

Little Hoover Commission: February 27, 2014 Meeting

Climate Change Adaptation: Building Code & Construction Update

Testimony by
Robert E. Raymer, PE, Senior Engineer
California Building Industry Association

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Dealing with a Longer Fire Season: *The Good, the Fair and the Ugly*

In terms of fire protection in and around the Wildland-Urban Interface, there are three specific issues that need to be addressed to effectively reduce losses from Wildland fires.

***“The Good”*: New Building Codes for Fire Safety**

- Over the past decade, the Office of the State Fire Marshal has conducted three separate proceedings to update the Fire Safety Building Standards for new homes constructed in the Wildland-Urban Interface.
- As with California’s seismic, energy and green building standards, these fire safety standards are by far the most stringent in the nation. These updated fire safety requirements apply to the roof coverings, roof vents, walls, windows, and attached decks.
- Compliance with these provisions are checked numerous times during the construction process starting with initial plan check by the building department and including numerous field-inspections by building department or fire department staff.
- All of these individual requirements work together to substantially increase the resistance to fire of the home’s entire exterior exposure.
- In addition, Cal Fire has produced updated fire severity maps for adoption by all affected local jurisdictions. As you can imagine, given today’s technology, the detail and accuracy of these updated maps are significantly better than those used 20 years ago. And it is through the areas highlighted by these maps that the application of the more stringent building standards is triggered.
- Lastly, starting on 1/1/11, all new homes in California must be built with residential fire sprinkler systems. This new code mandate significantly reduces the potential for a fire that starts on the interior of a new home from destroying the structure and then spreading to neighboring homes or to any adjacent Wildland area.

“The Fair”: Defensible Space around the Structure

- The provision of defensible space around a structure has a dual purpose: it reduces the potential for burning vegetation (fuel load) to come into direct contact with the structure and it provides a safer environment from which fire suppression personnel can mount a defense of the structure as a fire approaches.
- The Public Resources Code (§4291) establishes a very clear statutory mandate regarding defensible space: if a structure is located on land that is covered with flammable material, the owner of the structure is required to maintain defensible space of 100 feet around the entire perimeter of the structure, or up to the property line if that is closer.
- Please note that this mandate applies to mountainous areas, forest covered lands, grass covered lands and brush covered lands...the key trigger is anywhere you have a “burnable fuel load” adjacent to a structure.
- The State and local efforts to implement and enforce these provisions are going well in areas that have **ongoing** programs...not so well where there is no long-term effort in place.

Ventura County Defensible Space Program:

- An excellent example of this is the successful program implemented by Ventura County over the past thirty years.
- The centerpiece of Ventura County’s aggressive prevention program is their “defensible space” mandate for county property owners. For the past 30 years, Ventura County has required property owners to remove all brush and debris within 100 feet of their homes or be fined. **For those that don’t comply, there are immediate consequences; the county hires contractors to clear the land and sends the owners the bill. In addition, the County adds on a \$635 administrative fee.** Of the nearly 15,000 notices sent out to property owners in 2006, Ventura County had to clear only about 18 parcels that year, down from several hundred per year in the program’s early years.
- As reported by LA Times Staff Writer Gregory Griggs, “While more than 3,600 homes were lost in the October 2003 firestorms, most were in San Diego and San Bernardino counties, only 24 homes were destroyed in Ventura County”.
- Related to this, of the 32,990 requests for disaster assistance received by the Federal Emergency Management Agency, less than 1% of those came from Ventura County residents.

“The Ugly”: Burnable Fuel Load (in undeveloped areas):

This is still a serious issue and will remain such until a common strategy can be accepted by a wide range of stakeholders: the fire service, local & state governments, environmental community, and the timber industry need to all be on same page. As the name implies, the “burnable fuel load” represents the amount of burnable material in a given area, commonly referenced as a “per acre” value.

Excessive amounts of burnable fuel load contribute greatly to (1) the intensity of a wild-land fire and (2) the amount of time that the fire takes to move through a given area. For example, the enormous intensity of the recent Angora Fire in Tahoe was directly attributed to the fact that there was **5 to 10 times the amount of burnable fuel load per acre that an otherwise healthy forest might have.**

Politically, this will be the toughest issue to deal with since it will involve the long-term management (and removal) of some burnable fuel in undeveloped regions adjacent to developed areas. Environmental groups have strongly resisted such efforts for over forty years. On a positive note, if transport and facility-location issues can be resolved, this waste product can be used to fuel bio-mass energy facilities.

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Responding to Diminishing Water and Energy Resources:

Energy Conservation: Regarding energy efficiency, several events over the past 12 years have prompted unprecedented changes in the state building codes required in all new residential construction. The electric deregulation crisis of 2000 and the later movement towards green building resulted in the Energy Commission's adoption of historically large increases in the stringency of the state's energy efficiency building standards.

Specifically, starting in 2002, the energy efficiency standards required in new construction incorporated the following increases in stringency:

- 2002: +15% increase in stringency
- 2005: +15% increase in stringency
- 2010: +20% increase in stringency
- 2014: +25% increase in stringency

At the present time, California's minimum requirements for energy efficiency in new construction are substantially more stringent than those required in other states and the CEC is already working on the next two sets of updates.

Water Conservation: In 2008, several state agencies began development of a set of "green building standards" which focused on, among other things, significantly reducing the amount of water consumption in new residential and commercial buildings.

Starting in January of 2011, local jurisdictions began enforcing mandatory minimum green building standards in all new construction. This code, referred to as CALGreen, establishes mandatory requirements for the maximum allowable water "flow-rate" for a variety of indoor plumbing fixtures.

The most significant indoor mandates contained in the CALGreen Code are:

- Low-Flow Toilets (must use 1.28 gal/flush or less)
- Low-Flow Showerheads (must use less than 2.0 gal/minute)
- Low-Flow Lavatory Faucets (must use less than 1.5 gal/minute)
- Low-Flow Kitchen Faucets (must use less than 1.8 gal/minute)

Regarding water use outside of the home; when landscaping is installed at time of construction, automatic irrigation system controllers (weather-based or soil-moisture based) must be installed to prevent unneeded irrigation.

The conservation benefits of these water-saving measures are very impressive. For example, the average family of four will save 14,000 gallons of water per year simply from the installation of the low-flow toilet.

California's Existing Building Stock

While the benefits of the energy and water conservation mandates for new construction are clear, climate change adaptation concerns are hardly limited to "new" construction.

At the present time, California has an existing housing stock of 13,624,000 dwelling units. Of these, well over 9,000,000 were constructed under building standards containing no required provisions for energy efficiency. This means 2 out of 3 homes in California never had to comply with any comprehensive energy efficiency mandate.

For water conservation, the numbers are even worse: 4 out of 5 homes in California never had to comply with any manner of water conservation mandate when first constructed.

This being the case, it is clear that vast energy and water savings potential exist within the existing housing stock.

To put this into perspective, a study produced by the California Homebuilding Foundation estimates that an expenditure of \$5,000 on an existing home will result in a reduction in greenhouse gas emissions that is 8 times the amount that a similar expenditure on a new home would produce.

This is entirely due to the fact that we have reached a point of diminishing returns regarding energy efficiency in new homes. The low-cost, low-hanging fruit has been picked. Yes, there is more that can be done to make new homes more efficient....it's just going to cost a whole lot more

Yet, the regulatory efforts of key state agencies remains focused almost entirely on **new** construction.

The State of California could achieve enormous levels of resource conservation by stepping up efforts to implement energy and water conservation efforts in the existing building stock. Statute has already been passed to get this going: AB 758 (Skinner) for energy efficiency retrofit and SB 407 (Padilla) for water conservation retrofit. Implementing these measures should become a priority for California's greenhouse gas reduction efforts.