



California Reach Standards for Building Energy Efficiency

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California Energy Commission

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Presentation Topics

- CEC approval of Local Energy Ordinances
- 2013 Building Energy Efficiency Standards Update
- 2013 Voluntary Reach Standards Update



Two Different State Commissions

- All local **energy efficiency** standards that meet or exceed the California Building Energy Efficiency Standards (Title 24, Part 6) must be approved by the **California Energy Commission**.
- All local standards that exceed the California Building Code (plumbing, electric, historic, etc) must be filed with the **California Building Standards Commission**.



The Application to the Commission

- Required Documentation
 - A copy of the ordinance.
 - A study or analysis showing the expected energy savings and the cost effectiveness of the ordinance.
 - A statement/finding that the ordinance will require buildings to “consume no more energy than is permitted by (Title 24) Part 6.”
 - The date the ordinance, energy savings and cost-effectiveness study were presented to Council/Board in a **Publicly Noticed Meeting**.
 - A letter to the Executive Director assuring them that the City/County will continue to enforce Title 24, Part 6 as well as the proposed Ordinance.
 - Evidence of CEQA compliance.





Your Ordinance Needs Approval if it has any of the Following Elements

- Green Building Standard that includes **mandatory** energy efficiency requirements that meet or exceed the statewide Standard.
- Using Non-Governmental Certification Programs that meet or exceed the statewide Standard.
- Adopting CalGreen Tier I or II.
- Early Adoption of Energy Standards
- Adoption of stricter energy budgets
- Renewal or Updating Existing Ordinance

GPR

LEED

OTHER



Evidence of CEQA Compliance



CEQA
Lead
Agency

Local agencies must include any findings, determinations, declarations or reports, including any determination of exemption, negative declaration or environmental impact report, that are required by CEQA.



CEQA
Responsible

The Commission is required to review and consider any Exemption, EIR or Negative Declaration prepared by the local agency, as well as comments made to the local agency.



Commission Review of a Complete Application

Ordinance Review



Ensure that buildings will consume no more energy than permitted by Title 24, Part 6.

- Clear requirements to ensure greater energy efficiency.
- Clear statement(s) that Title 24, Part 6 will still be enforced.
- Exceptions or exemptions are explicitly limited to the ordinance and do not affect compliance with Title 24, Part 6.
- Look for elements that may trigger a Federal Preemption



We will gladly review your draft ordinance.





Resources

California Energy Commission, Approved Local Ordinances

<http://www.energy.ca.gov/title24/2008standards/ordinances/>

Joe Loyer, JMLoyer@energy.state.ca.us (916) 654-4811

Utility Contacts for Cost Effectiveness Studies

Southern California Edison

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San Diego Gas and Electric

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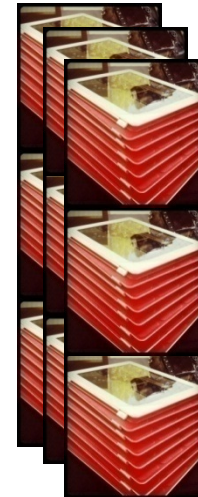
California Building Standards Commission

<http://www.bsc.ca.gov/default.htm>



2013 Standards Update

- First year savings: 464 GWh, 11Mtherms
 - Most of savings (90%) coming from nonresidential sector: buildings & processes
 - Savings dampened by economic downturn
 - After 30 years, savings accrue to the equivalent of 6 power plants; 1.7 million homes; 140 million iPads





2013 Standards Update

- Residential Highlights
 - Better windows U-factor and SHGC
 - More wall insulation in all climate zones
 - Mandatory HVAC and air distribution system installation testing
 - Ventilative cooling (e.g. whole house fans), where appropriate
 - Improved hot water system performance, saving both energy and water
 - “Solar ready” roofs - provides an area on roof that is penetration and shade free
 - Simplified rules for additions and alterations



2013 Standards Update

• Nonresidential Highlights

- Multi-level lighting control requirements
- Lower threshold for when lighting alterations need to meet code requirements
- Daylighting – better controls; windows with good visual transmittance; more skylights
- Higher cool roof reflectance & building envelope sealing
- “Solar ready” roofs
- HVAC economizers & speed controls on more and smaller equipment
- Cooling Tower Water Efficiency
- New efficiency requirements for process energy systems:
 - Commercial Refrigeration
 - Commercial Kitchen & Laboratory Exhaust Systems
 - Process Boilers
 - Data Center Cooling
 - Compressed Air Systems
 - Parking Garage Ventilation



2013 Title 24, Part 11, Appendices A5 All Nonresidential Buildings



Prerequisites

- High Efficacy Outdoor Lighting
- Service Water Heating in Large Restaurants – 15% Solar Fraction or 95% water heater efficiency

Tier I

- 95% of Energy Budget – lighting OR mechanical
- 90% of Energy Budget – lighting AND mechanical

Tier II

- 90% of Energy Budget – lighting OR mechanical
- 85% of Energy Budget – lighting AND mechanical

If the permit is only for the building envelope, then just the prerequisites must be met.



2013 Title 24, Part 11, Appendix A4 Newly Constructed Residential



Prerequisites

- Whole Building Design Rating
- Quality Insulation Inspection
- High Efficacy Indoor Lighting
- High Efficacy Outdoor Lighting

Tier I

- 85% of Energy Budget
- Limit of no more than 10,000 kWh per year

Tier II

- 70% of Energy Budget
- Limit of no more than 8,500 kWh per year

A proposed design exceeding the kWh/yr limit must use additional energy efficiency measures or on-site solar electric system to comply with the limit.



2013 Title 24, Part 11, Appendix A4 Newly Constructed Residential



Zero Net Energy ELECTIVE Performance Approach

- Meet all Tier II requirements
- Zero or less on the Whole House Design Rating





2013 Title 24, Part 11, Appendix A4 Additions and Alterations to Existing Residential Buildings



Prerequisites

- Quality Insulation Inspection
- High Efficacy Indoor Lighting
- High Efficacy Outdoor Lighting

Tier I

- 95% of Energy Budget – one mechanical system
- 90% of Energy Budget – two or more mechanical systems

Tier II

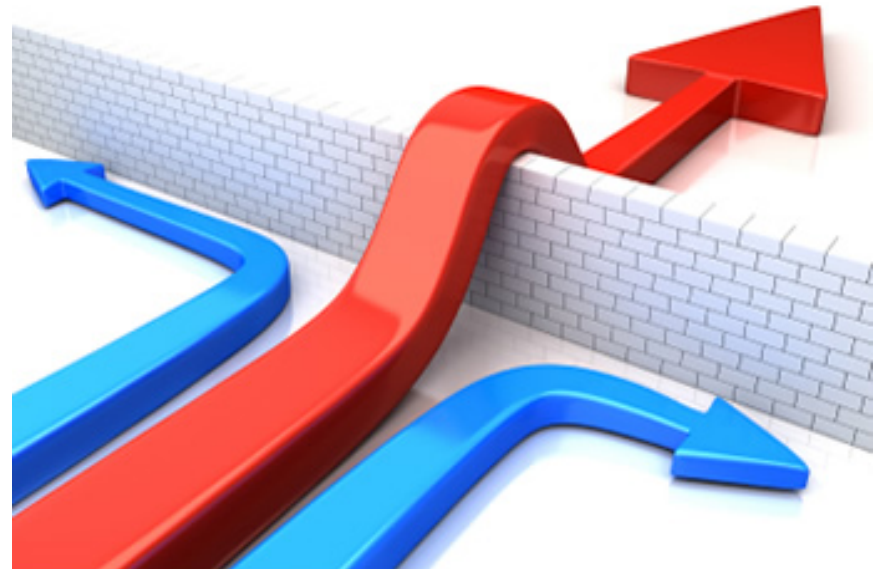
- 90% of Energy Budget – one mechanical system
- 85% of Energy Budget – two or more mechanical systems

If the addition or alteration changes the envelope with no change to the mechanical systems, then no additional efficiency measures above Title 24, Part 6 are required.



Ongoing Challenges...

- Changing building practices
- Improving code compliance
- Increases in plug load energy use





Electricity End Uses

Building Standards Don't Capture Plug Loads or Preempted Appliances

Over half of home electricity consumption NOT covered by Title 24

End-Use	kWh/yr	
Not covered by T-24	3,612	
Dryer	187	
Clothes Washer	109	
Dish Washer	73	
First Refrigerator	707	
Additional Refrigerator	313	
Freezer	138	
Range/Oven	105	54%
Television	645	
Microwave	122	
Home Office Equipment	17	
Personal Computer	602	
Well Pump	28	
Miscellaneous	568	
T-24 + Preempted	1,106	
Conv. Space Heating	37	
Heating	13	
Aux Space Heating	0	10%
Central Air Conditioning	876	
Room Air Conditioning	47	
Water Heating	133	
T-24	1,927	
Furnace Fan	164	
Attic Fan	14	
Evaporative Cooling	43	
Solar Water Heating	0	
Pool Pump	234	29%
Spa	25	
Outdoor Lighting	284	
Spa Electric Heat	28	
Lighting	1,136	
Total	6,645	

Natural Gas End Uses

End-Use	Therm/yr	%
Not Covered by T-24	51.4	
Dryer	16.2	
Range/Oven	31.7	14%
Miscellaneous	3.5	
T-24+ preempted	309.0	
Primary Heat	175.8	83%
Conv. Gas Water Heat	133.2	
T-24	10.2	
Pool Heat	5.6	
Spa Heat	2.9	3%
Auxiliary Heat	1.6	
Total	370.5	

- Not covered by Title-24
- Energy use partly influenced by Title-24
- Covered by Title-24

Weighted consumption from 2009 Residential Appliance Saturation Survey



The End



Reach Standards Development: mbrook@energy.ca.gov
Local Government Support for Reach Standards Adoption:
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