



BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY



Sustainability at Berkeley Lab Introduction to CAG

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Chief Sustainability Officer

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UC MERCED
triplezero

zero net energy. **zero** landfill waste.
zero net greenhouse gas emissions.


Sustainability
UC MERCED

Green from the Ground Up

UC Merced is a living laboratory, piloting sustainable strategies for growing communities.



Energy Generation
Technologies

Decarbonizing electricity



CCUS



Electric demand



Renewable Energy



Grid-scale storage

Sustainable transportation



Biofuels



Vehicle batteries



Fuels from sunlight



Combustion

Systems &
Impacts

Understanding global systems

Climate Modeling

Sustainable chemistry & materials



Energy Analysis

Ecosystem studies

Responsible development



Energy Efficiency



Globally Transformative Technologies





U.S. DEPARTMENT OF

ENERGY

Sustainability Requirements

| | | |
|---|---|---------------------|
| Energy Intensity Reduction (btu/ft ²) (non HEMSF) | EO 13423 | 30% (2003-2015) |
| Scope 1&2 GHG Emissions Reduction (mt CO ₂ e/yr) | EO 13514 | 28% (2008-2020) |
| Scope 3 GHG Emissions Reduction (mt CO ₂ e/yr) | EO 13514 | 13% (2008-2020) |
| Renewable Electricity Use | EPACT 2005, EISA 2007, EO 1342 | 7.5% (2013 forward) |
| New Building and Renovation Fossil Fuel Reduction | EISA 2007 | 55% (2003-2010) |
| | | 65% (2003-2015) |
| | | 80% (2003-2020) |
| | | 100% (2003-2030) |
| Net Zero Energy (designed after 2020) | EO 13514 | 100% (by 2030) |
| High Performance Building (LEED EB) | EO 13514 | 15% (by 2015) |
| High Performance Building (LEED NC Gold if >\$5M) | EO 13514 | 100% |
| Waste Diversion – non-hazardous and C&D | EO 13514 | 50% (by 2015) |
| Fleet Petroleum Reduction | EO 13514 | 30% (2005-2020) |
| Potable Water Use Intensity Reduction (gal/ft ²) | EO 13514 | 26% (2007-2020) |
| Industrial/Other Water Use Reduction (gal/yr) | EO 13514 | 20% (2010-2020) |
| Procurements Meet Sustainability Requirements | EO 13514 | 95% (each year) |



Lawrence Berkeley
National Laboratory

FY 2012 LBNL SITE SUSTAINABILITY PLAN



12/21/11

Facilities Division

Produced by:

LBNL Energy Management Program

Lawrence Berkeley National Laboratory

University of California, Berkeley California 94720



Available at

<http://tinyurl.com/8p3uvow>

User Support Building



Energy use
47% lower
required by
code

LEED Gold
Certified

Highly-efficient high performance computing

- Driving down PUE with real-time monitoring
- Moving to outside-air cooling



22 high-efficiency condensing boilers installed in 10 facilities

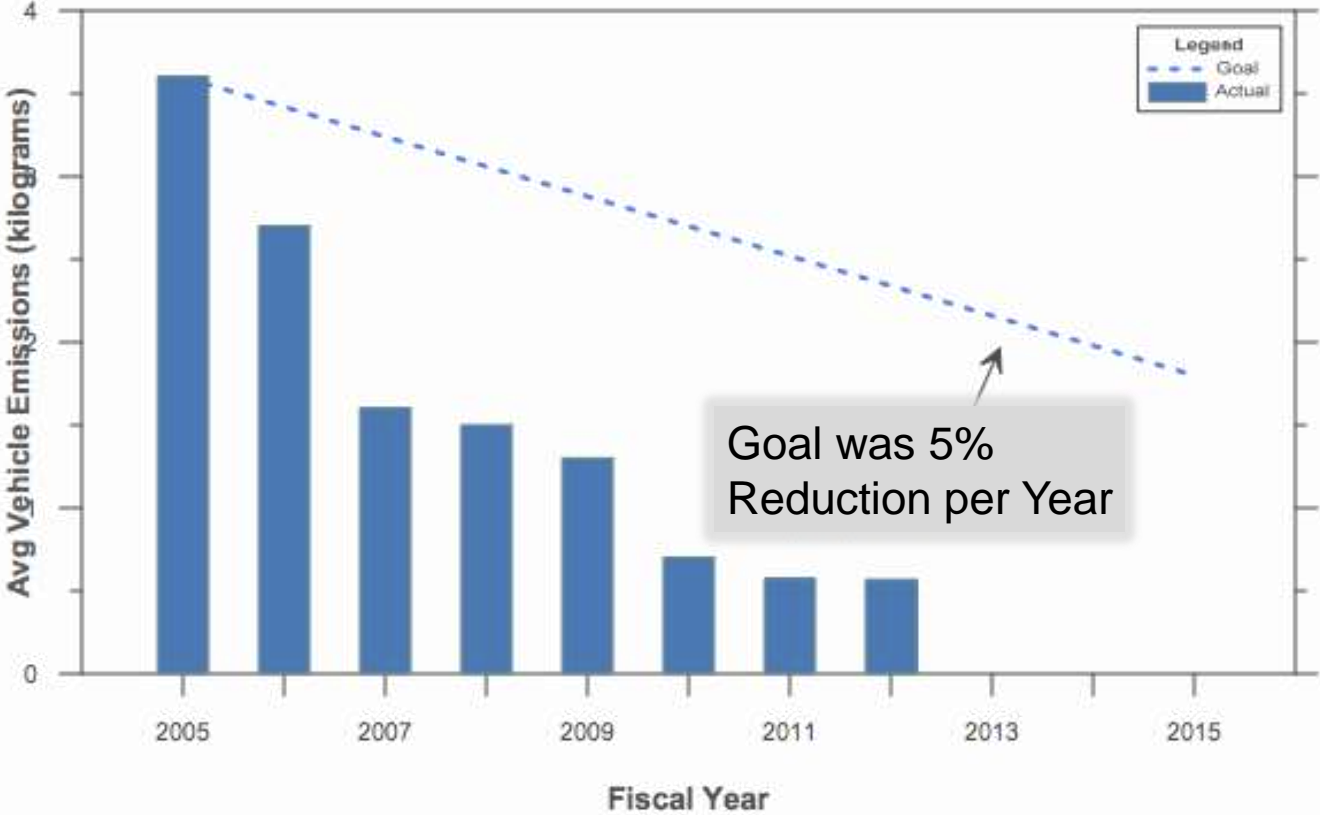




LED
energy-
efficient
lighting

Solar
powered

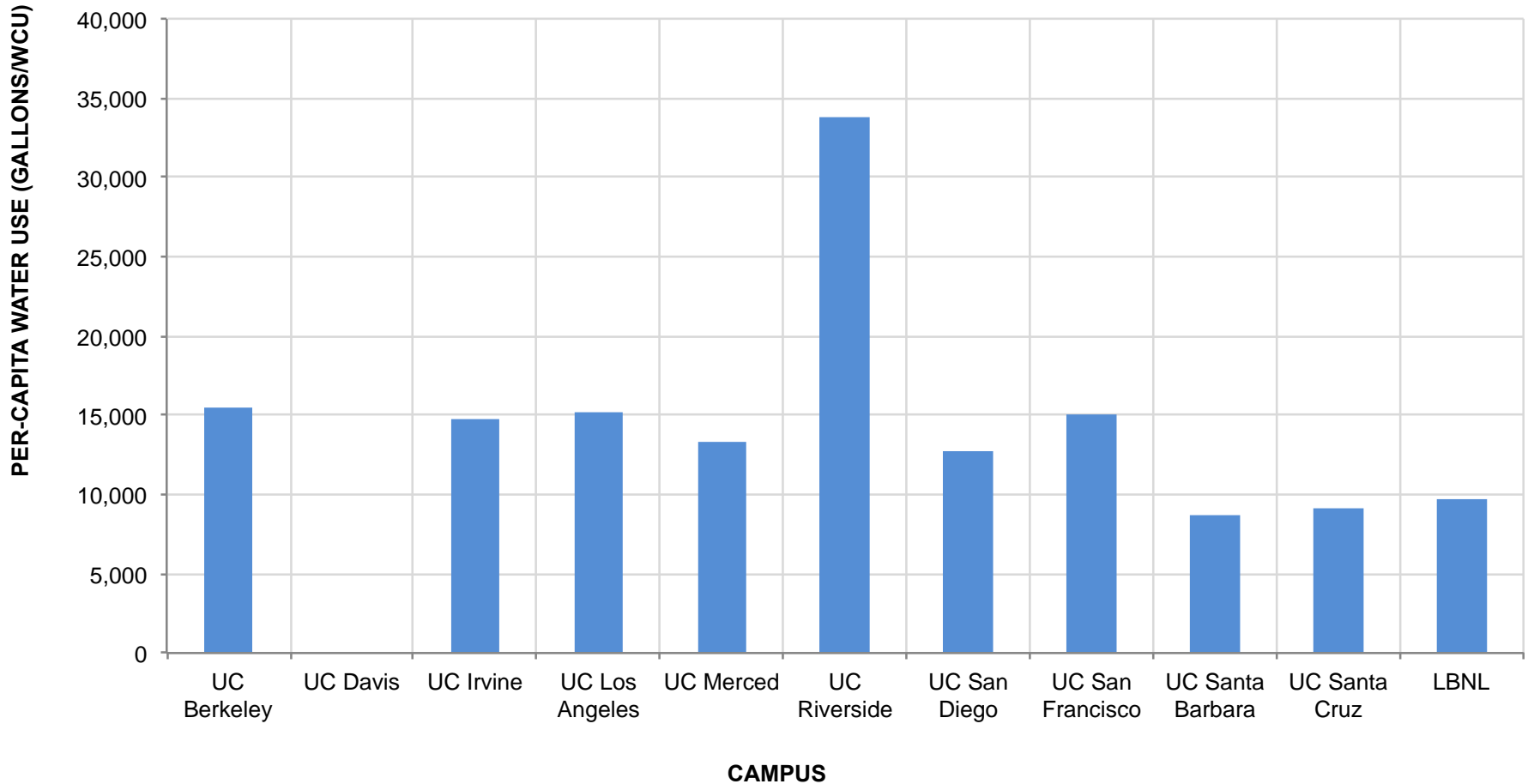
Diesel Particulate Emissions from Lab Buses Down over 80% since 2005



Potable water use reduction

FY2011: 18.5% reduction from 2007 baseline

PER-CAPITA POTABLE WATER USE (CURRENT)



Over 98% Diversion Lab's First Site-Wide Zero Waste Event



Help make this a **zero** waste event!

Ask us how!



Priorities



Sustainable Berkeley Lab

1. New Construction

Set sustainability standards for new construction

2. Retrofits

Strengthen and sustain energy management and efficiency retrofit program

3. Zero Waste

Widely enable zero waste practices

Approaches



Sustainable Berkeley Lab

1. Living Laboratory

Cultivate opportunities to support, strengthen, and apply research

2. People

Enable motivated people to pilot solutions that can be applied broadly

3. Process

Pursue process improvements that institutionalize sustainability

Other areas to be explored and coordinated

- **Alternative Transportation**
Encouraging options that decrease single vehicle trips, and developing infrastructure for electric vehicles
- **Printing**
Moving towards network (not personal) printing
- **Water Conservation**
Identifying opportunities for water use reduction and reuse
- **Green Departments**
Identifying “green” department and lab standards
- **Landscape**
Engaging staff in a vegetation plan for the main campus



Sustainable Berkeley Lab

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