

What's New with 2016 Code: one perspective

Martin Bond
Executive Director
Community Energy Services

BayREN Forum
June 22, 2016

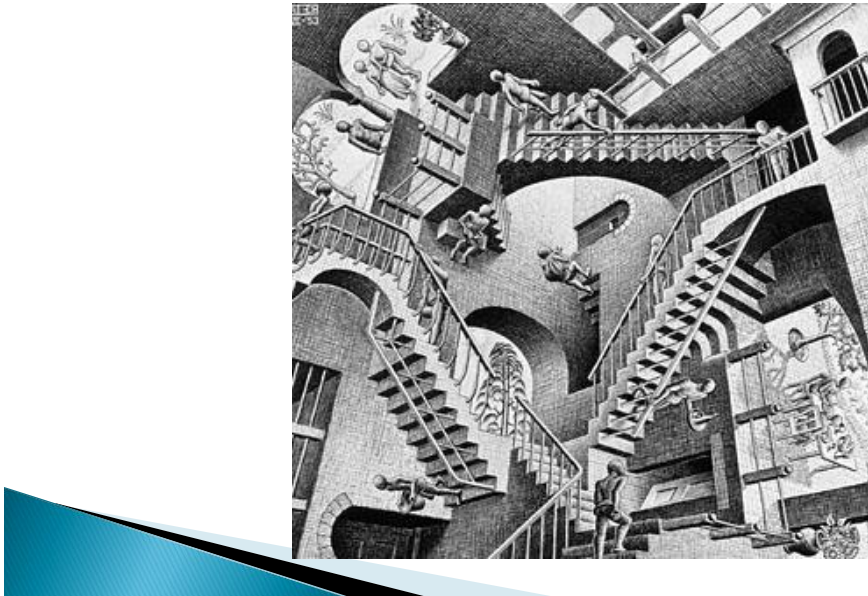
What is this about

- ▶ **Resources**
 - Our appetite for energy appears boundless, but traditional supplies are not
- ▶ **Responsibility**
 - The combustion of fossil fuels releases carbon dioxide (a major “greenhouse” gas) into the atmosphere
- ▶ **Security**
 - Our society relies on energy that is available when and where it is needed, is generally affordable at stable prices, and can be counted on in the near future.

What could be: Zero Net Energy Homes/ buildings



How do we get there?



Zero Net Energy pathway: 3 code cycles

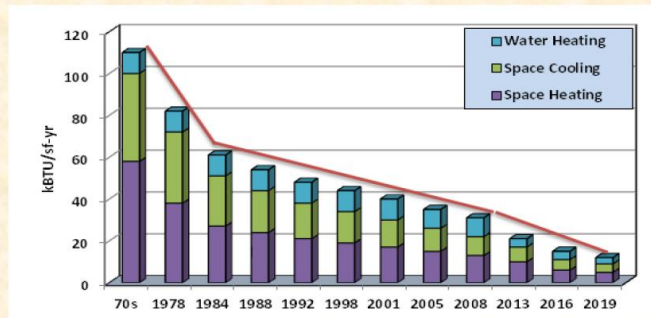
- ▶ Governor Brown's ZNE goals – focused on ZNE building code requirement by 2020 for newly constructed residential buildings – get there in 3 code cycles: 2013, 2016, 2019



Zero Net Energy Standards

- Achieve additional energy savings from building components regulated under Title-24 to reach ZNE goals
- Integrate onsite generation into building Standards to accomplish ZNE

Impacts of Building Standards on Home Energy Use

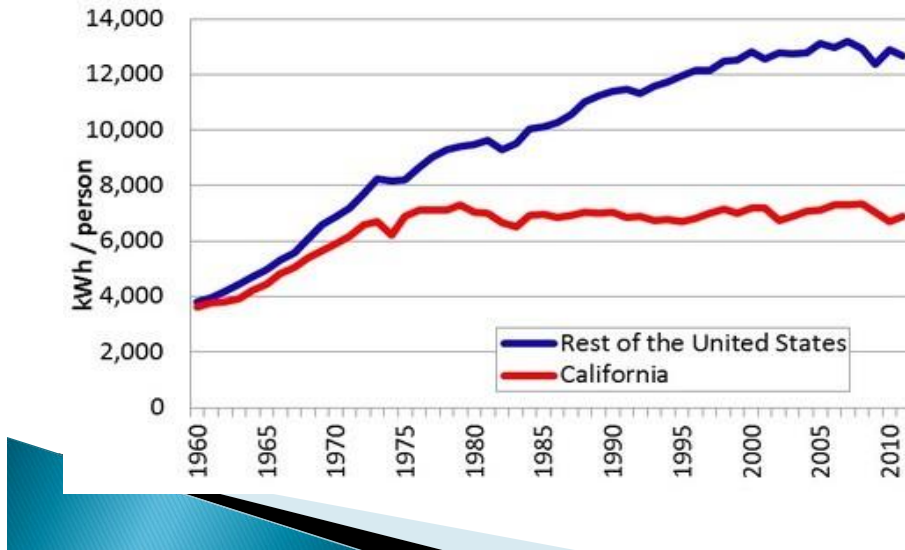


4

Title 24
2016
Standards



California vs Rest of U.S.



Per CEC “Title 24 has saved Californians more than \$74 billion in reduced electricity bills since 1978. California's per capita electricity usage has stayed largely flat since the mid-70s, largely due to the Title 24 energy efficiency standard, while the average American's went up by 50%...”

But



How Much Energy Do Building Energy Codes Save? Evidence from California

"...there is no evidence that homes constructed since California instituted its building energy codes use less electricity today than homes built before the codes came into effect. "

Arik Levinson
Economics Dept
Georgetown University
Nov. 2015



How could this be?

California Energy Efficiency: Lessons for the Rest of the World, or Not? Levinson, 2013, Nat'l Bureau of Economic research

Everyone is heading south!

- ▶ (1) shifting of the U.S. population towards warmer climates of the South and West



How could this be?

California doesn't want much energy

- ▶ (2) relatively small income elasticity of energy demand in California's temperate climate



How could this be?

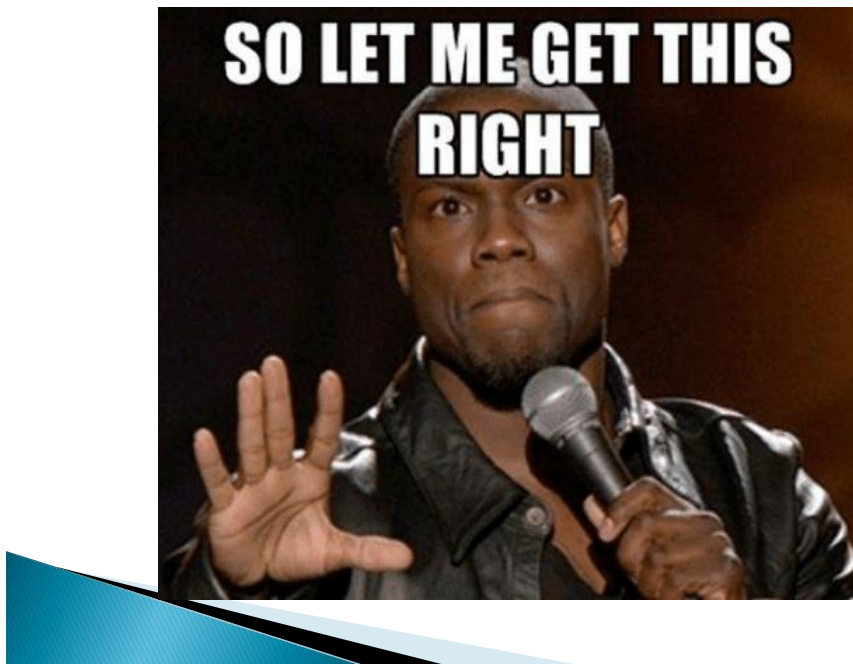
- ▶ (3) demographics: California households have gained on average 0.6 members relative to households in other states, this changes per-household energy use, and energy use per capita declines as household size goes up



How could this be?

“Together, these trends account for around 90 percent of California's apparent residential electricity savings, thus providing no lessons for other states or countries considering adopting or tightening their energy efficiency standards. “





Well, maybe not...

Report looked at electricity only, for residential customers only

- ▶ Residential energy use in California is primarily Natural gas
 - 93% of California homes are heated with gas and only 5% are heated with electricity.
 - 87% of homes have gas water heating and only 7% use electricity for water heating

Building Energy Codes Program:

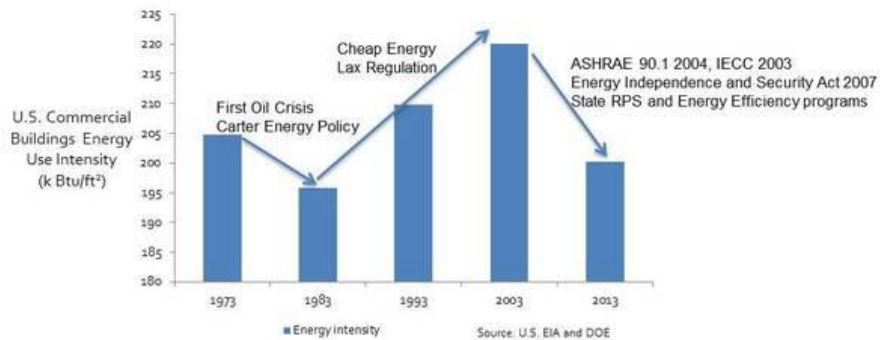
National Benefits Assessment, 1992 - 2040

By Pacific Northwest National Laboratory

<http://www.greenbuildinglawblog.com/uploads/file/DOE%20Building%20Energy%20Code%20Savings%20Report%20Oct%202013%281%29.pdf>

Well, maybe not...

- ▶ Why Residential?- In commercial buildings much easier to find compliance, and impact



Source: Lux Research, Inc.
www.luxresearchinc.com

Well, maybe not...

California Building codes impact nation

- ▶ Many appliance manufacturers adopted California's energy standards nationwide, instead of producing two sets of products;

California's energy code has influenced energy use across the country, minimizing the impact of Energy standards between California and the other states.

Building Codes DO save energy

So, energy standards DO save energy, though these savings were not seen in this narrow study.

But do they help my organization?

What's in the 2016 Update for me! ?



UC Berkeley Student Store

- 5000 Sq/Ft retail
- primarily T12 fluorescent & Inc. spot lights
- Only on/ off controls



Energy Standards Impact

Retrofit to:

- ▶ LED Retrofit kits,
- ▶ T-LEDS, LED screw in lamps

*“The SmartLights project manager **Jenn Kreutzer** was awesome – she went out of her way to make sure we got the original savings that was quoted.”*

2013 Energy Standards Impact

- ▶ Claimable savings reduced by 35%
- ▶ Additional controls required
- ▶ Acceptance testing

-Ashley Wood
Student Store



The Big One already hit

The 2013 Standards were a seismic shift to energy efficiency programs.

- ▶ Code requirements triggered on any interior lighting retrofit over 40 fixtures.
- ▶ Advanced lighting controls with continuous dimming required on many projects
- ▶ Acceptance Testing
- ▶ Exterior lighting : strict control requirements and BUG compliance (Backlight, Uplight, and Glare)



If only...

- ▶ Wouldn't it be great if the building code process was only triggered on larger projects?
 - Tenant Improvements, large retrofits, new construction.
- ▶ Exempt: Small projects, retrofits for energy savings
- ▶ Simplified, more streamlined compliance
- ▶ A pathway to make compliance easy, and incentivize energy savings over paperwork.

If only...



2016 Code: Non-residential lighting

New code will make it easier, and less complex

- ▶ Compliance trigger for luminaire modifications raised from 40 - to 70

Compliance:

- ▶ **New path** IF Reduce existing lighting power by 50% retail/office, or 35% all other spaces
 - Only auto shut off control requirement
- ▶ IF <85% of LPD by space type
 - Exempt from daylighting and demand response requirements
 - Simplified, one step controls by space, not fixture
- ▶ IF 20 or fewer luminaires
 - Acceptance testing no longer required for projects where controls are added



Comply with 2016 Code!

- ▶ Energy Efficiency:
- ▶ Reduces energy costs
- ▶ Increases reliability and availability of electricity
- ▶ Improves building occupant comfort
- ▶ Reduces impacts to the environment

Educate yourself! Resources available at

- ▶ <http://energycodeace.com/>
- ▶ email CEC : title24@energy.ca.gov call: 800-772-3300
- ▶ CEC Blueprint Newsletter

Thanks!

Martin Bond
CESC
martin@ebenergy.org
www.smartlights.org

