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2019 Building Energy Efficiency Standards - AEA Comments

Additional submitted attachment is included below.

ASSOCIATION FOR ENERGY AFFORDABILITY INC.

California Energy Commission
Building Standards Office
1516 Ninth St
Sacramento, CA 95814

October 15, 2017

Comments on:
2019 Building Energy Efficiency Standards Development
Docket # 16-BSTD-06

Dear Energy Commission,

The Association for Energy Affordability appreciates the opportunity to submit comments related to the development of the 2019 Building Energy Efficiency Standards. We offer the following comments to the CEC as it further develops the Standards.

AIR TIGHTNESS

It is our strong recommendation that the CEC enable whole-building air tightness as a compliance option in the 2019 Energy Standards for all building types.

The 2016 ACMs offer no credit for air tightness outside of single-family residential.

The 2016 Residential ACM, section 2.2.5.1 states:

In multifamily buildings, due to the lack of an applicable measurement standard, ACH50 is fixed at the above defaults.

Meanwhile, the 2016 Nonresidential ACM, section 5.4.2 states:

The infiltration method used for the standard design shall be the same as the proposed design.

By focusing on insulation as the basis for high-performance envelopes and effectively ignoring air tightness, we are leaving a very cost-effective and high impact tool on the table.

Air tightness is an area of enormous opportunity for cost-effective performance gains.

As California moves toward net zero, the Building Standards should give compliance credit for improved air tightness in building types other than single-family residential.

Numerous standards and model codes for air tightness already exist.

Air tightness testing standards and protocols:

- ASTM E1827 – Standard Test Method for Determining Airtightness of Buildings Using an Orifice Blower Door
- ASTM E779 – Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
- ISO 9972 – Thermal Performance of Buildings - Determination of air permeability of buildings - Fan pressurization method

- ENERGY STAR Multifamily High Rise Testing & Verification Protocols (http://www.resnet.us/professional/standards/Adopted_RESNET_Guidlines_for_Multifamily_Ratings_8-29-14.pdf)
- RESNET Guidelines for Multifamily Buildings (http://www.resnet.us/professional/standards/Adopted_RESNET_Guidlines_for_Multifamily_Ratings_8-29-14.pdf)

Example codes and standards that require testing:

- State of Washington Administrative Code, 51-11C-40241 C402.5.1–Air Barriers (http://apps.leg.wa.gov/wac/default.aspx?cite=51-11C-40241)
- Passive House standard (http://passiv.de/downloads/03_building_criteria_en.pdf)

WATER HEATING

Need both Prescriptive and Performance Path for Heat Pump Water Heating – Res & Nonres

For the Energy Standards to be truly fuel-neutral, there needs to be both a Prescriptive and Performance path for heat pump water heating (HPWH), for both Residential and Nonresidential Compliance. Currently when a project indicates that the space heating source is electric, the baseline for heating is an electric system. For water heating, however, an all-electric building is still compared to a gas baseline for water heating. This is not a fuel-neutral approach, and discourages high-efficiency, low-GHG HPWH.

AEA fully supports the comments made by the Natural Resources Defense Council and Sierra Club on this topic.

CBECC-Com needs to work for Heat Pump Water Heating in High Rise Residential

In many of California's milder climate zones, one of the largest end-uses for high rise residential buildings is water heating. The CBECC-Com software currently cannot model these systems in high-rise residential spaces. This is a major obstacle in advancing high-efficiency all-electric multifamily buildings. This should be fixed as soon as possible, preferably before 2019.

Additional Recommendation for HPWH Calculations

HPWH tank standby loss is factored into HVAC loads when the tank located within conditioned space, but does not factor in gas tank type water heater standby loss when it is located within conditioned space. We recommend the modeling software account for HVAC interactive effects of all tank-type equipment equally regardless of fuel type.

HPWH located in conditioned space are also interactive with HVAC space conditioning based on the cooling effect of the HPWH. This provides a heating penalty and a cooling benefit, and depending on the climate and building, the net effect could be a penalty. In this scenario, the HPWH intake and exhaust could be ducted to the exterior to eliminate this penalty. We recommend that the software be updated to include an option to specify whether the HPWH will have both intake/exhaust ducted to the exterior, which would eliminate the HVAC interactive effect in the software.

PASSIVE HOUSE AS ALTERNATE COMPLIANCE OPTION

Projects targeting Passive House certification should be allowed to submit their Passive House calculations in lieu of the standard Energy Code Compliance documentation.

The international Passive House Standard is a field-verified, performance-based super-low energy building standard. This standard goes well beyond performance levels required by any iteration of the California Building Energy Standards. Projects in California that wish to voluntarily pursue Passive House certification, however, must fill out all of the CA Energy Code Compliance documentation, in addition to the extensive calculations required for Passive House certification.

California should be making it easier, not harder, for projects to pursue the internationally-recognized high-performance Passive House standard. One way to do that would be to offer the option to submit Passive House calculations, reviewed and approved by an accredited Passive House Building Certifier, in lieu of Energy Code Compliance documentation.

GAS COST EFFECTIVENESS

Gas cost effectiveness should include cost of bringing gas service to the building, gas piping within the building, and ancillary gas equipment costs such as flue gas venting and combustion air venting.

We echo the comments of others, namely that the cost of bringing gas service to a building should be included in the cost effectiveness analysis of gas-based systems.

MINI-SPLIT HEAT PUMP TECHNOLOGIES

Limiting the efficiency performance values of mini-slit systems to minimum efficiency dramatically reduces the potential impact and market deployment of these energy-saving technologies.

We ask the CEC, manufacturers, and certification bodies to endeavor to quickly resolve any impasse so that this technology's performance efficiency can be better reflected in the 2019 Standards, or sooner if possible.

DEMAND RESPONSE AND LOAD SHIFTING

As the grid becomes increasingly renewable, and as code encourages solar PV systems to be installed, additional strategies for load shifting, demand response (DR), and site energy storage are needed. The CEC is leading this effort with a variety of alternative compliance options and we would like recommend the following:

Provide a tradeoff/credit for demand responsive or grid-interactive HPWH. Grid-interactive electric water heaters have proven in other parts of the country to provide cost effective demand response capacity for utilities. The HPWH equipment on the market today currently has the capacity to respond

to DR, but there is a nascent aggregator market in California that needs encouragement and the prospect of scale to provide this service to utilities/building owners.

We thank you for considering these recommendations, and look forward to the continuing development of the Building Energy Standards.

Sincerely,

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