ENERGY EFFICIENCY

The City of Montpelier believes that ongoing maintenance of historic buildings, such as reasonable repairs and use of quality materials, extends the life of these structures and contributes to the vitality of downtown Montpelier.

In providing this document to local citizens, the Department of Planning and Community Development seeks to encourage the proper maintenance of historic buildings in the City and make information available to property owners well before the final design of a project, thereby saving both the owners and the City valuable time and money.

Use What You Have

Contrary to common perception, historic buildings can be as energy efficient as modern structures, particularly if the structure is well maintained. Reusing existing buildings saves the energy embodied in the original construction and the energy used in demolition.

Long before energy use became a modern day concern, historic structures were energy efficient. Without the use of modern central heating and cooling systems, residents had to devise ways to regulate temperature through non-technical means. Built-in energy efficient elements of historic structures can include:

- Thick brick walls with greater thermal mass to reduce heating and cooling demands.
- Operable windows for natural light and ventilation.
- Louvered slats on shutters to allow in breeze but provide shade.
- Retractable awnings to help regulate solar gain/loss.
- Shared party walls in businesses downtown to reduce surface area exposed to outside temperatures.

132 Main Street

This specific Design Review Brochure is intended for the use of property owners within the City of Montpelier's Historic District who wish to improve the energy efficiency of their property.

Energy Efficiency...in a Historic Building?

Enhance What You Have

Due to the inherent energy efficient aspects of historic structures, improving the overall efficiency of the building does not need to begin with expensive upgrades. Small things can make a big difference. For example, weather-stripping old windows and insulating the attic will likely be more effective in improving energy efficiency than spending thousands of dollars on new windows.

FUN FACT: Turning your thermostat down by 10 to 15 degrees for eight out of every 24 hours can save 10% on your heating bill.

The following steps are important to consider when seeking ways to improve energy use in a historic building. The key here is to optimize the building's components as they interact with each other, rather than approaching efficiency improvements in a piecemeal fashion.

Step 1. Consider having an energy audit of your building. This will help prioritize your action steps: locating where efficiencies could be enhanced and identifying improvements that offer the greatest return on your investment.

Step 2. Retain, maintain, and/or restore the inherent energy efficient aspects of your historic building, particularly with regard to daylighting and ventilation. This includes ensuring windows and shutters are operable; windows, if once inappropriately re-sized or filled with bricks, are restored; and ceiling fans, if historically present, are installed and maintained. In order to take this step, it is helpful to understand how your building was constructed and operated historically.

FUN FACT: According to the U.S. Energy Information Administration, the average energy consumption of commercial buildings constructed prior to 1920 is comparable to commercial buildings constructed since 2000.

Step 3. Improve energy efficiency of the building envelope. Check for leaks around windows (condensation during the winter could indicate leakage) and in your roof (as often indicated by quick melts or ice dams). Windows can be improved with weather stripping and, in some cases, caulking. Roofing can be improved with insulation that is ideally limited to the attic and crawl spaces around pipes and ducts.

Step 4. Increase efficiency of lighting. Install compact florescent light bulbs. Recent improvements in technology have increased and diversified the stock of compact florescent bulbs, making it much easier to find, and more affordable to purchase, bulbs for older light fixtures. Consider installing motion detectors to control lighting levels.

Step 5. Address heating and cooling loads. With the above improvements made, a new efficient HVAC system (with fan settings) can significantly reduce energy use.

FUN FACT: Compact florescent lights use 20 to 33 percent of the power used by equivalent incandescent light bulbs, and last 8 to 15 times longer. This is primarily because about 90 percent of the power used by incandescent light bulbs is emitted as heat, not light.

Step 6. Consider landscaping effects. Deciduous trees often provide the shade necessary to block light during the summer but lose their leaves during the winter, allowing the sun's heat to reach the building (awnings can do this too). Other plants help block wind.

Step 7. Modify user behavior. This includes such measures as: purchasing energy efficient appliances (identified by Energy Star's rating system), setting heat controls to mimic human behavior, installing motion detectors to ensure lights are turned off when not in use, installing heavy curtains in doorways to insulate heated areas, and attaching a self-closing mechanism to doors likely to be left open. If you are not the sole user of your building, do not forget to teach occupants about how to maximize the use of the building's energy system.

Making Plans

Considerations Along the Way

Alterations made to the exterior of any building in the Historic District require a permit from the City of Montpelier's Department of Planning and Community Development. While most designs and changes are easily approved, common issues affecting historic structures include:

- Replacing windows without assessing their significance and their potential to be upgraded. The financial payback from new windows is often much longer than generally assumed.
- Insulating walls without replacing historic trim.
- Adding a dormer or other glazing feature to enhance daylighting.
- Removing historic functional features like air shafts and cupolas that could enhance the energy performance of the building.

Please visit or contact the Department of Planning and Community Development at City Hall to inquire about modifications to the exterior of your building and the permitting process.

Tax Incentives

Tax incentives from the federal and state governments are often available for energy improvements. Check out **www.historicvermont.org/financial** or **www.dsireusa.org** for a more thorough list of tax incentives for efficiency improvements.

FOR MORE INFORMATION

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Also see Efficiency Vermont: www.efficiencyvermont.com.

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