Memo

10/13/20

To: Mass EEAC

From: Hank Keating, AIA, President, Passive House Massachusetts

EEAC Three-Year Plan 2022-2024 Testimony

RE: Electric Central Hot Water Systems for multifamily housing

The current Three-Year Plan's Passive House Incentive Program (PHIP) has been a tremendous success in getting dozens of developers and their design / construction teams to do Feasibility Studies and seriously consider completing a Certified Passive House project. Such a project is not required to be all-electric, but with the ground swell of interest in Net Zero buildings, many teams are seeing if they can use passive house as the very low energy foundation they need to achieve full building electrification. Central hot water systems are proving to be a major obstacle to this goal.

The technologies for electric central hot water systems exist and are widely used in Asia and Europe. The current obstacles to their use in this country are product availability, product cost, installation experience, maintenance experience, and finally in many areas of the country such as Massachusetts, operating costs, because of the price differential between gas and electricity. Not enough systems have been installed in our region to accurately assess capital and operating premiums, but estimates suggest that capital costs may range up to 100% more and operating costs up to 300% more as compared to central gas fired systems. Market transformation spurred by incentives are needed to advance the adoption of these technologies.

We recommend that the EEAC create at Electric Central Hot Water Incentive Program (ECHWIP) for multifamily buildings containing over ten units. The design of such a program is complicated especially because of the operating premiums that will continue well into the future. Rather than trying to develop a program that can rebate operating costs, it makes more sense to incentivize the use of add-on systems that can bring down the operating costs. Such systems would focus on pre-heating to lower the amount of electric energy needed to get the water to final design temperature. These could include solar hot water panels, geothermal pre-heat, internal waste water drain heat recovery, municipal sewage heat recovery, and any other promising pre-heat strategies. These technologies are needed in our region simply to approach parity with gas operations, but they are technologies we will need in the long run to lower source energy demand as we electrify buildings on the path to Net Zero.

How to size the incentive is the challenge. It probably makes sense to try to keep it simple – a dollar amount per unit. We have a technical team considering this and will have specific recommendations for the New Construction Workshop on October 27th .