ENERGY & SUSTAINABILITY COMMITTEE

MEMO

TO: Sherborn Zoning Board of Appeals (ZBA)
Jeremy Marsette, Town Administrator
Jeff Waldron, chair, Select Board

FROM: Michael Lesser

DATE: November 28, 2023

RE: Comments on Greenwood Homes (affordable housing project)

This memo presents the ESC's sustainability and energy related comments and recommended conditions for the Greenwood Homes project. The ESC unanimously approved them at its November 28, 2023 meeting. This memo differs from the Final Draft sent on November 19th by the following: (a) a rationale is provided for these conditions even though they go beyond what is required for non-40B housing and (b) two of the appliance-related recommendations have been moderated.

It should be noted that these comments are also applicable to all residential projects in town. In the case of affordable housing, many of the building specifications noted should lead to lower ongoing operating and life-cycle costs and, therefore, result in better affordability.

Overall, to benefit residents of this project, the Energy and Sustainability Committee strongly recommends the following conditions marked by "**→**". Many of these conditions will also benefit neighbors and the region. We want to acknowledge that the project developer has expressed their interest in many of these conditions.

Water conservation and preserving water quality are particularly important to preserve this local and limited resource. Energy conservation is important for lowering the climate change impacts and meeting MA goals. Both are important for overall affordability as conservation measures have lower life cycle and environmental costs.

Rationale for Permit Conditioning of Affordable Housing (beyond current building code)

W**ater Use:** Due to the increased density of the housing project in comparison to local zoning and the resulting increase in density of groundwater use, the water efficiency and conservations conditions are appropriate to address local water supply issues even if beyond current zoning.

Energy Use and Solar Electricity: Due to the lower life cycle cost of Energy Star appliances and more efficient lighting, these conditions will improve the affordability of the housing. Furthermore, with the various incentives and though site-specific, solar electricity is generally a financially attractive investment; therefore, its inclusion to the maximum extent reasonable will also improve the affordability of the housing. It will also protect residents from future price increases and lower the cost of operating an all-electric home.

- ***Maximize Water Efficiency and Conservation***

Given exclusive use of limited local water resources that are shared by neighbors and the Town as a whole, both indoor and outdoor water use should be minimized. It is acknowledged that the developer's Project Description notes that "all fixtures will be low flow"; however, it is strongly recommended that the ZBA weigh in with specific conditioning of water use with the following conditions for covering indoor and outdoor water use:

- **Indoor/In-Home Water Use**

→ Require meeting certification or compliance with meeting EPA "**WaterSense Labeled Homes** Program", which requires WaterSense labeled toilets, bathroom sink faucets and showerheads as well as no visible leaks. https://www.epa.gov/watersense/homes-specification#version2homes

→ However, toilets are one of the largest uses for water in the home and the WaterSense standards are currently under revision. There is a consensus that the best new practical standard is: **"require toilets with a flush rate of 1.28 gpf for both single flush and the full-flush mode of dual-flush toilets" – which the ESC recommends requiring to save local water resources**. This type of toilet is commonly available, and this standard is only a slight revision of the current one. (There are pushes ultra-high efficiency toilets of 1.1 gpf max, but there are reservations about this design and commercial availability.) https://www.epa.gov/watersense/residential-toilets

- **Outdoor/Landscaping Water Use and Overall Landscape Plan**

→ **Require a landscaping plan that focuses on drought resistant flora and low water use.** (As below for sustainability reasons, this plan should also involve plantings that are native, pollinator friendly and should not involve pesticide use and only organic slow release nitrogen fertilizer.)

→ **Require any irrigation systems to be subsurface** to the extent possible as these have been shown to substantially reduce water consumption, relative to aboveground sprinkler systems with timers and rain sensors.

- ***Appliances in Homes***

The developer's Project Description notes that "Appliances ….. will be Energy Star certified", and to ensure this compliance, this should be a condition:

→ Require that, at a minimum, **all appliances be at least Energy Star** rated to lessen energy use. In the case of washing machines, the Energy Star rating also helps with water conservation.

In addition, in this final version, we are putting forth the following two points as recommendations:

- Recommend that **all cooktops be induction** for energy savings; not to mention the superior cooking attributes of such technology and that there are significant incentives.
- Recommend that **domestic hot water be produced by air-source heat pump water heaters** for which there are significant incentives.

- ***Lighting***

The developer's Project Description notes that "lighting will be Energy Star certified"; however, Energy Star certification for lighting only notes the use of LEDs; therefore, it is recommended to have more specific conditions.

Lighting is a major use of electricity, and the move to LED lighting has resulted in substantial energy savings. However, the marketplace has evolved whereby there is a large range in the efficiency of commercially available LED bulbs in terms of their lighting produced per unit of electricity, i.e. lumens/Watt, and a new standard is under preparation by the US DOE (possibly 120 lumens/Watt).

→ **Interior Lighting Efficiency:** Require that all built-in interior "down" lighting should have a minimum efficiency of 110 lumens/Watt, which is based on what is currently commercially available. This condition has affordability and sustainability benefits.

→ **Outdoor/Exterior Lighting:** Require all exterior (house and landscaping if any) to be high efficiency LED (i.e. >110 lumens/Watt) with warm color (i.e. 3000K or less and preferably 2700K) with built-in timers for either reduced wattage or turning off from late night to early morning, motion detectors as desired, and photocells to prevent day-time use.

→ **Quantity of Lighting:** Though commonly done, the amounts interior and exterior lighting installed should strive to be at the low end of the applicable "IES Footcandle" Recommendations to avoid excess lighting and achieve greater energy conservation.

• ***Solar Electricity***

The developer's Project Description notes "[t]he applicant will explore opportunities for solar energy in order to achieve net zero". This goal is applauded; and as part of the longer term affordability of these homes, especially if all-electric (as recommended), the follow condition is recommended:

→ **Maximize onsite roof-top solar-based electricity generation with no/minimal additional tree cutting** as a means of providing low cost electricity and with the cost savings from the economies of scale when doing all four homes at once.

• ***Battery Backup/Storage***

Utility incentives are making standalone battery storage when combined with solar financially attractive. Such storage also helps create a more resilient local electrical grid and avoid fossil-fuel generators. Batteries are generally integrated with solar systems and their inverters. As such, these technology synergies should be investigated and employed if readily available and at competitive cost when compared with multiple separate pieces of equipment.

Financial incentives: Battery storage can be a source of revenue for the project and residents through incentives and payments from the grid operator as this stored electricity can be tapped during peak demand periods. There are also tax and other incentives.

Though we are not recommending a condition related to battery storage, the developer should be encouraged to incorporate this in any solar installations as utility incentives are greater when done together.

• ***Electric Vehicle (EV) Charging***

in-Home EV Charging Stations: This is now required by the current Stretch Energy Code.

• ***Building Design***

→ To address climate change, it is recommended that the homes are **"all-electric" and utilize efficient heat pumps for heating and cooling unless Passive House design is used**. This commitment along with the new and pending energy code will lead to energy-efficient and low-carbon homes. The new code will also require energy conservation improvements.

→ Nonetheless, to the extent possible through the ZBA Comprehensive Permit process, the ESC **recommends that the developer also implement Passive House design or its elements to achieve even greater energy conservation**. The Passive House design is well-established and vetted and will lead to lower life-cycle costs and greater affordability, (ii) achieve improved indoor air quality and (iii) ensure compliance with MA climate action targets for reduced carbon emissions. There are significant utility/Mass Save incentives to cover much of any additional initial design/soft costs as well as additional building costs relative to current code-minimum compliant construction. Furthermore, the possible higher building costs are decreasing and are nearly always covered by lower operating costs.

- ***Building Materials***

→ We encourage the use of low environmental impact materials, when reasonable. Examples of this may be locally sourced timber and insulation produced via processes that minimize greenhouse gas emissions.