


Pete V. Domenici U. S. Courthouse , Albuquerque, NM - After water conservation efforts



# EXISTING WATER INVENTORY

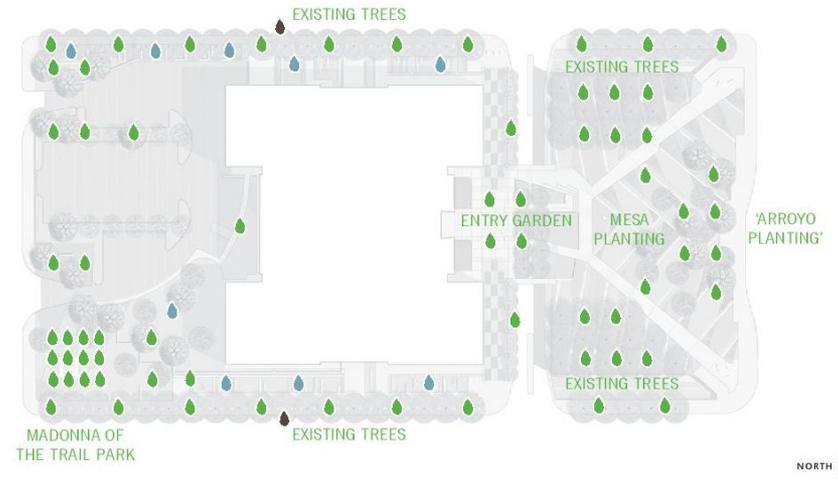
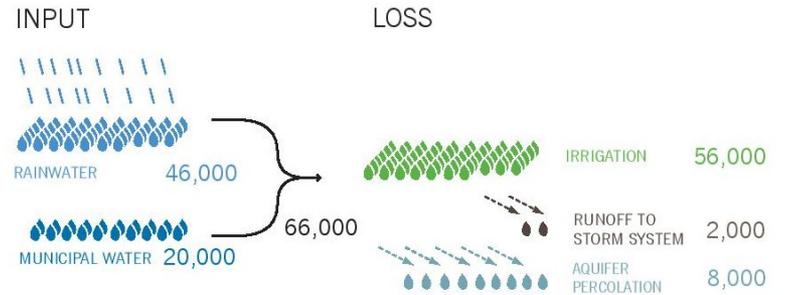
ESTIMATED LANDSCAPE WATER USE **296,000** GAL/ MONTH



- FOUNTAIN EVAPORATION
- IRRIGATION LOSS
- RUNOFF TO MUNICIPAL STORM SYSTEM
- AQUIFER PERCOLATION
- 1,000 GALLONS

# PROPOSED WATER INVENTORY

PROJECTED LANDSCAPE WATER USE **66,000** GAL/ MONTH



- FOUNTAIN EVAPORATION
- IRRIGATION LOSS
- RUNOFF TO MUNICIPAL STORM SYSTEM
- AQUIFER PERCOLATION
- 1,000 GALLONS

# Thank You

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