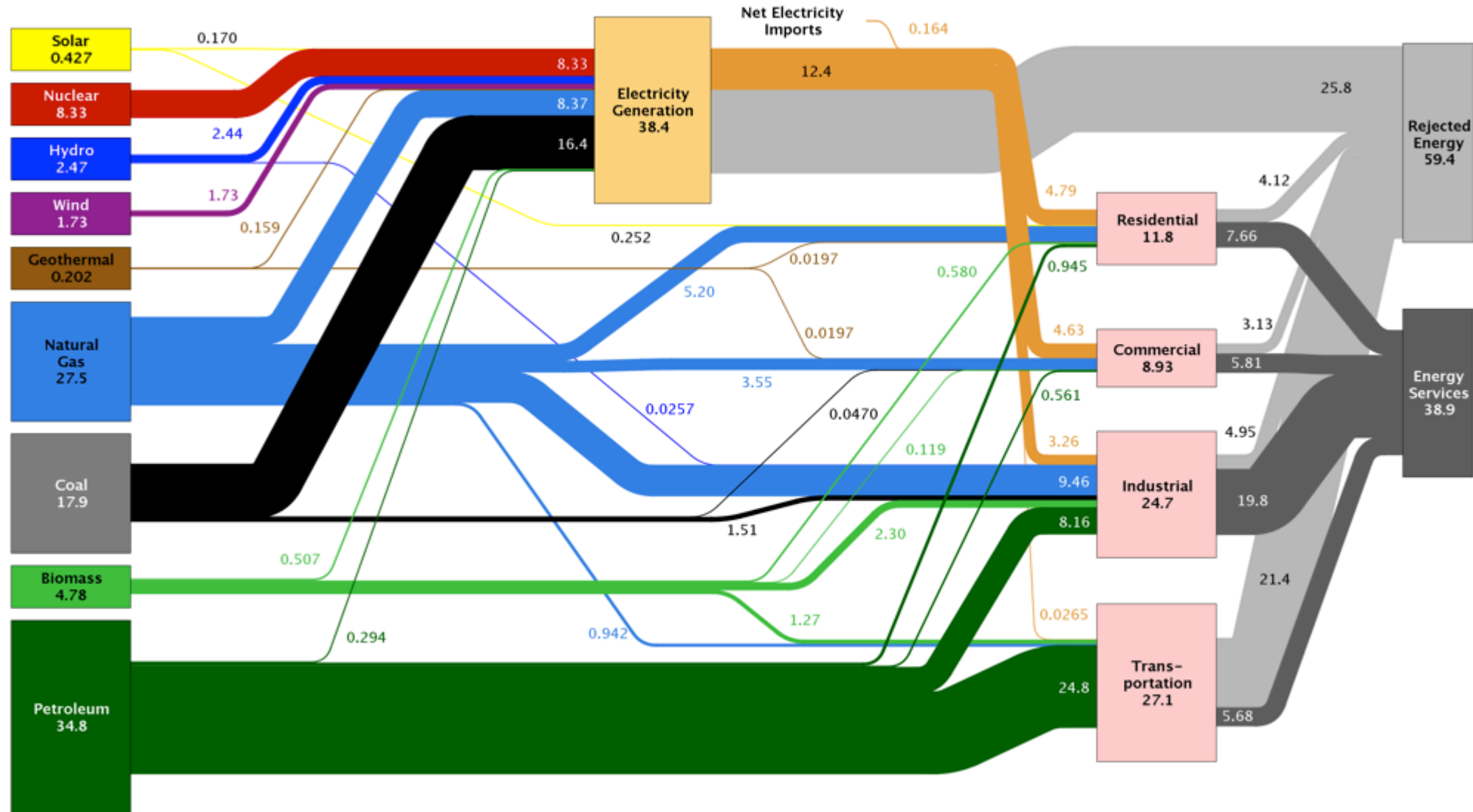


HOW WE SAVE ENERGY

UC DAVIS ENERGY EFFICIENCY CENTER

Nicole Woolsey Biggart
Graduate School of Management

Estimated U.S. Energy Use in 2014: ~98.3 Quads



This is Wasted Energy ↴

Source: LLNL 2015. Data is based on DOE/EIA-0035(2015-03), March, 2014. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports consumption of renewable resources (i.e., hydro, wind, geothermal and solar) for electricity in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 65% for the residential and commercial sectors 80% for the industrial sector, and 21% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

Who we are



California has strongest environmental protection regulation in US – leads federal government

Who We Are

University of California, Davis



Where We Live



THE UNIVERSITY OF ECOTOPIA

NEW-STYLE STUDENT HOUSING NEAR SACRAMENTO JUST MIGHT CHANGE THE WORLD

THIS SEMESTER, students at the University of California at Davis don't have to leave their dorms for a crash course in planet-saving ideas. The just-built West Village housing complex has the lofty goal of becoming Zero Net Energy (ZNE), which means the 53 completed buildings plan to generate as much energy as their 800 current residents consume over the course of a year. It's more than just low-flow toilets, double-pane windows, and low-VOC paint jobs (although check, check, and check). This is the largest planned ZNE project in the U.S., reducing its energy needs so dramatically that it can be powered by a much lesser solar panel—another project of this scale would require at least double that. In short, ZNE is the future. [www.ucdavis.edu](#)

BY THE NUMBERS

41% Amount of energy of U.S. total consumed by non-ZNE buildings, according to the U.S. Department of Energy.	50% Amount of energy saved in a year by West Village compared with the same facility built to California code.	3,000 Number of students and staff who'll call West Village home, in 800 apartments and 200 single-family homes, upon project completion.	2020 The year that the California Public Utilities Commission hopes to require all new residential construction in the state to be ZNE.	2050 Year the City of Davis, inspired by West Village, hopes to become a ZNE city through rehabilitating and new construction.	\$2.5 MILLION Amount of federal funding received through this project.
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WEST VILLAGE

UC DAVIS



How the Energy Efficiency Center Got Started



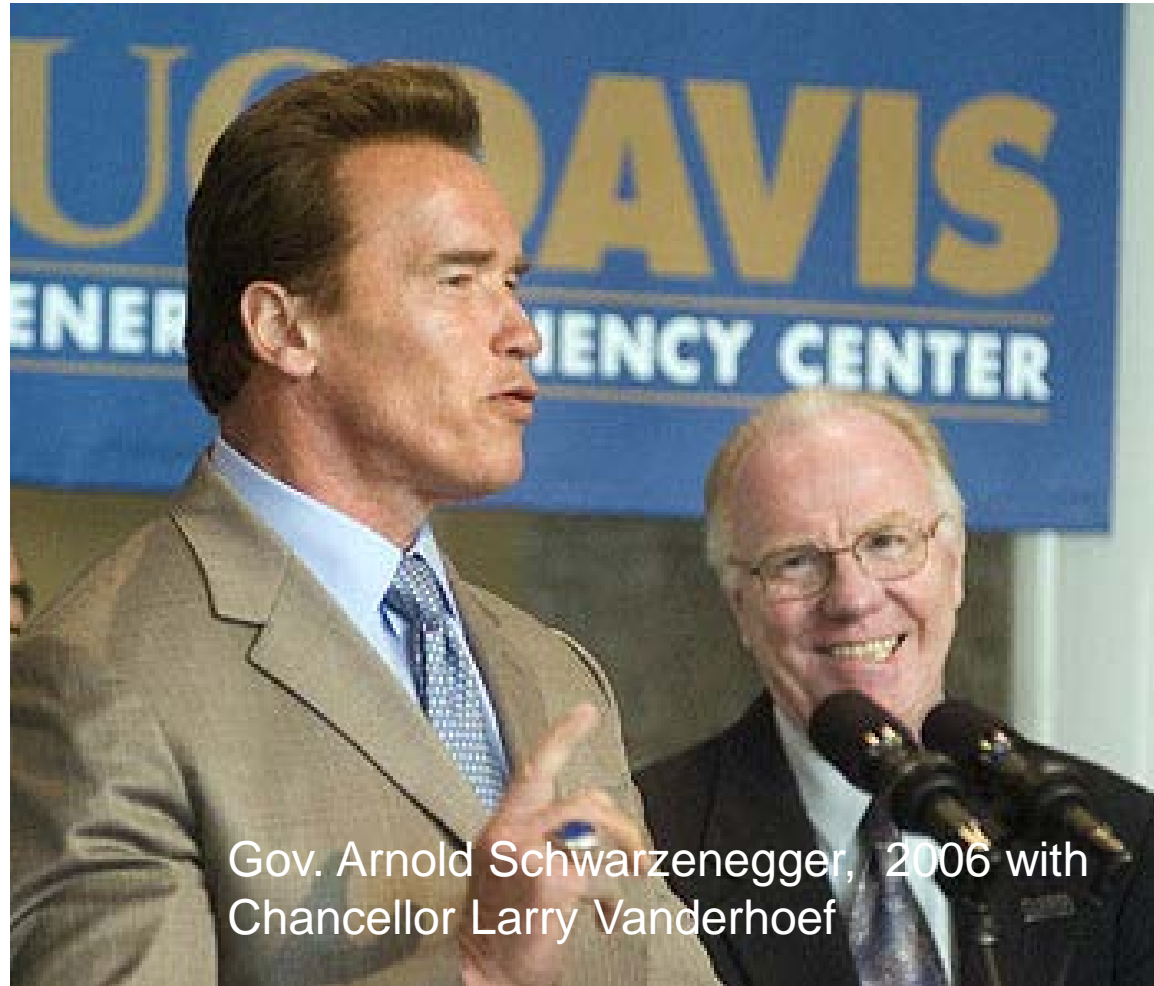
Greenfield Investment Fund for EE and Renewables

Accelerating
clean energy
development
at the intersection of
policy, technology
and finance



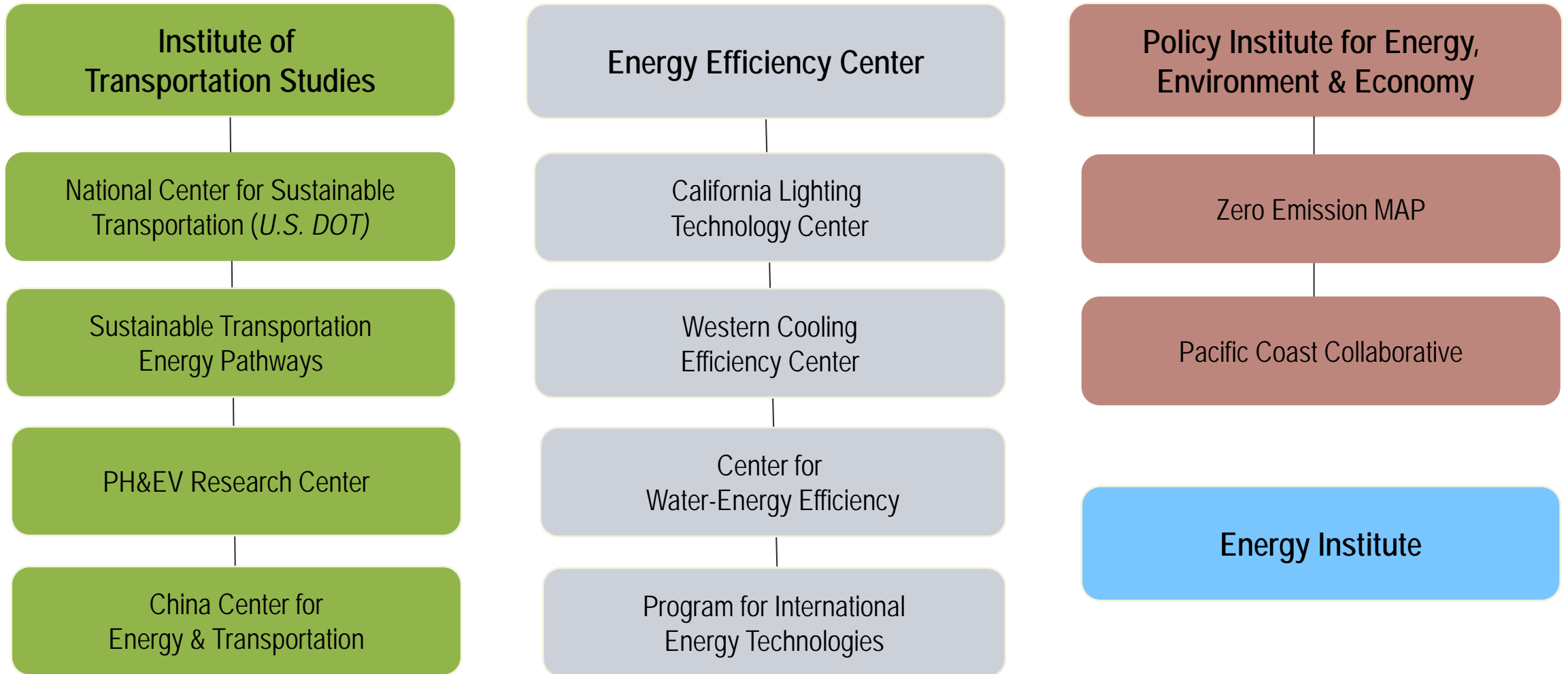
CALCEF

Who we are



Gov. Arnold Schwarzenegger, 2006 with
Chancellor Larry Vanderhoef

UC Davis Transportation and Energy Cluster



1. UC Davis California Lighting Technology Center

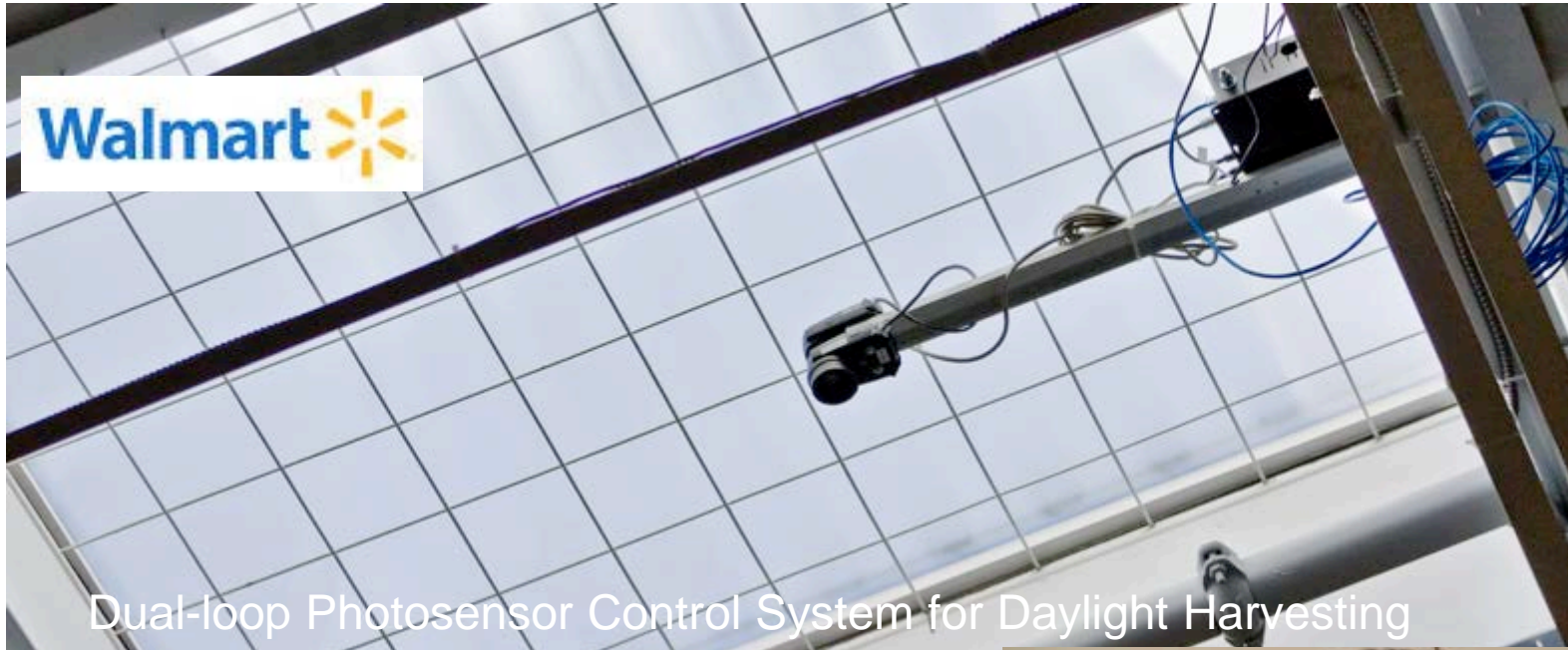


Testing for longevity, light quality

Case: Bi-level Lighting



Case: Meeting Retailers' Needs



2. Western Cooling Efficiency Center



Case: Working with an Oligopoly



UCDAVIS
WESTERN COOLING CHALLENGE
CERTIFIED

Case: Adapting a Technology



Case: HVAC Installers



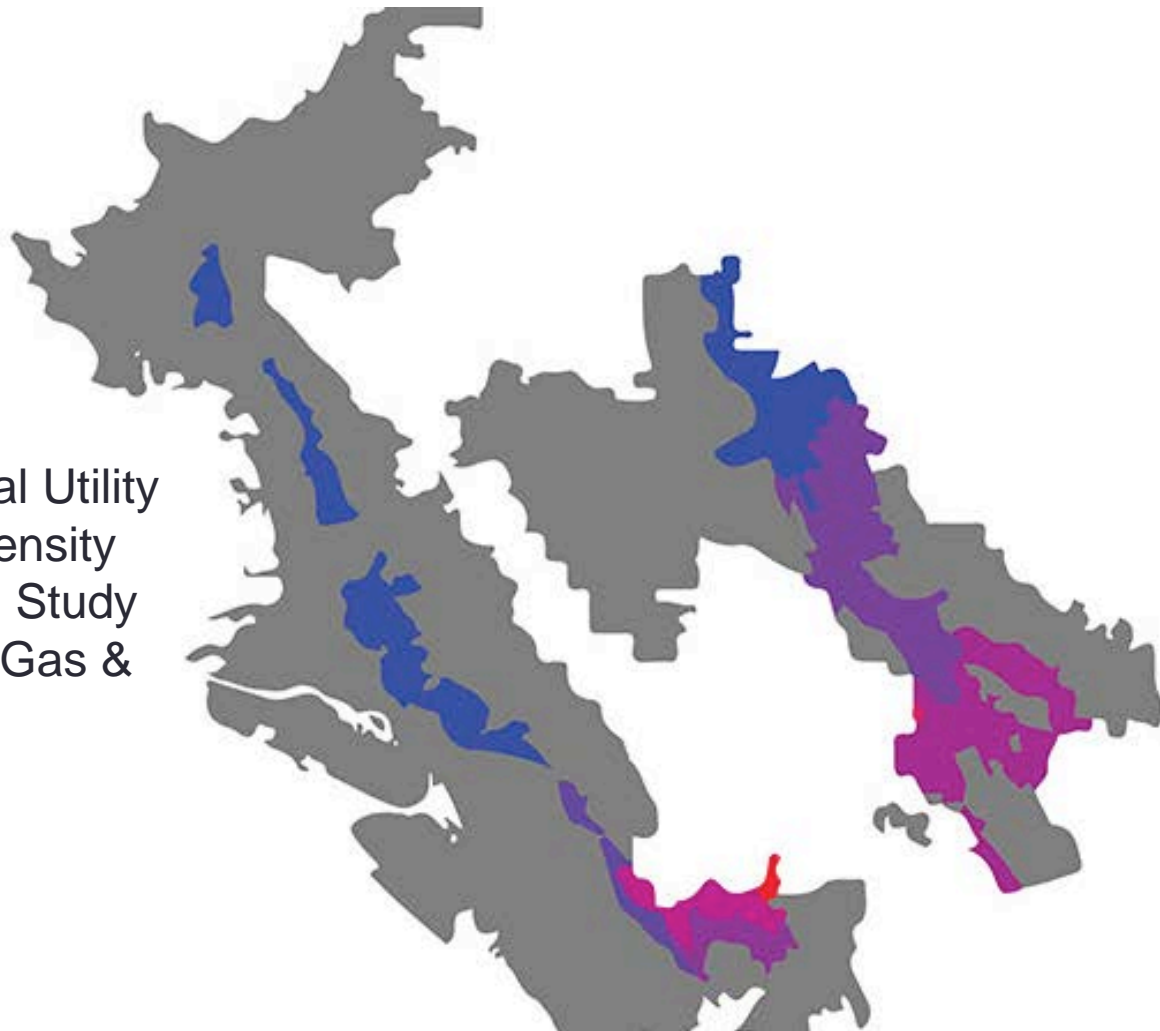
3. Water-Energy Efficiency Center



Water-pumping plant along the Colorado River Aqueduct —*LA Times*

Case: Energy Intensity of Water

East Bay Municipal Utility District energy intensity by pressure zone. Study funded by Pacific Gas & Electric.



Annual Mean
Energy Intensity



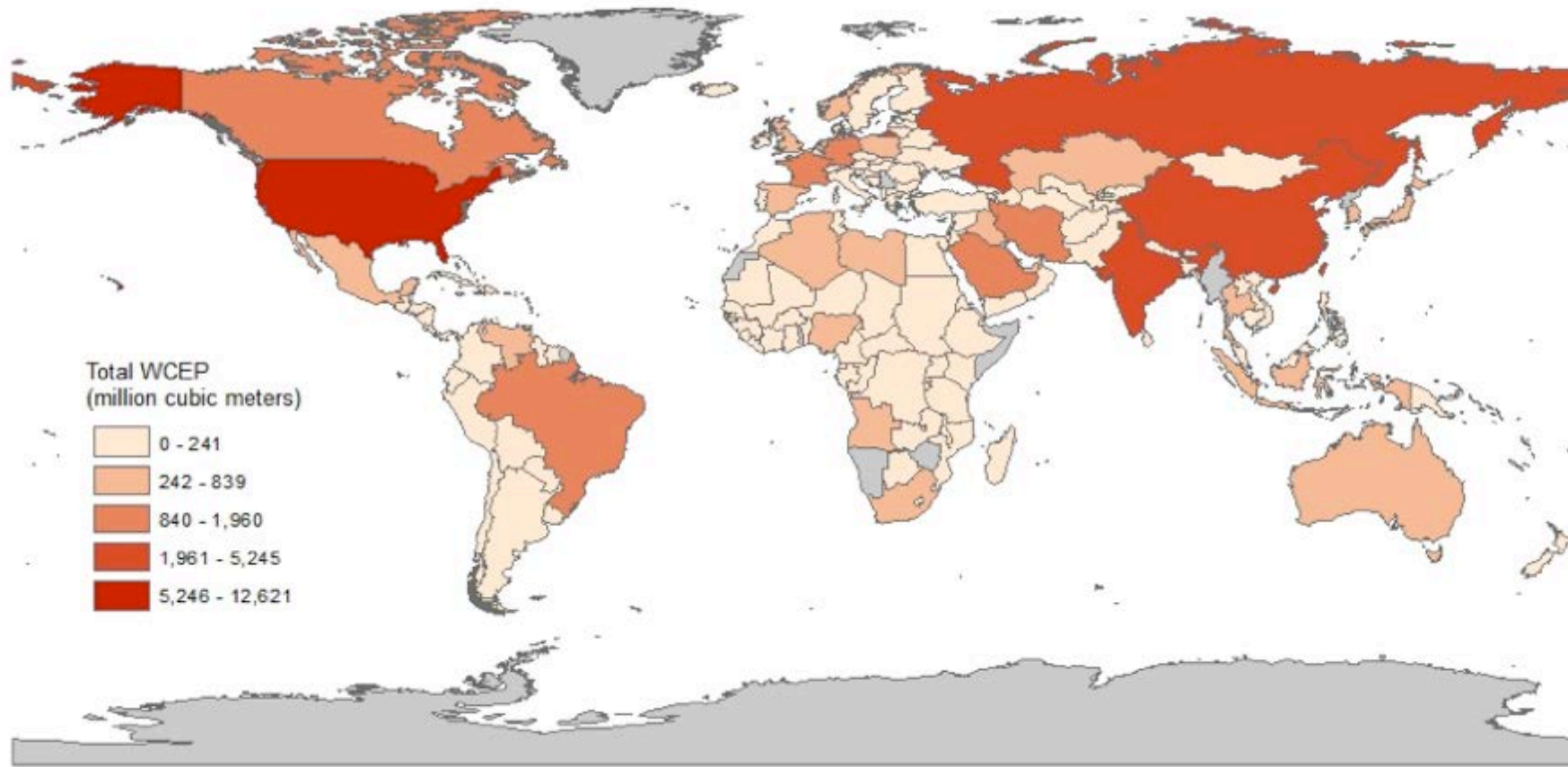
4000

3000

2000

1000

Case: A Thirst for Power



Water Consumption for Energy Production : 45 billion cubic meters per year globally

4. PIET – Program in International Energy Technologies



Case: Off-Grid Electricity Audits

- History
- Culture
- Social Networks
- Needs/Technology Assessment
- Business Possibilities



Lessons We Have Learned

1. Be mission driven
2. Make friends in *all* sectors - and convene and connect
3. Understand and leverage markets
4. It's not about widgets
5. Advance policy with science
6. Partner with yourself and demonstrate
7. Teach and learn with others

1. Be mission driven

Energy Efficiency Center Mission:

Accelerating the Development and Commercialization of Energy-Efficient Technologies and *Training* Future Energy Efficiency Leaders

2. Make Friends – and Connect Them



2. Corollary: Don't Get Too Close to Any Sector



3. Understand and leverage markets



4. It's Not about Widgets

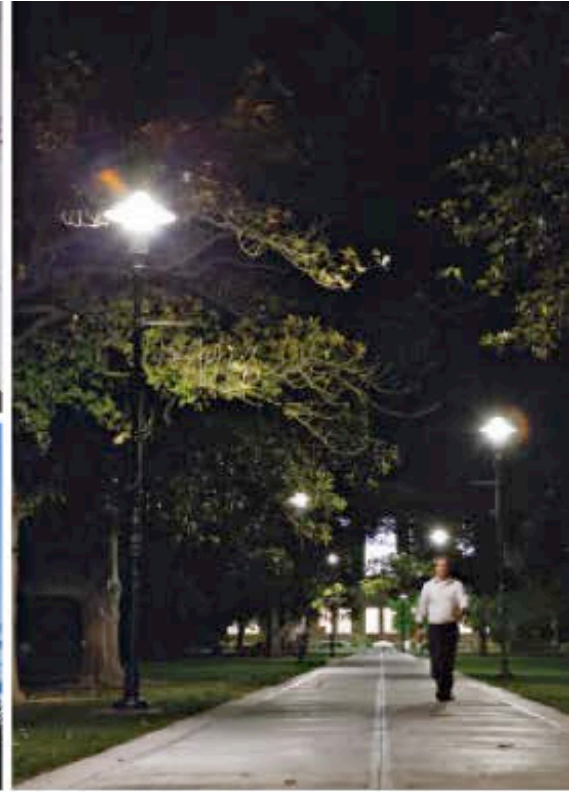


5. Advance Policy with Science



- Help to develop building codes and standards
- Publish guides
- Brief legislators on best science for policy
- Engage in government-sponsored research

6. Partner with Yourself and Demonstrate



SmartLighting
A UC DAVIS INITIATIVE

7. Teach and Learn with Others



Thank You!



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o
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k