Recommended Changes to the Proposed 2016 California Building Energy Efficiency Code

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Docket Number 14-BSTD-01

Section 150(j)3 a & b – Insulation Protection.

Recommended Change:

Insulation Protection. Insulation outside conditioned space shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

Protection includes but is not limited to the following:

A. Insulation exposed to weather shall ~~either be rated for outdoor use or~~ be installed with a cover suitable for
outdoor service;~~ e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation shall be protected as above or painted with a coating~~ that is water retardant and provides shielding from solar radiation that can cause degradation of the material. Adhesive tape shall not be permitted for protection

B. Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space shall have a Class I or Class II vapor retarding facing.~~, or the insulation shall be installed at the thickness that qualifies as a Class I or Class II vapor retarder.~~

Reason for the Change

This modification is needed for energy & material savings as well as clarity and consistency of the standards language. The 150 j California standards is taken form the ASHRAE 90.1 standard for commercial buildings and the ASHRAE 90.1 standard section is not written in performance code language that of equivalent other California construction codes such as the Building, Residential, or Mechanical codes. This makes enforcement by inspectors very difficult.

This modification seeks consistency with performance in the Title 24 but also in function with the 2013 California Mechanical Code that requires refrigerant piping to be exposed for visual inspections before being covered.

Chapter 11 Refrigeration- 1111.4 Visual Inspection

Refrigerant piping & joints shall be exposed to view for visual inspection and acceptance by the AHJ prior to being covered or enclosed [ASHRAE 15.8.9].prior to being covered or enclosed.

Insulation encased in adhesives tapes makes inspection very difficult without removing and thus destroying the insulation.

Both the 2012 and the 2015 IECC Residential and Commercial prohibit the use of adhesives tape for protection of pipe insulation.

Covering pipe insulation without adhesives will allow removal and reusable installation after inspection. However when adhesives tapes are used to encase the insulation for protection, its subsequent removal for

either inspection, maintenance or for a change out of equipment will mostly destroy the insulation. The damaged insulation must now be replaced adding to addition cost, labor, manufacturing etc.

This change would eliminate unenforceable language in 150(J) 3 A "Insulation exposed to weather shall **either be rated for outdoor use**" There is no adopted standard that rates pipe insulation for outdoor use, or in non-condition areas. Many major pipe insulation manufactures have published papers stating that they have a limited UV resistance and if exposed outdoor it must be protected.

150(J) 3 B "or the insulation shall be installed at the thickness that qualifies as a Class I or Class II vapor retarder" Again There is no adopted standard, or chart that anyone can use to determine insulation thickness to meet a Class I or Class II vapor outdoors or in non-condition areas.

Consistence performance language is needed to unify understanding and compliance with all other California Building codes that are performance based language codes as such eliminating all the examples. The examples can be listed for reference in the Residential and non-residential manuals.

Cost Savings

This change would result in a cost saving for California and a savings from the consumption of energy to manufacturing of additional insulation. The need to insure proper insulation for energy efficiency is vital for continued energy savings.

The majority of insulation exposed to weather is pipe insulation that is used for hot and or low temperature fluids. Change out of HVAC equipment on homes and buildings built after 2005 usually have to replace pipe insulation that:

A. was not protected and the insulation has become thermoset and has no conductivity value.

B. destroyed by moisture or damaged from weather and wildlife.

C. encased in adhesives tape, when the tape was removed for maintenance or to install new equipment it destroyed the insulation.

Many inspectors have also commented on tapes which are unraveled due to adhesives breaking down due to bacteria, moisture, and heat.

Example: The majority of new homes and change outs after 2005 in California after the Energy Standard requirement for outdoor pipe insulation protection have had the pipe insulation encased in adhesives tape. The California Building Industry Association statistics data from 2005 – 2013 there were a total of 501,441 single family starts and Multifamily starts at 323,062 total of 824,503 units. The Air-Conditioning, Heating and Refrigeration Institute statistic data show that during the same years 2005-2013 a total of 38,964,105 non window or wall Central air units sold in the USA.

The 2000 Censuses shows almost 7 million single family homes in California. Taking a very conservative number and project only 1 million units out of all single family and multifamily units in 2014 will have maintenance or need a change out of their heat pump or compressor. Pipe insulation is sold in 6ft length so 6 million feet needed to replace, and at a cost of $1.70 a foot would equal **$10,200,000** in cost saving in one year to California homeowners. This savings could be used for better energy efficiency from higher seer units to air sealing, insulation and cool roofing etc.

Not permitting adhesives tapes for protection of insulation is providing sustainability and saving California home and building owners an estimated $10 million not including the saving from

nonresidential building. This change is in line with the California Green concept by making substantial enhancements to our environment from the result of manufacturing reduction, a goal of California Long-Term Energy Efficiency Strategic Plan.

Thank you

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