

*Good Afternoon*

*HERS Verifications*

*and*

*California Residential Energy  
Standards*

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# Brief History of California Residential Energy Standards

1973 Gas lines and energy storages

1977 Legislation created California Energy  
Commission and mandated residential  
energy standards.

## Brief History of California Residential Energy Standards (cont)

1978 First energy standards based on

R-19 Attic

R-11 Walls

Single Pane windows (16%)

Trade-offs allowed based on equivalent heat loss.

## Brief History of California Residential Energy Standards (cont)

1983 True performance based standards using computer simulation (CALPAS & Micropas most common programs).

Loud hue and cry from industry.

Standards delayed 11 months at last minute.

Increase in energy efficiency remarkable.

## Brief History of California Residential Energy Standards (cont)

1983 - 1998      Energy standards periodically  
updated and tightened.

## Brief History of California Residential Energy Standards (cont)

1999 Residential Energy Standards include optional HERS verification requirements.

## Brief History of California Residential Energy Standards (cont)

2001    Emergency legislation mandated revised Residential Energy Standards. Revised standards took effect July 1, 2001.



# *2001 Residential Manual*

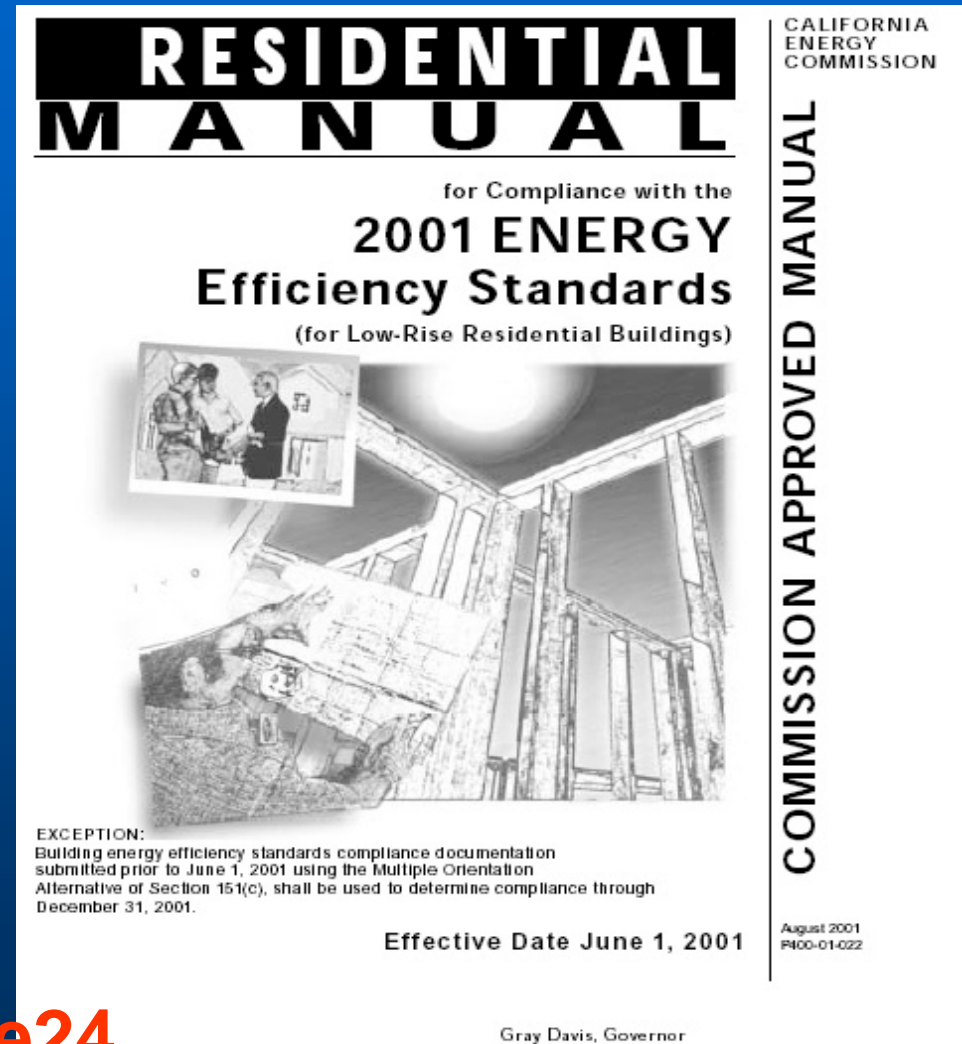
Available in PDF  
format from the CEC

website:

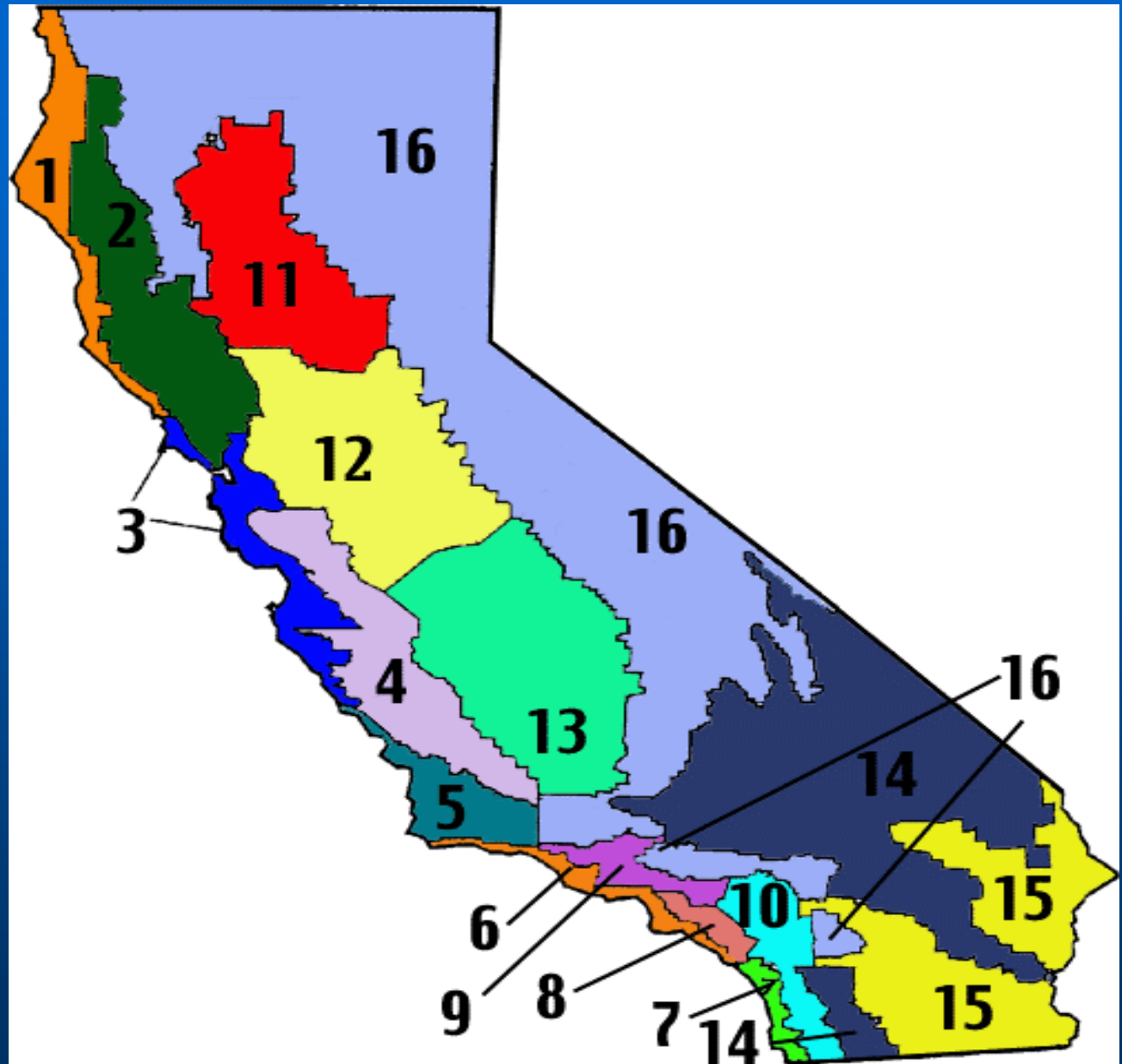
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[www.energy.ca.gov/title24](http://www.energy.ca.gov/title24)



# California Climate Zones



# Compliance Approaches

Mandatory Measures

Plus

Prescriptive Package

or

Computer Performance Methods

# Prescriptive Packages

- No trade-offs allowed between measures
- Seldom used for new construction
- Very common for additions

[illegible]

## Basic Prescriptive Package D

Climate Zone	Window SHGC	Roof	Window U-Factor	Duct	TXV
1	-	-	0.65	Sealed	-
2	0.4	RB	0.65	Sealed	TXV
3	-	-	0.75	Sealed	-
4	0.4	RB	0.75	Sealed	-
5	-	-	0.75	Sealed	-
6	-	-	0.75	Sealed	-
7	0.4	-	0.75	Sealed	-
8	0.4	RB	0.75	Sealed	TXV
9	0.4	RB	0.75	Sealed	TXV
10	0.4	RB	0.65	Sealed	TXV
11	0.4	RB	0.65	Sealed	TXV
12	0.4	RB	0.65	Sealed	TXV
13	0.4	RB	0.65	Sealed	TXV
14	0.4	RB	0.65	Sealed	TXV
15	0.4	RB	0.65	Sealed	TXV
16	-		0.6	Sealed	

# Computer Performance Method

Trade-offs allowed between all measures except mandatory measures

# EnergyPro Addendum - HERS Verification

## HERS Required Verification

These features must be confirmed and/or tested by a certified HERS rater under the supervision of a CEC approved HERS provider. The HERS rater must document the field verification and diagnostic testing of these measures on a form CF-6R.

	Plan	Field
The HVAC System "Res HVAC" includes Refrigerant Charge and Airflow Credit (or a TXV). A certified HERS rater must provide verification of the TXV, or measure the Refrigerant Charge and Airflow.		
The HVAC System "Res HVAC" is using reduced duct leakage to comply and must have diagnostic site testing of duct leakage performed by a certified HERS Rater. The results of the diagnostic testing must be reported on a CF-6R Form.		
This house has tight construction with reduced infiltration and a target blower door test range between 786 and 1833 CFM at 50 pascals. The blower door test must be performed using the ASTM Standard Test Method for Determining Air Leakage Rate.		
WARNING - If this house tests below 786 CFM at 50 pascals, the house must either be provided with a ventilation opening that will increase the infiltration to this level (SLA=1.5) OR mechanical supply ventilation must be provided.		



# HERS Verified Measures

1. Tight Ducts
2. Reduced Infiltration
3. TXV
4. ACCA Manual D
5. Ducts in Conditioned Space
6. Reduced Duct Surface Area

# How Did It Happen - Doug's Opinion

## 1. Energy “crisis” in California

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5. Support of organizations such as NRDC

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6. Role or impact of Building Inspector  
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7. Availability of energy consultants (CABEC)



# How Did It Happen - Doug's Opinion

6. Role or impact of Building Inspector organizations (CALBO & ICBO's)
7. Availability of energy consultants (CABEC)
8. CHEERS - Proven track record in the state and able to work with CEC

