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Docket Number:	17-BSTD-02
Project Title:	2019 Title 24, Part 6, Building Energy Efficiency Standards Rulemaking
TN #:	223282
Document Title:	George M Matthews Comments Next steps forward in energy efficiency for buildings in California. An open letter to California law-makers and our Energy Commission
Description:	N/A
Filer:	System
Organization:	George M Matthews
Submitter Role:	Public
Submission Date:	4/26/2018 10:05:27 PM
Docketed Date:	4/27/2018

Comment Received From: George M Matthews

Submitted On: 4/26/2018

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Next steps forward in energy efficiency for buildings in California. An open letter to California law-makers and our Energy Commission

Next steps forward in energy efficiency for buildings in California. An open letter to California law-makers and our Energy Commission

California's energy code is a fine thing but some of it is broken. Let's fix it. Our California building energy code evolves every 2 or 3 years. Here are the things we ought to move to as soon as possible. These are all simple, cost effective and helpful in keeping our homes comfortable at lower energy costs as well as reducing carbon in the atmosphere.

Insulation levels in the code don't reflect today's insulation technology. Let's move up to R23 from R19 (so 1980s!). At the same time, move to fire resistant insulation and sound deadening insulation. It the same stuff.

Time to move up to mineral wool.

Let's mandate radiant barriers on all roofing plywood. It makes no sense to install old fashioned plywood when one can install plywood/radiant barrier at the same cost. This will last the lifetime of the roof. Go into an attic with a plain plywood roof in the summer. Feel the heat pounding through the ? That heat is why people get expensive air conditioners installed. With a radiant barrier it is much cooler so AC systems don't have to work so hard. A radiant barrier in every new roof!

Air conditioning systems that are designed custom for your house

Calgreen and Title 24 energy code both mandate room by room calculations of building heat loss and gain. The software to do this is affordable, powerful and within reach of non-engineers. If you passed middle school math, you have the skills to use it. Let's enforce the code and have citizens benefit from the fruit of US software companies, the efficiencies and optimized design they allow. Guessing at sizing systems and ducts makes no sense. By downsizing previously oversized systems, we save more in capital than it costs to design a high performance, accurately sized, custom system. Building AC systems should be more like the "Build a bad-ass super custom Hot Rod with your crew" TV shows.

Let's code now. Let's enforce it. Stop guessing.

Your ducts still leak. The current code allows 15% leakage on existing duct systems. This might make sense on a 110 year old mansion with a plaster lathed mechanical chase. It makes no sense on a system that was replaced ten years ago in a wood frame tract house. These are different things. Let's create a tighter requirement for no-so-old ducts.

Attic hatches in California are all wrong. Let's fix it.

I have 150 pictures of attic hatches that are just a piece of drywall on a picture frame in a closet or in a hallway. Because they are not air sealed with a foam gasket they allow conditioned air to waft up into the attic all winter. All summer they allow radiant heat in as well. If an R30 attic has a 20" by 30" hole in it, it is no longer R30. Lets hold insulation contractors responsible to do their job and insulate attic hatches properly. No more energy holes in the ceiling.

Insulation is underappreciated and under-used technology.

I inspect attics and crawl spaces every day. The great majority are a hodgepodge of poorly installed material with gaps everywhere one looks. Let's start to improve insulation by training insulation workers to install material to manufacturers specifications. Doing that and applying quality assurance checks to their work will go a long way to improving our thermal comfort in home and at our work places.

Where is your breathing-air coming from?

California already has a ventilation air requirement to keep the air in our homes and offices fresh. Leaky buildings short circuit where our air might be coming from. We should tighten up the barriers between us and our attics and our lungs and our crawlspaces. Other states, lots of them, mandate blower door testing to figure out where the leaks are and how to fix them. Let's join the USA and do blower door testing on houses. Doing so really allows one to optimize energy calculations. We know that air-sealing houses is the single most cost-effective energy measure. Let's make home air testing mainstream in California just like it is the United States. California should not be an energy laggard in this powerful diagnostic tool.

Let's enforce CalGreen consistently throughout California. A quick web search of CalGreen shows that scores of Cities all have their own slightly different version of the "green" building code that keeps toxics out of homes and forces us to use water and energy more efficiently. Let's have one, improved version that is up-to-date and understandable to the building contractors that have to adhere to the code.