

From: Tom Phillips <tjp835@sbcglobal.net>
Subject: **California's AB 758 Energy Efficiency in Existing Buildings: Comments on Draft Action Plan**
Date: July 12, 2013 11:02:33 AM PDT
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Dear AB 758 Team Members:

Thank you for holding the workshops on the draft action plan posted at http://www.energy.ca.gov/ab758/documents/#2013_june. Your efforts to improve energy efficiency in existing buildings are essential if we are to meet the goals of AB 32 for green house gas reductions while also protecting public health, worker health, and air quality.

Listed below are some initial comments on health, comfort, and safety issues associated with retrofitting of existing buildings to achieve low energy and low carbon performance. A PDF version of this email is attached.

1. Please clarify your plans for meeting the GHG reduction timeline and quantities in the AB 32 Scoping

Plan and the update that is currently underway (<http://www.arb.ca.gov/cc/scopingplan/2013comments.htm>). Also address the rate of successful implementation that you are assuming.

2. Existing building designs in California are based on outdated climate data, if any at all. Please assess how your programs will address projected increases in heat wave intensity, duration, and humidity due to climate change, without increasing the use of air conditioning that will increase carbon emissions and urban heat island effects. Also address trends toward larger household sizes and smaller homes in terms of indoor temperature and humidity impacts. If low carbon methods to keep buildings cool are not deployed, then existing buildings will become uncomfortable and perhaps hazardous during much of the year, perhaps within the next two decades. Several programs in North America and Europe are already future-proofing buildings for extreme heat projections, through measures such as external shading, thermal mass, night ventilation, insulation, and urban heat island reduction (see <http://www.resilientdesign.org/bigger-longer-heat-storms-are-coming-soon-will-your-building-keep-its-cool/>).

3. In order to optimize the public health and economic benefits of building retrofits, I recommend that you initially target efforts on buildings where the occupants are the most vulnerable health-wise to extreme heat and cold. For example, hospitals, elder care facilities, and low income

housing all host population groups that are especially sensitive to extreme heat and cold. The non-energy benefits of addressing vulnerable populations can exceed those from energy savings alone and should be factored into your plan.

4. The Draft Action Plan includes measures for commissioning of nonresidential buildings, but seems to omit this measure for residential buildings. I recommend that you employ commissioning and follow-up monitoring and pilot studies for all building types. This is necessary to verify that intended energy savings are achieved in the real world. Feedback from building occupants and owners should also be included because building operation and maintenance is largely dependent on human behavior. This type of information will provide quality control and satisfied customers, and these will both help market your programs, especially the voluntary programs. Continuous and rigorous evaluation of the progress in meeting the AB 758 and AB 32 goals is necessary if we really want to reduce the impacts of climate change, protect public health, and do it in the most cost effective way.

5. I recommend that you also verify that thermal comfort and ventilation standards are met, as part of the modeling, commissioning and evaluation processes. Thermal comfort problems are the most common type of complaint from building occupants in various building types. Problems with HVAC system installation and performance are still very common in California. Whole house

ventilation systems are used in a growing number of new and existing homes, but much R&D and installer training is needed to improve system performance. For example, see the recent review of heat recovery performance in England

(<http://www.zerocarbonhub.org/resourcefiles/ViaqReportFinalJuly2013.pdf>). Similarly, good ventilation is essential

for providing a healthful and comfortable building. Health, safety, comfort, and productivity are high priorities for many households and building owners, as noted in the AB 758 Scoping Report and other studies

(<http://www.energy.ca.gov/2012publications/CEC-400-2012-015/CEC-400-2012-015.pdf>).

Improving and maintaining thermal comfort and ventilation in existing buildings will be major market drivers and should be addressed and marketed explicitly in your programs.

6. What are your plans to address moisture and other major indoor air pollutants and the potential buildup indoors if buildings are made too air tight? The Commission has published a document on best practices for moisture control. The US EPA has published guidance on this issue for home weatherization. The ASHRAE 62.2 ventilation standard includes provisions for controlling moisture sources by local ventilation, and best practices are available for controlling other moisture sources such as condensation in the building shell. Low-VOC materials and finishes are specified in Tier II of the California Green Building Standards, Build It Green guidelines, and Collaborative for High Performance School specifications.

7. Obviously, California is still low on the learning curve and will hit many bumps in the road in its efforts to improve the performance of existing buildings. I recommend that you contact and learn from other programs that are well ahead of you in trying to achieve energy efficient, low carbon buildings through retrofit programs, e.g.:

Build Up, EU, <http://www.buildup.eu/>. Various tools, case studies, research studies, etc.

Note upcoming webinar on energy efficient retrofits, <http://www.buildup.eu/events/37278>, and.

Training for Rebuilding Europe, <http://www.buildup.eu/events/37278>.

Intelligent Energy Europe, EU retrofit demonstration programs, <http://www.iee-square.eu/>, http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1561.

Retrofit for the Future, UK, <http://www.retrofitforthefuture.org/>.

Technology Strategy Board, Built Environment Program, UK, <https://www.innovateuk.org/built-environment>.

Green Buildings Performance Network, 2013. Buildings for our Future – The Deep Path for Closing the Emissions Gap in the Building Sector.

http://www.gbpn.org/sites/default/files/06.BuildingsForOurFurture_Low.pdf.

Please contact me if you have any questions.

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