Welcome

"Going for Performance"

The Move Towards Performance Testing in the California Building Energy Codes

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History of California Energy Standards

Brief review of how we got here and where we might be going tomorrow.

California Statehood 1850 until 1977

No energy standards.

Most homes built without any insulation.

Single pane windows.

Plenty of fresh air (or at least outside air).

1973 Gas Lines

1973 OPEC embargoed oil to the US and we starting spending hours waiting in line to buy gas.

Gas prices shot up to nearly $.50/gallon

1977 Warren Alquist Act

The Warren Alquist Act created the California Energy Commission and mandated the establishment of performance based energy standards.

1978 First Energy Standards

R-19 Attic Insulation

R-11 Wall Insulation

16% Glazing - Single Pane

Or a house with equivalent heat loss.

1979 California Passive Solar Design Competition

To help judge the entries, Phil Niles, an engineer from Cal Poly SLO, wrote a computer simulation program.

Surprising Impact

That computer simulation program was developed into the commercial programs: Micropas & CalPas.

1983 Revised Energy Standards

R-30 Attic, R-11 Wall, R-19 Floor Insulation

16% Glass – Dual Pane Windows – Windows shaded (East, South & West)

Caulking and Weatherstripping required

Or Computer Performance

Energy Consulting Industry

1983 Energy Standards were the trigger that started the current energy analyst/energy consulting industry for new construction in California.

1983 - 1998

Energy Standards Revised every 3 – 5 years.

Based largely on insulation, windows, HVAC equipment

1994

California utilities offered incentive for duct testing and sealing.

Significant push back from contractors but opened the door to HERS verifications.

1998

The 1998 Energy Standards first introduced HERS verifications.

Duct Testing

Blower Door

ACCA Manual D

Quality as a Conservation Feature

Realization that quality installation could be as important in the energy standards as insulation and HVAC efficiency.

HERS in 1998

The HERS measures were seldom used.

HERS industry was small, resistance from builders, fairly easy to find compliance using other paths (higher efficiency HVAC etc.).

2000 California Electricity Crisis

In response to the electricity crisis in 2000, the California Legislature mandated stronger energy standards.

2001 Energy Standards

The 2001 Energy Standards were the real beginning of HERS verifications.

15 – 20% HERS Verification

Estimated that 15 – 20% of new homes require HERS verification under 1991 Standards.

Still significant resistance from subcontractors and worries about construction delays.

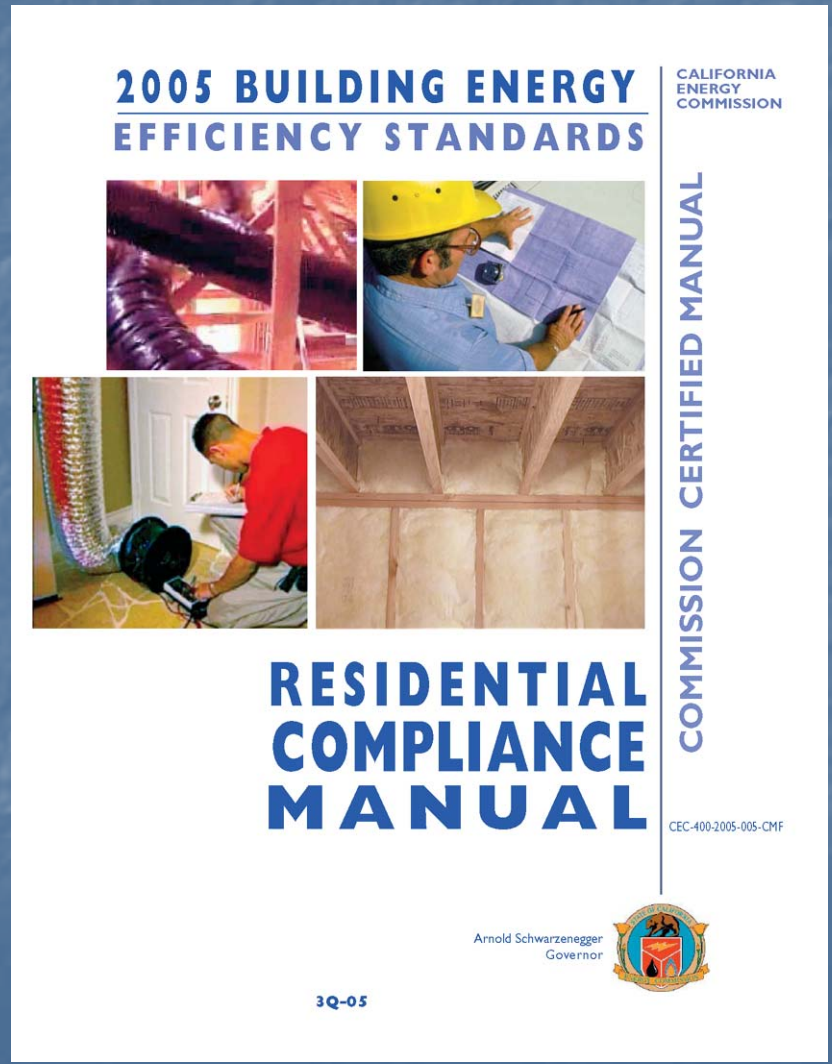
2001 NonResidential

Very, very small NonResidential HERS Verifications.

Duct Testing only and seldom used.

2005 Energy Standards

2005 Energy Standards Major Impact on HERS Verifications.



2005 Energy Standards - Res

Additional Residential Measures.

Duct Testing remains most common HERS measure due to impact in the energy standards and minimal cost.

2005 Energy Standards - NonRes

More Impact in NonResidential market,

but still very small.

Again, duct testing and sealing only.

2005 Energy Standards
HVAC Changeouts

First time California Energy Standards address existing homes and business.

Mandated by AB 549.

New Homes vs. Existing

Energy conservation potential going forward is much greater in existing homes than for new homes.

Addressing Existing Homes

While the energy conservation potential is significant in existing homes, it is a huge step for energy standards with many political landmines.

Duct Leakage in Existing Homes

Estimated duct leakage in existing homes is 35 – 40% of air flow. Reducing leakage to 15% will have a greater impact on consumption and demand than installing higher efficiency equipment.

Where is HERS Going in California

Residential New Construction

Increased HERS verifications every year

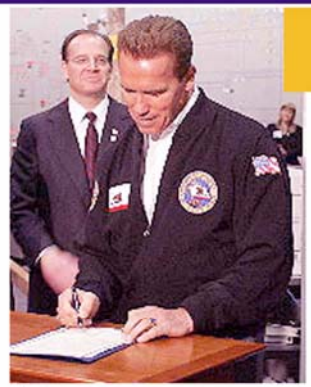
ENERGY EFFICIENCY AND DEMAND ANALYSIS DIVISION

BLUEPRINT

SEEKING EXCELLENCE

We interview Doug Beaman on training and the state of the art – page 4

NEW YEAR's RESOLUTIONS – page 3



Above: At the California Independent System Operator (Cal ISO) facility in Folsom on Deceember 14, the Governor signed his Green Buildings Executive Order.

Below: Following the Executive Order signing, Governor Schwarzenegger flipped a ceremonial switch to dedicate the upgrade to the Path 15 transmission line. The upgrade adds a new 500 kilovolt power line to the transmission corridor that links Northern and Southern California.

The Governor Proactively Supports Energy Efficiency and Renewables

On December 14, 2004 Governor Schwarzenegger held a news conference which included his latest action related to energy efficiency, Executive Order S-20-04, referred to as the Green Building Initiative. Governor Swarzenegger, speaking at the California Independent System Operator (Cal ISO) on the benefits of green energy, set the goal for state buildings to be 20 percent more energy efficient by 2015 and encouraged the private sector to do the same. The Green Buildings project will save taxpayers millions of dollars and preserve California's resources and the environment. His statement included the following:

"... Make no mistake. California will face big energy challenges this coming summer and also maybe for years to come. So, its very important that we're proactive and we act now and we don't wait for something to happen and then act."

"What is equally critical for our long term energy plan is a strong commitment to conservation. Conservation! Conservation! Conservation! ... Conservation is something that we can do right now in order to deal with our energy crunch. Every megawatt that we save is a megawatt that we do not have to produce..."

"I want all Californians to keep flexing their power and use energy wisely, buying energy efficient homes and buying energy efficient appliances..."

WINTER 2004–2005 No. 77

Where is HERS Going in California

NonResidential New Construction

Market continues small for next few years

Where is HERS Going in California

Residential HVAC Change-outs

~8% of all Change-outs currently are using duct testing and sealing. Original estimates were between 5 – 20% of change-outs.

Where is HERS Going in California

Residential HVAC Change-outs

Is 8% reason for despair?

Not in the least. The market potential is tremendous and will grow over time (don't look for 100%)

Where is HERS Going in California

Federal Tax Credits

Quote from a major builder to a rater,

"Anyone that can bring me a $2000/house credit is a hero in my book."

Where is HERS Going in California

Federal Tax Credits

Relatively short life (2007 & 2008) but significant book of business.

HERS verifications will make money for builder not cost them money.

Where is HERS Going in California

New Solar Home Program

~100,000 New Solar Homes will be built over next 10 years.

HERS verifications required.

(Presentation Wednesday Afternoon)

Where is HERS Going in California

2008 Energy Standards

New Construction – more HERS

Verifications

Where is HERS Going in California

2008 Energy Standards

Existing Homes – Watch for more details and listen to Bill Pennington (CEC) – HERS Verifications likely will be required at time of sale of existing home.

Where is HERS Going in California

- Residential New Construction – Yes

Where is HERS Going in California

Residential New Construction – Yes

NonResidential Construction – Yes (soft)

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Residential New Construction – Yes

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HVAC Change-outs – Yes

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Where is HERS Going in California

Residential New Construction – Yes

NonResidential Construction – Yes (soft)

HVAC Change-outs – Yes

Federal Tax Credits - Yes

Solar – Yes

Where is HERS Going in California

Residential New Construction – ***Yes***

NonResidential Construction – ***Yes*** (soft)

HVAC Change-outs – ***Yes***

Federal Tax Credits - ***Yes***

Solar – ***Yes***

Existing Homes – ***Count on it!!!!!***

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Questions