



**SUSTAINABLE BERKELEY LAB**

# **Water Conservation Activities**

**Presentation to the Community Advisory Group**  
**John Elliott, Chief Sustainability Officer**  
**September 2014**

## Better Buildings

Build high-value buildings that support science, target efficiency, and minimize fossil fuel use

## Building Tune-Up

Deploy a multi-year, financed program for deep energy use reduction

## Green Grid

Access renewable power, supporting a smart grid for greater penetration of renewables

## Water

Respond to drought conditions and meet a 20% reduction in potable water use by 2020

## EV Readiness

Enable staff EV charging and prepare for a transition to an electricity-based transportation system

## Employee Engagement

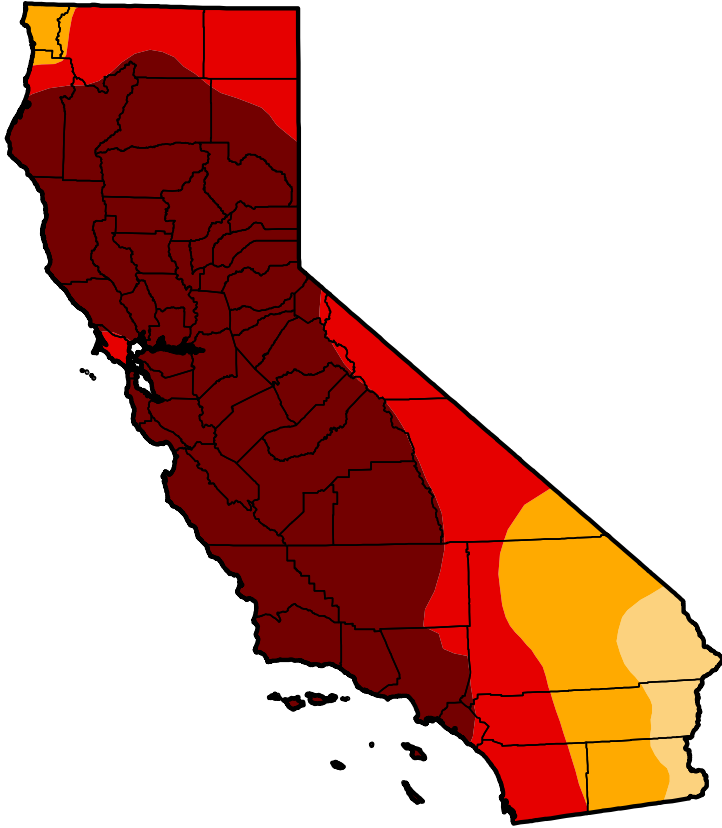
Engage staff to institutionalize practices that reduce footprint and enhance morale

## Material Sustainability

Encourage use of renewable, reusable, less hazardous, and less energy-intensive materials and equipment



# Drivers for water conservation activities



see United States Drought Monitor  
<http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA>

- Exceptional California Drought
- Federal / DOE Goal
  - Reduce potable water use intensity (gal/gsf) 26% from FY2007 to FY2020
- UC President Napolitano Letter and Goal
  - By 2020, reduce potable water use 20% (per capita)
- EBMUD now mandatory restrictions

# Berkeley Lab Water Use

- 67 MG/yr

Total LBNL water use (FY13)

- 43 MG/yr

Main site water use  
~64% of total

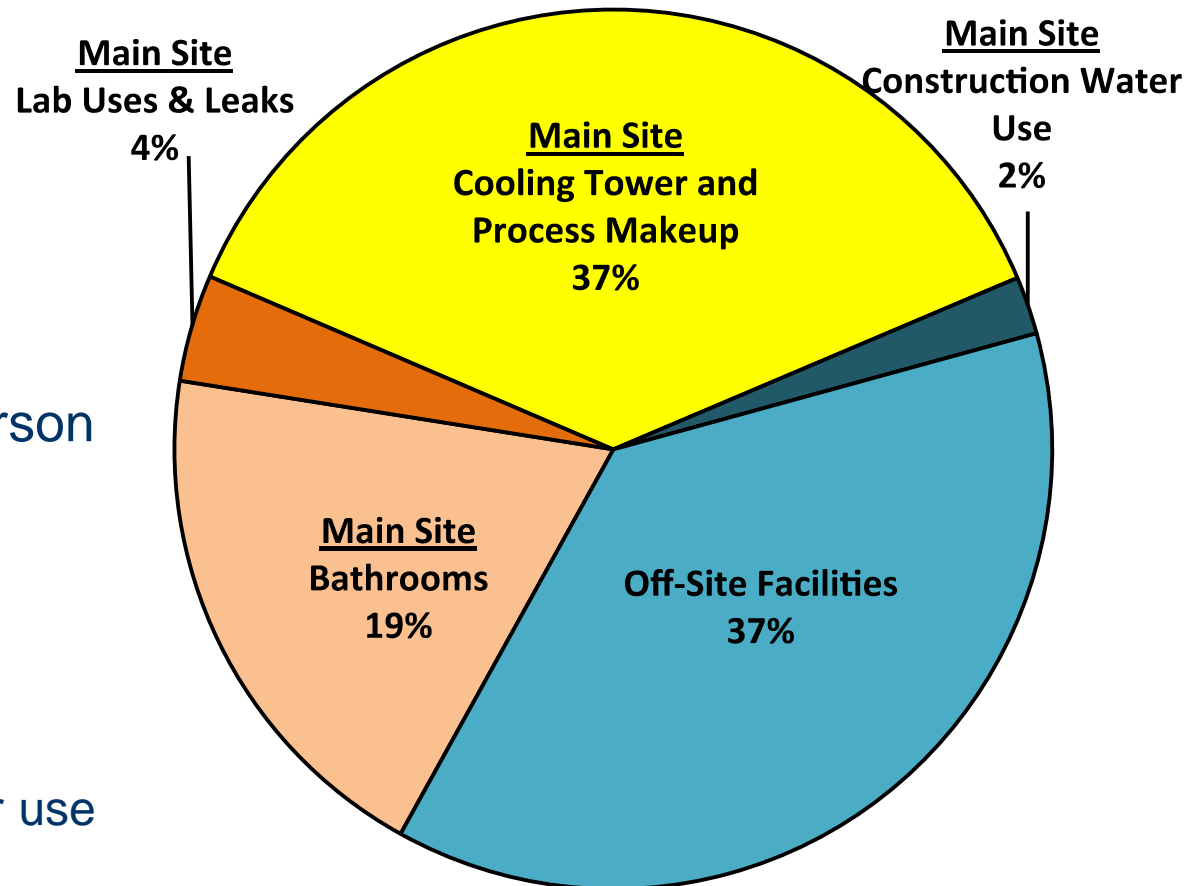
- 44 gpd

Total water use per person

- 150 gpd

70-500 gpd

Typical and range  
EMBUD household water use



# Berkeley Lab Water Action Plan

*Institutionalize less water waste*

1. Improve Communication
2. Improve Site-Wide Metering
3. Eliminate Regular Irrigation Watering
4. Implement Fixture Retrofits
5. Identify Water Waste
6. Deploy Cooling Tower Monitoring and Management
7. Increase Awareness

# Progress to Date

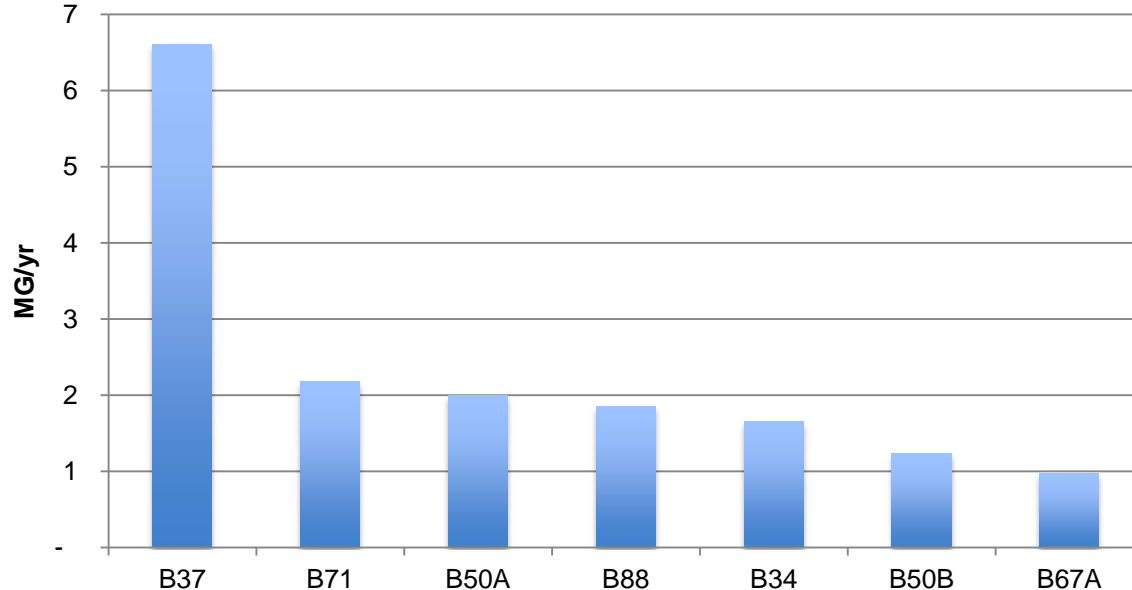
- Established water conservation website (March 2014)
- Confirmed no automated ongoing irrigation watering (March 2014)
- Ran TABL articles about water conservation and reporting leaks (March 2014)
- Conducted bathroom fixture inventory with volunteers (April 2014)
- Placed “leak reporting” stickers in all main-site bathrooms (April 2014)
- Met with UC Berkeley to establish process to better manage site-wide metering data (May 2014)
- Facilities completed faucet aerator retrofits on main site (June 2014)
- Purchased equipment to monitor 12 MG of water use at four sets of cooling towers, installation in progress (September 2014)



# Cooling tower metering and management

- Focus on biggest, actionable water use
- Meter and monitor make-up and blow down
- Projects phased over the next few years
- Implementing pilot at B37, B71, B50A, B50B (12 MG/yr)

**Annual Cooling Tower Make-up Flows**

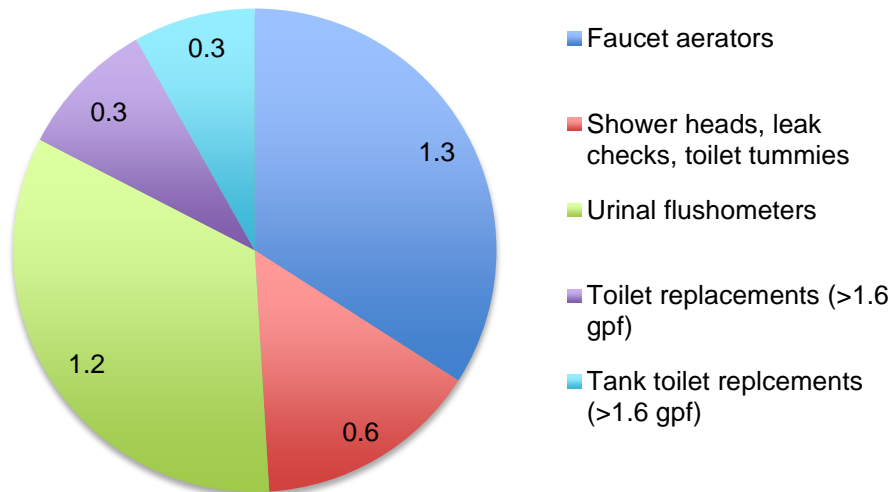


- Monitor 16.5 MG/yr
- 90% of main site cooling tower flow
- 25% of total water use
- 38% of total main site use

# Bathroom fixture replacements

- Based on fixture inventory, replacing:
  - faucet aerators, shower heads
  - urinal flushometer diaphragms, toilets
- Phased over 4 years

## Annual Water Savings (MG/yr)



- Savings estimated at 3.7 MG/yr
- 5.5% total water use
- 8.5% main site water use



# Saving Electricity Saves Water

**300 gal/MWh**

Conservative estimate of upstream water use associated with on-site electricity use

**~ 0 gal/MWh**

Water use associated with negawatts (energy efficiency) and most on-site renewables

# Next Steps

## *Continue implementation of Action Plan*

- Assess efficacy and savings from cooling tower pilot results, expand metering as appropriate
- Implement bathroom fixture retrofits at urinals
- Monitor and manage CRT water use

# Contact



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