Sustainability

The Preservation Commission recognizes the commitment the Town of Brookline has made to the cause of sustainability and supports the goals of the Brookline Climate Action Plan. Given Brookline's well-preserved architectural heritage and its citizens' growing interest in environmental responsibility, it is necessary to examine the relationship between sustainability and preservation.

The following guide to sustainability in Local Historic Districts have been written to clarify the issues unique to historic areas regarding appropriate integration of energy efficiency, renewable energy, improved transportation & waste reduction strategies. The Commission recognizes that these systems are not historic, but can contribute to a more sustainable future for historic buildings. We will endeavor to accommodate them while avoiding or minimizing adverse impact on the historic fabric of individual buildings and districts.

> *Former President of the National Trust for Historic Preservation, Richard Moe, explains that "Most older buildings were constructed so that their individual components can be easily repaired or replaced when necessary. Because of their durability and "repairability", they have almost unlimited renewability."*

Steps to Sustainability in Brookline's Local Historic Districts:

1. Minimal Intervention
2. Reversibility of new additions.
3. Conservation and Utilization of existing materials.
5. Retention of traditional passive heating and cooling features.
4. Appropriate integration of new technology.

The principles of minimal intervention, reversibility and conservation are important to the goals of both preservation and sustainability when considering energy upgrades to an existing building. Minimal intervention conserves both embodied energy and historic fabric while also avoiding the impacts of new manufacture. Embodied energy is the energy required to extract raw materials and then process, manufacture, transport and install a building product. It also includes the energy expended by architects and builders to design and craft them. An existing building represents all of the fossil fuel needed to construct the building originally. Wasting this resource through unnecessary demolition—particularly in the name of energy conservation—is an idea in need of thorough reexamination. Reversibility further ensures that the new components systems can be effectively disassembled and repaired to prolong life cycle, mitigate waste and protect historic fabric.

With all this in mind, sustainable interventions of an historic property should be planned on a whole-building/site basis, even if they will be implemented in phases. This is in keeping with the advice of the

Secretary of the Interior's Standards for Sustainably Rehabilitating Historic Buildings.
https://www.nps.gov/tps/standards/rehabilitation/sustainability-guidelines.pdf
It is highly recommended that building owners conduct an Energy Audit to identify the efficiency of existing assemblies and potential upgrades.

Guidelines for appropriate adaptive technology

Electric Vehicle (EV) Chargers:

Electric vehicles were very much part of the mix of available vehicles in the early 1900's as seen by these two examples from Brookline's history.

An EV charging station and electric vehicle in the Corey Hill Garage on Winchester Street, 1915

Corey Hill Garage.

Photo Source "Report on the Annual Town Meeting 2017" Town of Brookline.

Electric Vehicle (EV) Chargers Draft Guidelines:

- The design and location of EV charging stations are subject to Commission review. Design of charging stations should be appropriate to location
- ~~Design of charging stations should be appropriate to location and use. Facilities should be readily identified by the electric car user but blend into the surrounding landscape/architecture. (Mehuthen City Wide Guidelines)~~
- Outlets & cords should be screened from view. Enclosures constructed from materials appropriate to the historic district should be provided for both wall and post mount applications.
- ~~Existing elements such as landscaping, walkways, curb cuts and other structural elements should be considered in a EVSE site plan. (Siting and Design Guidelines NY State Energy Research and Development Authority)~~

For locations of existing public charging stations within the Town of Brookline see here:
https://www.brooklinema.gov/1460/Electric-Vehicle-Charging

Solar Panel Draft Guidelines:

- When possible, renewable energy systems should be proposed for installation in locations where they will not be visible from a public way, park or body of water. In cases where this is not practical, systems attached to buildings should not obscure historic features from public view, or be visible in a way which significantly alters the profile or character of the building. ~~(our existing guidelines)~~
- Historic materials and features such as cladding, trim, windows, doors, ornamental detailing and other elements should not be removed or altered; however, installations on slate and terracotta tile and other historic roofing materials may be considered on a case-by-case basis if the system is designed to require minimal alteration to the historic roof. ~~should not be removed or altered. (our existing guidelines)~~
- ~~New construction should respect the historic streetscape. (our existing guidelines)~~
- ~~The Commission will consider the historic and architectural significance of the facades which may be affected.~~
- Reversibility of the proposed system will be emphasized.
- Free standing or detached installations should be located to minimize their visibility from public view and should not obscure historic features of nearby buildings. The Commission may request that installations be screened or enclosed with materials appropriate to the setting and district. ~~(our existing guidelines)~~
- There should be a minimum of two feet roof surface visible surrounding the collector array. ~~(Easton Historic Commission Guidelines)~~
- ~~Framing, piping and insulation should match the roof surface. (Easton Historic Commission Guidelines)~~
- ~~The inverter should be located on the interior whenever possible.~~ The Commission prefers that associated equipment such as wiring, piping and inverter be located on the interior of the building when possible. Exterior conduit and piping should be painted to match the wall or roof surface.
- Collectors should be mounted to match roof slope ~~(parallel to roof and no more than three inches above the roof surface.) (Easton Historic Commission Guidelines)~~
- Arrays should be visually coherent, arranged as a group to avoid single "stray" panels.
- ~~Roof integrated solar shingles must be low or non-reflective. (Hingham Historic Commission Guidelines)~~
- The application shall state the location, dimensions and design of equipment to be placed on the exterior of a building, and the route of exterior wiring or piping. Scaled drawings, manufacturer's specifications and photographs of similar installations must be included in the application. ~~(Hingham Historic Commission Guidelines)~~
- ~~A structural engineer should be consulted to ensure the building's capacity to support the additional weight of the solar array.~~

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Green Roofs:

Green roofs are designed to handle vegetation and soil loads. As a sustainability tool ~~"~~green roofs contribute to cooling and storm water management~~ and provide a co-benefit for public space to be used by the building's occupants." They can also "increase on-site storm water retention and help decrease urban heat island effects." (Boston Resilient Plan Guidelines)~~

~~"A green roof typically includes the following components: a supporting structure, continuous waterproofing membrane, root barrier, a drainage layer/moisture retention mat system, insulation, and soil and plantings. In order to provide a durable watertight long-term roofing assembly, the selection of an appropriate waterproofing membrane and the proper construction of detailing.." (Concord Historic Commission Guidelines)~~

~~Green Roofs Draft Guidelines:~~

- Cool-roof and green-roof technologies may be used in areas that are not visible from the public right-of-way, and in ways that do not adversely impact the appearance, structure, or moisture-performance of a historic structure. On new construction, the Commission will consider appropriateness to the surrounding neighborhood context. (Newton Historic Commission Guidelines)
- ~~Owners must consult a licensed architect or engineer as a first step to determine whether the structural capacity of the existing roof can support the green roof installation. It may be necessary to supplement the existing structure. (Concord Historic Commission Guidelines)~~
- ~~The soil media, insulation, and drainage/moisture retention systems must all be designed to reduce the volume of runoff. (Concord Historic Commission Guidelines)~~
- ~~Additionally, a licensed roofing contractor or vegetative roofing supplier should be involved to assist in reviewing the relevant details, drainage, installation, and any suggested quality control measures for testing of the system. (Concord Historic Commission Guidelines)~~
- ~~Vegetation should be set back from the edge of the roof to reduce visibility.~~

Rain Barrels:

Rain barrels are above ground water storage systems that connect to gutter downspouts. In urban settings they are more often used as a source of fresh water for landscaping. ~~The relationship between water and energy is not well publicized, however nationally approximately 3 percent of the nation's electricity is used to sanitize water. Brookline's energy use can be greatly reduced if homeowners utilize captured rainwater in instances where potable water is not required.~~

For guidance on the installation of rain barrels please refer to the section on gutters.

~~Rain Barrels Draft Guidelines:~~

•Rain barrels should not be visibly intrusive.
•Wooden barrels are preferred.
•If the rain barrel is visible from the public way it may need to be appropriately screened.
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