



2013 Building Energy Efficiency Standards

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Pre-rulemaking Staff Workshop

Mazi Shirakh

Patrick Saxton

Martha Brook



RESIDENTIAL Performance Compliance Approach for Solar Electric Systems*

Goals:

- Introduce renewable energy option for residential building energy code compliance
- Protect the thermal integrity of the building envelope
- Keep implementation as simple as possible

Proposal:

- Expected TDV energy from PV can be used to meet part of the Performance Standard's TDV energy budget
 - ✓ portion of energy budget that can be met w/ PV \leq 10%
- Thermal integrity of the prescriptive building envelope does not degrade significantly
 - ✓ degradation \leq 5%

* Other renewable energy systems can be considered if/when they can be modeled in the Residential Compliance Software



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

- Exploratory only at this time
- Begin to address loads not currently covered in Part 6
 - ✓ Interior and Exterior Lighting
 - ✓ Appliances
 - ✓ Miscellaneous Electricity (Plug Load)
- Significant savings potential but not in energy budget
- Assumptions and usage schedules from California Home Energy Rating System (HERS) Program



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

Goals:

- Introduce high efficacy lighting and Energy Star appliances option for residential building energy code compliance
- Protect the thermal integrity of the building envelope
- Keep implementation as simple as possible



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

Proposal:

- Expected energy savings from high efficacy lighting and Energy Star appliances can be used to meet part of the Performance Standard's TDV energy budget
 - ✓ portion of energy budget that can be met $\leq 5\%$
 - ✓ could vary if certain appliances are builder supplied
- Thermal integrity of the prescriptive building envelope does not degrade significantly
 - ✓ degradation $\leq 5\%$
- Verification required



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

- Interior Lighting
 - ✓ All permanently installed lighting shall be high efficacy and have vacancy sensor controls
 - ✓ Lighting must be installed in kitchen, bathrooms, utility room, and garage at a minimum
 - ✓ Any builder installed ceiling fans must be Energy Star and have fan light kit
 - No ceiling mount receptacle or empty ceiling junction box
- Exterior Lighting
 - ✓ All lighting permanently mounted to building shall be high efficacy and have photocontrol or time clock



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

- Appliances must be Energy Star
 - ✓ Dishwasher
 - ✓ If supplied by builder - refrigerator, freezer, or refrigerator/freezer combination
 - ✓ If supplied by builder – clothes washer
 - ✓ If supplied by builder – ceiling fans with fan light kit



RESIDENTIAL Performance Compliance Approach for Appliances and High Efficacy Lighting

- Miscellaneous Electricity (Plug Load)
 - ✓ Significant end-use electricity consumption
 - ✓ Plug load controls are available to ensure shutdown when not in use, but
 - Compliance and enforcement concerns
 - Persistence of savings concerns
 - ✓ No credit in this proposal
 - ✓ Potential measure for Reach



Reach Codes for Energy Efficiency

Title 24, Part 11 – Voluntary Appendices

RESIDENTIAL

- Tier I: 15% beyond Title 24, Part 6
- Tier II: 30% beyond Title 24, Part 6
- Prerequisites:
 - ✓ HERS “Design Rating” – whole building HERS rating w/o all requirements of HERS Whole House (exist. bldg) rating
 - ✓ Quality Insulation Inspection
 - ✓ High efficacy lighting – with hard wired lighting & occupancy controls in all functional areas, plus E* light kits in all ceiling fans
- Energy budget cap for electricity equivalent to 10,000 kWh/yr

NONRESIDENTIAL

- Tier I: 10% beyond Title 24, Part 6
- Tier II: 20% beyond Title 24, Part 6
- No prerequisites