NORTH COMMONS
AT VILLAGE HILL

Dear Neighbor,

You are receiving this letter along with a notice of Public Hearing for the Northampton City Council. As part of our construction project, North Commons at Village Hill LLC, c/o The Community Builders, as the Owner and developer of North Commons, is required to request City Council approval for the installation of (2) 2,000-gallon underground propane storage tanks to support the domestic hot water system for the entire North Commons building. We understand the choice to go with a fossil fuel might surprise some, and we wanted to provide some context on how we came to this decision and why it was the best choice for this multifamily, affordable Passive House building.

Sustainability – The building has been designed to meet Passive House standards, which is considered the highest energy standard of building technology. This large multi-family building also features a significant amount of open space including a playground, walk paths, and flat, green lawn space for the benefit of building occupants as well as the larger Village Hill community. In addition, approximately 20 acres of undeveloped land surrounding the North Commons site to the north and west and adjacent to the Mill River will be preserved through a conservation restriction with the City of Northampton.

Passive House Considerations– In order to achieve this important energy goal, we worked with our consultants to design the best system for our project in terms of sustainability. The factors that led to this decision included:

- *Source Energy Factors*: The source energy factor was 3.16 Btu/Btu for electricity, and the source energy factor for propane was 1.1 Btu/Btu. In other words, the source energy factor for electricity is 3x higher than propane due to distribution losses in the transmission of electricity. The Passive House Institute US "PHIUS" program uses source energy as part of their program requirements, and the source energy threshold is 6,200 kWh/person/yr. Because the source energy factor for electricity is 3x higher it is more efficient to meet this threshold with propane instead of electricity. If electric-fueled domestic hot water production were utilized in this instance, the project as a whole would have exceeded the 6,200kWh/person/yr. requirement and would not have been able to meet the Passive House design requirements/standard.

- *Available equipment*: At this time, the industry does not have air to water heat pump equipment that can adequately cover 100% of the domestic hot water demand in cold climates for dense multifamily buildings such as North Commons. The capacity of this equipment drops off at lower temperatures and cannot cover the peak demands associated with domestic hot water in winter months. As a result, there is not a great option for electric-fueled domestic hot water production in dense multifamily buildings in cold climates such as New England.

- *Industry Design Paradigm*: At the time of design there was not as much of an industry focus on full electrification of all building end uses (including domestic hot water), decarbonization, and an associated cleaning of the electricity grid. In the last three years, designers have just started to really focus on this. In fact, at the time of design, electricity in the USA was 'dirtier' than propane according to PHIUS. CO^2 emission factors were 90.86 g/kBtu for propane and 199.31 g/kBtu for electricity. Today, designers are forecasting and banking on a 2050 electrical grid that will be much cleaner than today, opening up options for future buildings.

Overall, The Community Builders is excited to be bringing this highly energy efficient, sustainable, affordable housing resource to Northampton. We are looking forward to working together with our neighbors to welcome fifty-three new families to the Village Hill Campus in 2022.