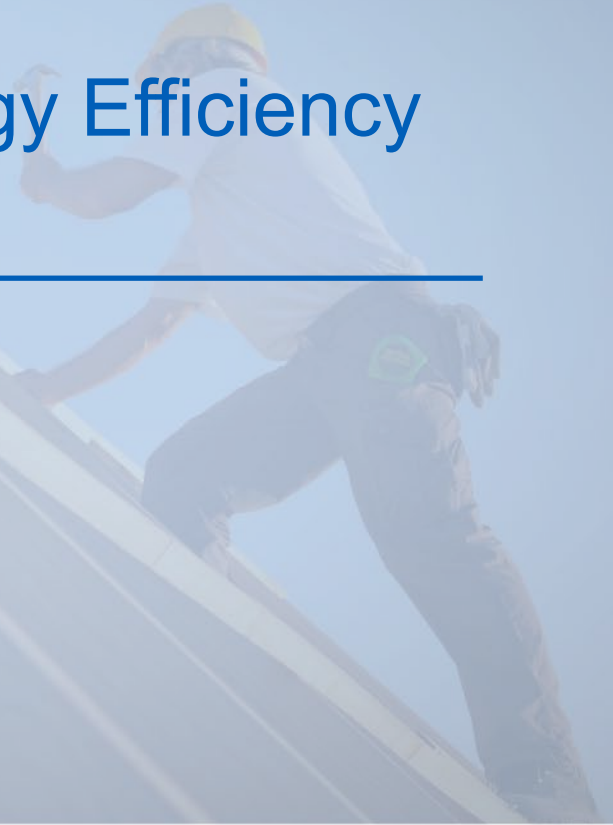



2019 Residential Energy Efficiency Standards



Building Products Efficiency Council
CBIA Fall Governance Meetings
October 23, 2018



What's New in 2019?



**CALIFORNIA
ENERGY COMMISSION**

NEWS RELEASE

For Immediate Release: May 9, 2018
Media Contact: [Amber Pasricha Beck](#) - 916-654-4989

[En Español](#)

Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation

SACRAMENTO - Moving to cut energy use in new homes by more than 50 percent, the California Energy Commission today adopted building standards that require solar photovoltaic systems starting in 2020. The building energy efficiency standards, which are the first in the nation to require solar, will reduce greenhouse gas emissions by an amount equivalent to taking 115,000 fossil fuel cars off the road.

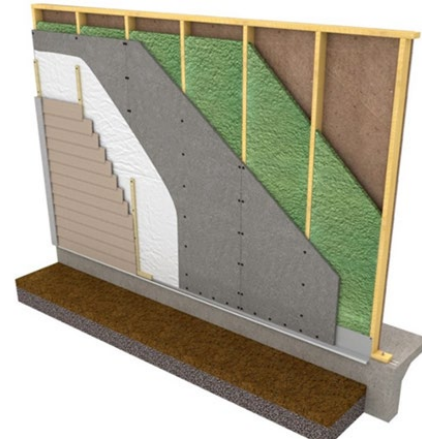
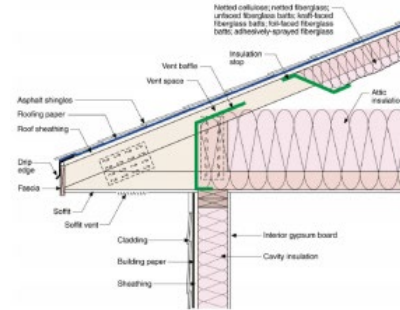
[Tweet](#)

Big Changes:

- Efficiency Improvements
 - ~20% Stringency Increase
 - High Performance Walls and Attics (Solar trade-off for EE eliminated)
 - Quality Insulation Installation (QII)
 - New MERV filter requirements
- Solar on every home
- Credit for storage
- Compliance Metric (TDV -> EDR)

Efficiency Measures

- High Performance Attics
 - CZs 4, 8-16
 - R-38/R-19
- High Performance Walls
 - CZs 1-5, 8-16
 - U-factor 0.048
- Quality Insulation Installation (QII)



Filter Requirements

- 2016: MERV-6 → 2019: MERV-13
- 2" Filter Required
 - Exception – may use 1" filter if you meet “face velocity” requirement (air flow)
- HVAC design should account for increase in static from MERV-13 (ACCA Manual J, D, and S)

Particle Removal Efficiency (ASHRAE 52.2-2017)			
	Particle Size in microns		
MERV	0.3-1.0	1.0-3.0	3.0-10.0
6	n/a	n/a	35 ≤ E3
8	n/a	20 ≤ E2	70 ≤ E3
11	20 ≤ E1	65 ≤ E2	85 ≤ E3
12	50 ≤ E1	80 ≤ E2	90 ≤ E3
13	50 ≤ E1	85 ≤ E2	90 ≤ E3

Solar PV Prescriptive Requirement

- Required for every home
- Sized to offset kWh consumption of the home
- Exceptions (can reduce size or eliminate PV altogether)
 - Shading
 - Roof area
 - Other
- **Cannot** be traded for efficiency (HPA/HPW)
- Community Solar/Storage Option



Battery Storage Compliance Credit



- Minimum size 5 kWh
- Credit for the Renewable/Flexibility EDR
- Provides flexibility for PV system size
 - Can reduce solar size up to 25%
 - Using the Performance Method, can oversize solar system by 1.6 times to meet over code goals (CALGreen Tier 1, CAHP, ZNE)
- 3 different levels of control with differing amounts of compliance credit
- Grid Harmonization Credit (GHC)

Energy Design Rating

Efficiency EDR + Renewables EDR =
Total EDR

Compliance Summary	CO2 Emissions	Energy Design Rating	Energy Use Details	CO2 Design Rating			
<p>EDR of Standard Efficiency: 48.1 - EDR of Standard Design PV: 18.7 = Final Std Design EDR: 29.4 Std Design PV: 3.17 kW (not current)</p> <p>EDR of Proposed Efficiency: 46.8 - EDR of Prop PV + Flexibility: 43.8 = Final Proposed EDR: 3.0</p>							
End Use	Reference Design Site (kWh)	Reference Design Site (therms)	Reference Design (kTDV/ft ² -yr)	Proposed Design Site (kWh)	Proposed Design Site (therms)	Proposed Design (kTDV/ft ² -yr)	Design Rating Margin (kTDV/ft ² -yr)
Space Heating	5,107		56.05	2,273		25.01	31.04
Space Cooling	1,645		61.06	353		20.06	41.00
AQ Ventilation	194		2.28	194		2.28	0.00
Other HVAC			0.00			0.00	0.00
Water Heating	2,924		34.29	1,030		11.14	23.15
Grid Harmonization						0.00	0.00
Photovoltaics				-9,416		-95.35	95.35

Strategic Insulation and High Efficiency HVAC Example in CZ 12 (Sacramento)

- Complies with efficiency requirements while avoiding complications of HPW
 - 2x6 Walls
 - Cost of lumber
 - Impact on lot size
 - Impact on square footage

	CEC OptB		
Below Deck Insulation:	19	38	38
Vented/Unvented:	Vented	Vented	Unvented
Ceiling Insulation:	38	19	0
WHF:	Yes	No	No
Water Heater 94	No	Yes	Yes
EER13/SEER15	No	Yes	Yes
93 Furnace			Yes
0.061 wall-2x4		Yes	Yes
0.065 wall-2x4			
Budget:	41.41	41.3	41.28
Margin	0	0.11	0.13



Workforce Instructions for
Standards and Efficiency

Questions?

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