

December 19, 2018

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From: Hank Keating, AIA, Passive House Massachusetts (PHMA Board)

To: EEAC

CC: Office of the Massachusetts Attorney General

Re: Final Three-Year Energy Efficiency Plan 2019-2021, Passive House Training Programs

As we stated in our 9/25/18 submission, we were very glad to see the broad emphasis on Passive House training in the September 14<sup>th</sup> Draft Three Year Plan. Since then we have come to understand that the proposed trainings include funding the goal of creating an additional 90+ Passive House professionals in the State over the next three years including Consultants, Designers, Builders, Raters and Verifiers. In addition, we also understand that the Plan includes 30 “lunch and learn” trainings aimed at a mix of architects, engineers and developers plus 12 “hands on” trainings, presumably for tradespeople. We understand that all of this proposed training will be funded with a budget allocation of under \$200,000. Vs the \$1M we had suggested. We are very concerned that, taken together, these trainings will not accomplish the goal of introducing the development, design, and construction industries to Passive House, the simple but revolutionary building design approach that will be required to meet the goals of the Global Warming Solutions Act.

On December 11, 2018 we devoted our PHMA meeting to a broad discussion of Passive House training with a large cross section of developers, architects, engineers, general contractors, trades representatives and marketing professionals. We engaged over 50 people in a two and half hour discussion that, in the end, reinforced our belief that broader and more specific trainings will be needed if the potential of Passive House is to be realized over the Three-Year Plan. In fact, if the Plan produces the 90 additional Certified Passive House professionals, we are concerned that they may not have enough Passive House projects to keep them busy if additional trainings of developers, lenders, architects, etc. have not produced more demand for such projects. In addition, if not enough engineers, contractors and subcontractors have been trained, the Passive House projects that do proceed are more likely to experience unnecessary difficulties during design and construction.

As in the examples from our 9/25/18 submission for example, a structural engineer does not need CPHC training or Builder training, but they need a simple 2-3 hour training module on the importance of thermal bridging in Passive House projects. With this they can contribute to a Passive House design team without bringing in their typical details with multiple thermal bridges. Likewise a training module for HVAC engineers can familiarize them with the typical type of equipment selections that fit with Passive House and the specific issues of oversized equipment, internal heat gains and humidity loads. Such a training ahead of the design charrette and schematic design would be invaluable to the design team. The same would be true for the plumbing engineer – hot water becomes one of the biggest remaining loads in a multifamily Passive House and distribution losses become very significant – Passive House design requires a different way of thinking. Likewise for the electric engineer - interior common lighting and its controls becomes another load that is relatively higher because the primary heating and cooling loads have been so dramatically diminished. Between architects and all of these types of consultants, the goal ought to be to provide 30 – 40 individuals in each category training for a total of 150 – 200 trainings over the Three-Year Plan.

At our PHMA Meeting on the 11<sup>th</sup>, there was also a strong consensus that builder trainings are critical including the project executives, estimators, project managers, site superintendents, and their counterparts from each major subcontractor along with their actual, hands on, installers. We see these as half to full day training

sessions aimed directly at what these participants need to know about Passive House at the outset of a project. This is very different than what is available today for builder trainings either through PHIUS or PHI which typically include four+ full days, often at a remote location involving travel and lodging, and they tend to be a “one size fits all” training. The goal ought to be to provide such builder trainings to 30 to 40 Passive House project teams reaching probably 600 to 800 builder and subcontractor staff.

Ideally, it was agreed that many of these trainings should be project specific, explaining the specific materials, details, and equipment selected to meet the project’s Passive House requirements. This could be accomplished by creating a template / check list that could be adopted for each project to guide the trainers as they work with their teams of tradespeople. In addition, on-site training should include specific hands-on activities regarding project specific critical details such as window installation, air sealing, insulation installation, etc.

Before a Passive House project actually reaches the design professionals and builders mentioned above, developers, construction lenders, mortgage bankers, appraisers, real estate brokers along with funding and permitting agencies must become familiar enough with Passive House design to understand its potential and participate as productive members of Passive House development teams. Training modules aimed directly at these team members must be developed and made readily available early in the Three-Year Plan to help generate new Passive House projects. We see these as one or two hour training sessions that convey the basics and point the participants in the right direction if they want more in-depth information about Passive House. The goal ought to be to reach 100 to 150 such individuals during the Three-Year Plan.

Who will fund, create and deliver these trainings? We understand that both the Residential and C&I programs have discretionary budgets that could be used to fund these additional trainings. We hope that the discretionary funds available are adequate and the effort can be organized quickly enough to have a meaningful impact within the first year of the Plan. We believe that the most efficient way to develop these trainings would be for the Residential and/or C&I Programs to issue an RFP(s) to procure services from consulting companies with established Passive House experience and a demonstrated ability to create such training programs. There are several such consulting firms with offices in Massachusetts.

We urge the EEAC to insure that adequate training budgets are allocated within the Three-Year Plan and that the PAs seriously consider contracting with well qualified consultants to develop training programs like those discussed above. The RFPs for such training programs need to be developed within the 1<sup>st</sup> QTR of 2019 so that the actual training can begin by the 3<sup>rd</sup> QTR. PHMA has an education / training committee that would be willing to advise the PAs as they develop the RFP(s) if that could be helpful.

The October 23, 2018 Recommendations of the Buildings Working Group of the GWSA Implementation Advisory Committee make it clear that there is no path to the 2050 requirements of the GWSA that does not run through buildings. It goes so far as to call for a 2050 emissions compliant building code within the next two to three years. Passive House is the platform needed to accomplish this. This Three-Year Plan comes at a critical time and must offer meaningful Passive House incentives along with the training programs needed to bring Passive House to scale in Massachusetts.