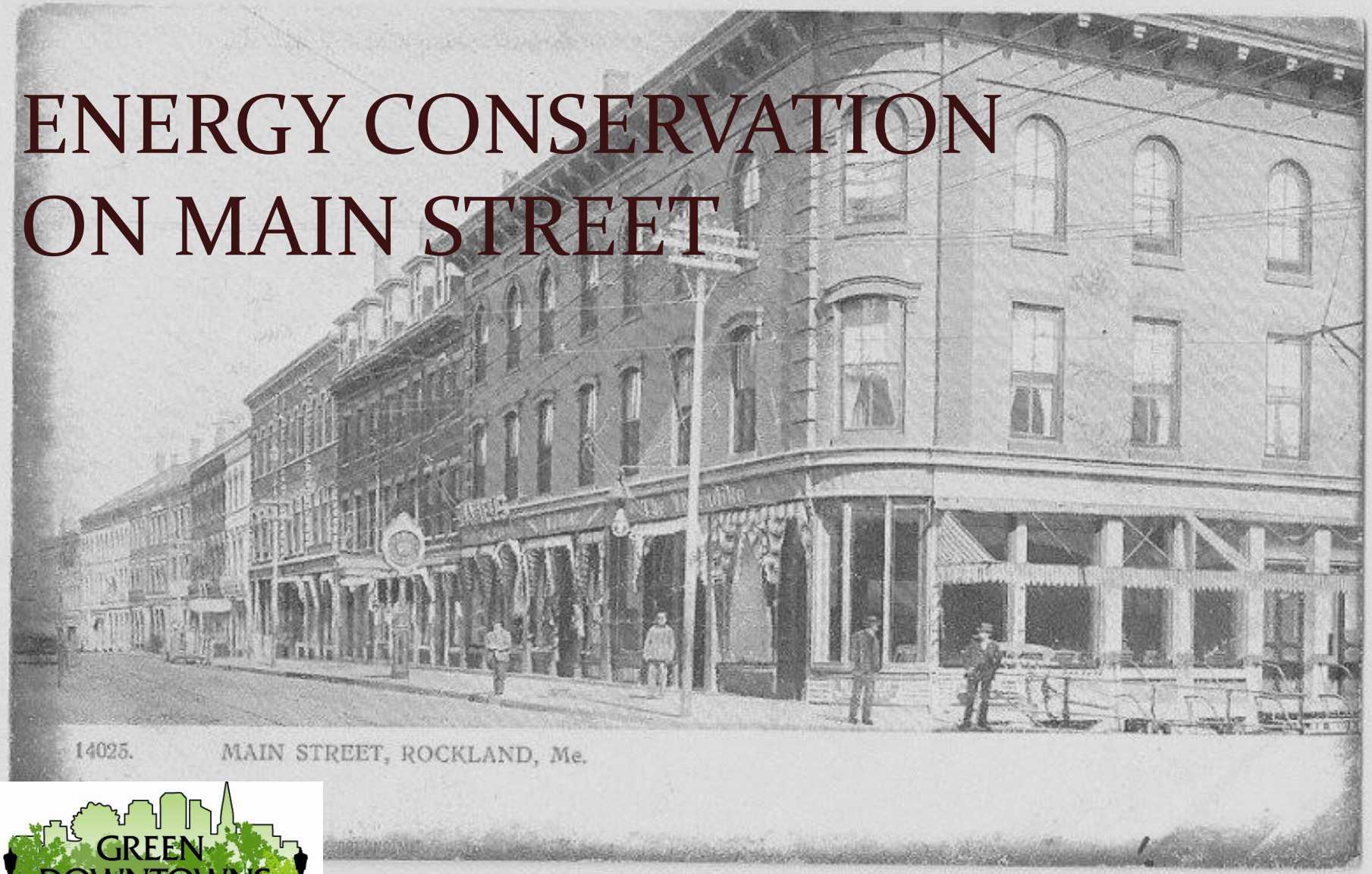
ENERGY CONSERVATION ON MAIN STREET



GREEN DOWNTOWNS

A PROGRAM OF THE MAINE DOWNTOWN CENTER

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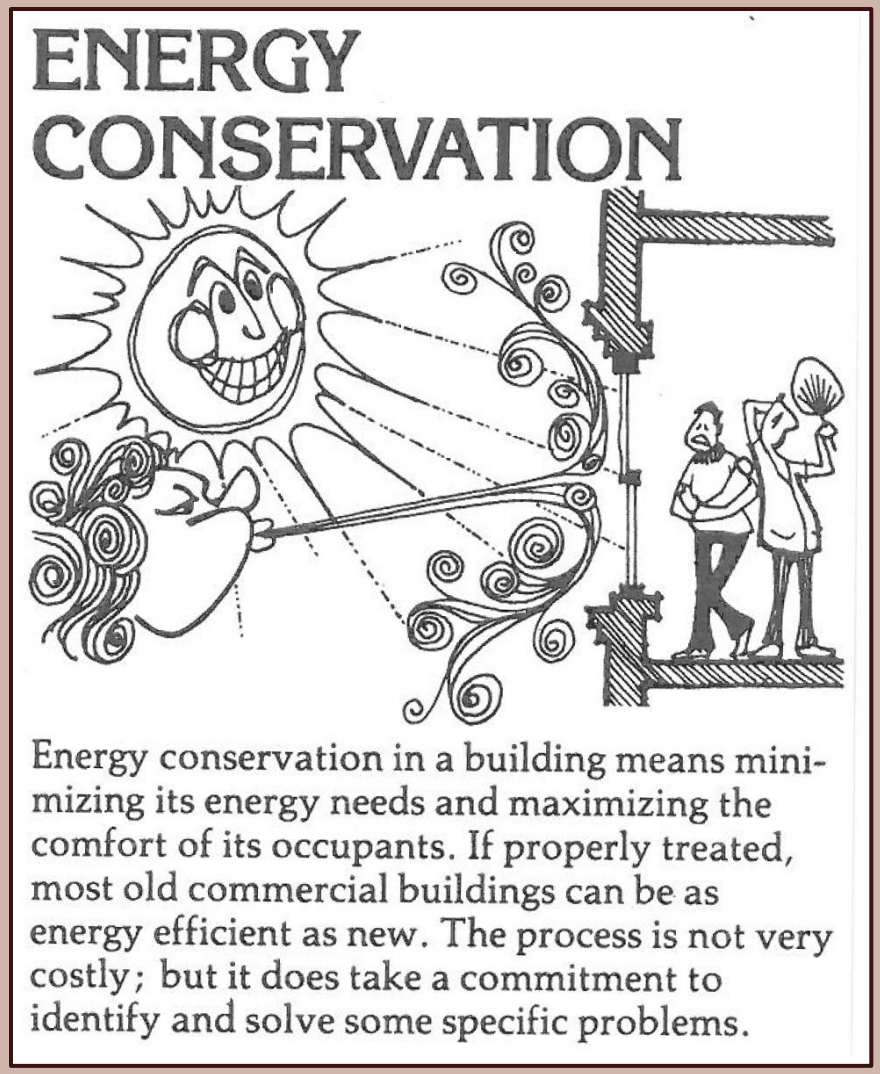
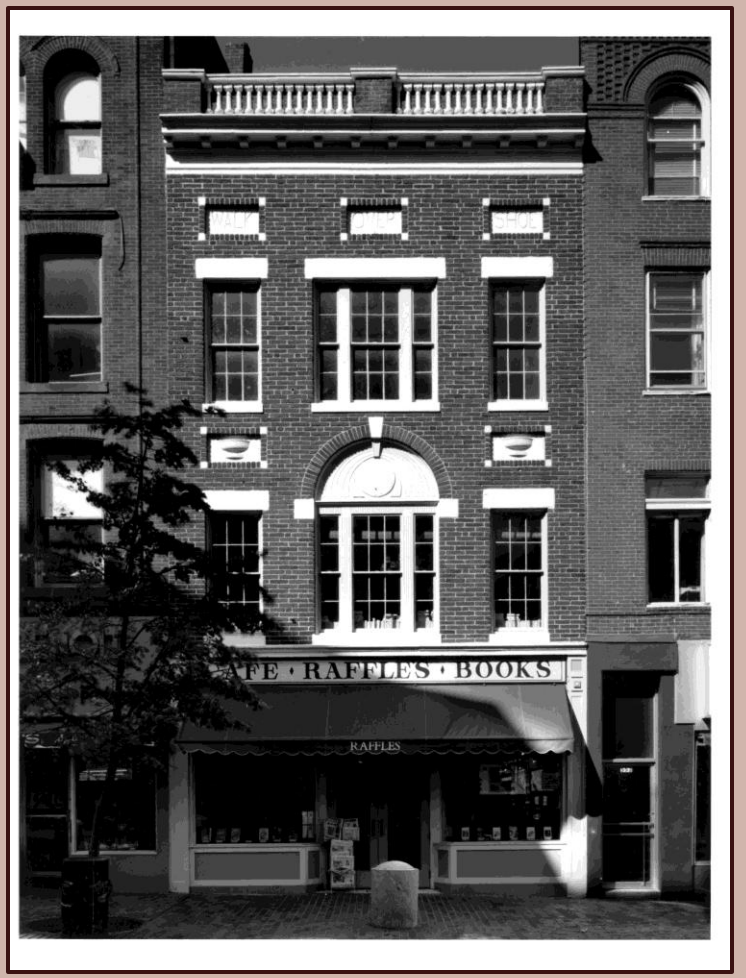
ENERGY EFFICIENCY OF HISTORIC COMMERCIAL BUILDINGS



INHERENT CHARACTERISTICS OF HISTORIC COMMERCIAL BUILDINGS

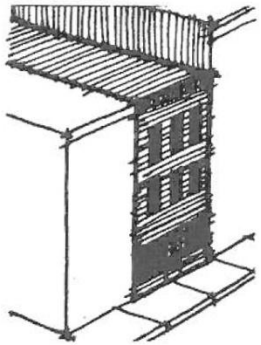
Capitalize on inherent features of historic commercial buildings:

- high ceilings
- quantity and size of windows
- load-bearing masonry walls
- shared (party) walls
- heat transfer between occupied floors

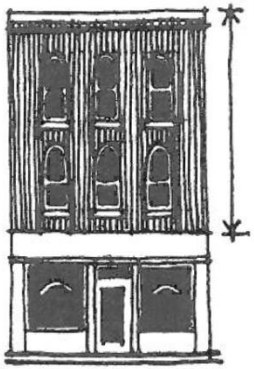


INHERENT CHARACTERISTICS OF HISTORIC COMMERCIAL BUILDINGS

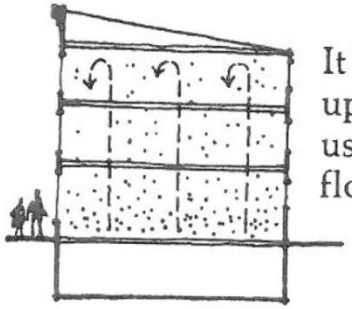
1. The traditional commercial building has some basic characteristics which help save energy.



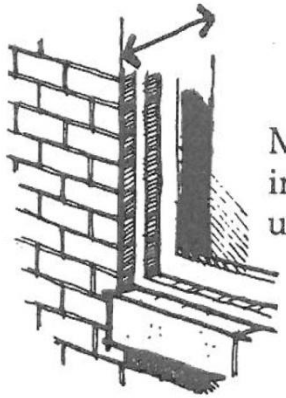
Relatively little of the building is exposed. Sides are usually covered (and insulated) by adjacent buildings.



Above the storefront, windows tend to be small and widely spaced. Compare this to the typical new building facade.



It has several floors. The upper stories trap and use heat rising from the floors below.

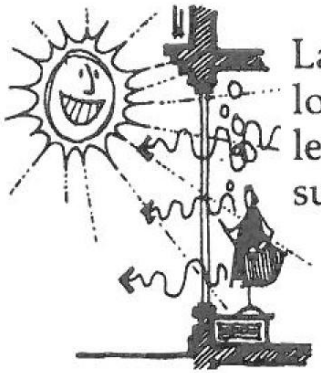


Masonry construction is good insulation. Also the walls are usually rather thick.

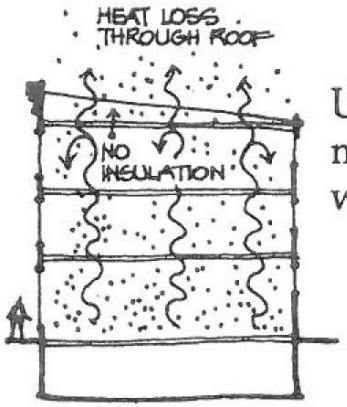
TYPICAL ENERGY PROBLEMS OF HISTORIC COMMERCIAL BUILDINGS

2. However, old commercial buildings have some typical energy problems too.

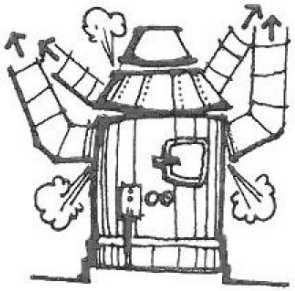
Old windows and doors haven't been maintained. Consequently they leak air and moisture.



Large storefront windows lose heat in the winter and let in the hot sun during the summer.



Uninsulated flat roof loses much usable heat in the winter.



Old heating systems are often inefficient and outdated.

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WINDOWS: SECRETARY'S GUIDELINES

- Maintain windows and louvered blinds in good operable condition for natural ventilation.
- Improve thermal efficiency with weatherstripping, storm windows, caulking, interior shades, blinds, awnings.
- Install interior storm windows with air-tight gaskets, ventilating holes, and/or removable clips to avoid condensation and allow for maintenance of windows.
- Install exterior storm windows which do not obscure or damage windows or frames.

WINDOWS: SECRETARY'S GUIDELINES

Not recommended:

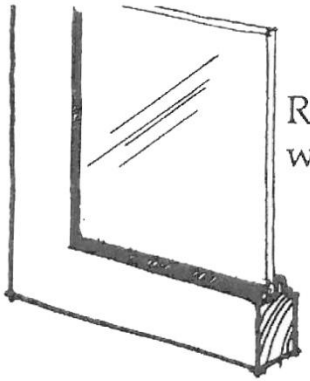
- Removing historic shading devices.
- Replacing historic multi-light sash with new thermal sash utilizing false muntins.
- Installing new exterior storm windows which are inappropriate in size and/or color.
- Replacing windows or transoms with fixed thermal glazing or permitting windows and transoms to remain inoperable rather than utilizing them for their energy conserving potential.

WINDOW TREATMENTS

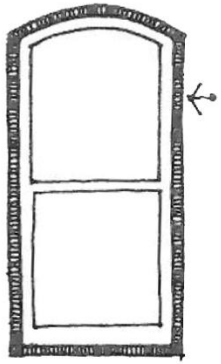
3. WINDOW TREATMENTS—Windows and doors should be sealed as tightly as possible. When closed they should not leak air or moisture.

Repair all windows and doors so that all their pieces fit tightly.

Carefully weatherstrip around all window and door openings.



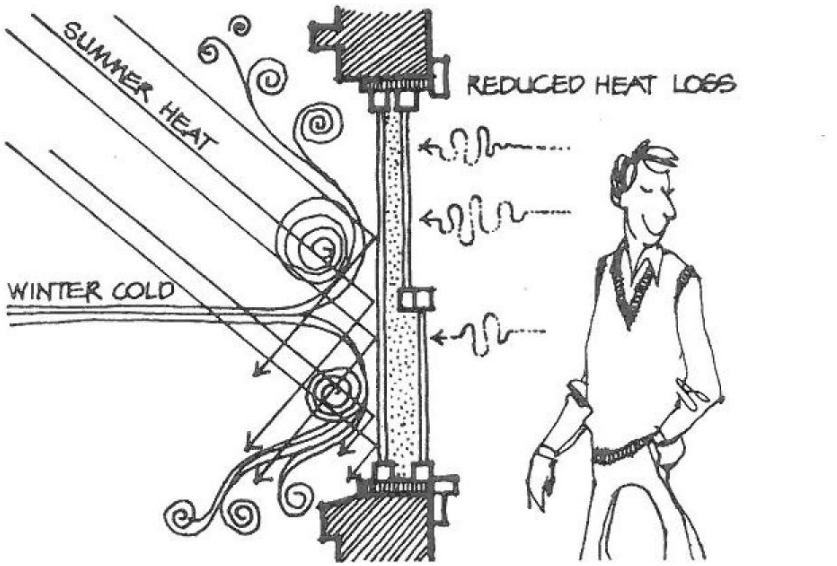
Reglaze all loose or broken window panes.



Caulk the cracks between window and door parts (non-moving parts); also those between the window or door and its masonry openings.

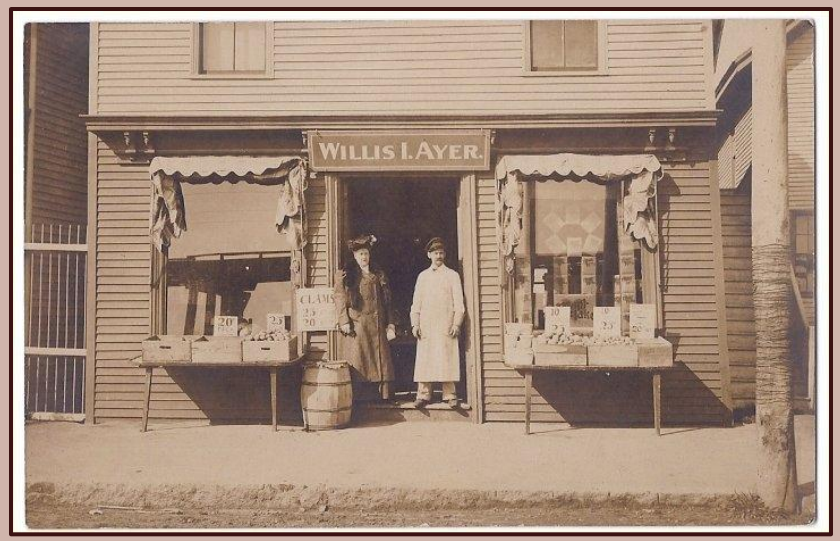
STORM WINDOWS

4. STORM WINDOWS—Storm windows can greatly reduce winter heat loss through wall openings. While rather impractical for the storefront (the constant opening and closing of the door negates their value), the use of storm windows on the upper facade and the rear and side walls should be considered.



WINDOWS: ADDITIONAL SUGGESTIONS

- Restore historic windows rather than replacing them.
- Some glass tinting products/systems may be appropriate for use.
- Insulate sash weight pockets (while maintaining operability).
- Reglaze existing single-glazed storefront windows with new double-glazed panels, or install a second layer of glass behind existing storefront windows.
- Retain historic interior shutters and transoms for their inherent energy-conserving attributes.



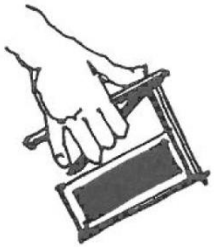
DOORS, ENTRANCES AND PORCHES

- Weatherstrip doors and caulk door frames.
- Maintain porches and double vestibule entrances so that they can retain heat, block the sun, and provide natural ventilation.
- Not recommended: changing the historic appearance of the building by enclosing open porches.

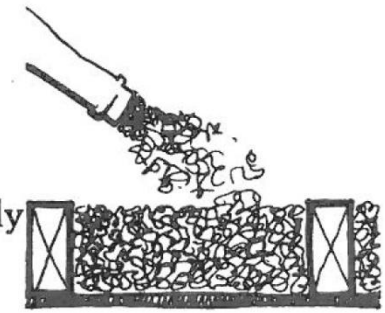
INSULATION

5. INSULATION—Carefully applied insulation can greatly improve a building's energy efficiency. While many kinds are available, two are most appropriate for downtown buildings.

Fiberglass consists of spun fibers attached to a paper backing. It is laid by hand and can be stapled to wood studs or joists.

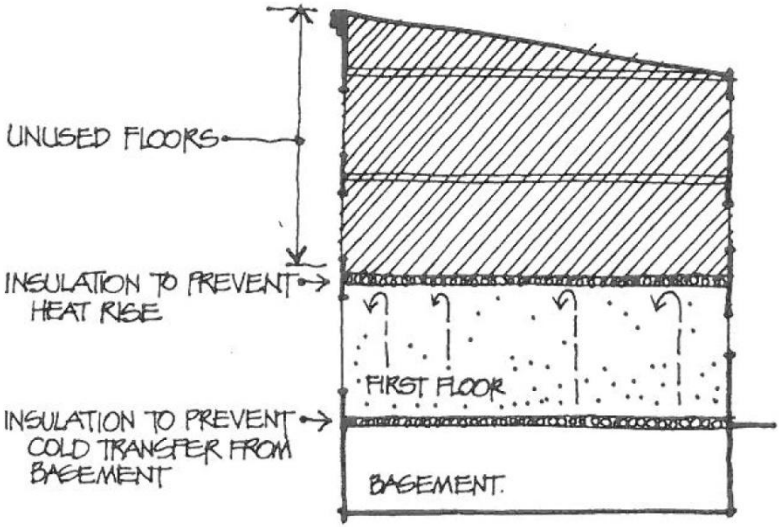


The second kind is cellulose, shredded paper treated with a fire retardant. It is installed using a mechanical blower. This is ideal for relatively inaccessible parts of of the building.



As a general rule, the thicker the insulation blanket is, the better. Proper placement of insulation is very important. The roof is a critical location since much of the winter heat loss takes place there.

If the upper floors are not in use, consider temporary insulation of the second floor to trap heat below it. Insulation of the first floor will protect the store from the cold basement space.



INSULATION: SECRETARY'S GUIDELINES

- Install thermal insulation in attics and in unheated basements and crawlspaces to increase the efficiency of mechanical systems.
- Install insulating material on the inside of masonry walls to increase energy efficiency where there are no interior character-defining features.
- Avoid thermal insulation with a high moisture content in wall cavities.

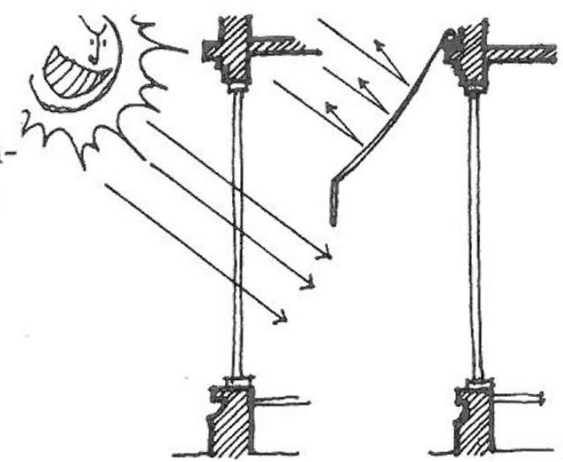
INSULATION: ADDITIONAL SUGGESTIONS

- Insulate the roof and/or top floor ceiling.
- Insulate exterior-facing foundation walls.
- Install temporary insulation below unused spaces and above unheated basements.
- Use environmentally-friendly insulation materials.

STOREFRONTS

6. THE STOREFRONT—With all its glass, the storefront presents special energy problems. It loses heat in the winter and, if exposed to the summer sun, it gains heat.

Where the sun is a factor, an operable awning provides a partial solution. (See guidelines sheet—AWNINGS.) Extended in the summer, it shades the storefront. Retracted in the winter, it can allow the warming sun into the store.



Insulated or tinted glass can also reduce the inefficiencies of your storefront window. Some of the value of insulated glass will be lost by the opening door, but nighttime protection can be substantial. With tinted glass, remember that the darker the window, the more your storefront will lose in transparency—and visibility from the street.

Location of heating vents near the storefront windows can minimize the discomfort of winter heat loss as well.

Because of these special problems, do remember that good weather stripping and caulking of storefront windows and doors is very important.

ROOF

- Insulate roof and/or attic to the highest degree possible.
- If the roof structure can support it (or can be modified to support it), install a green roof to increase roof insulation, retain storm water (thereby minimizing runoff), and contribute to cooler temperatures in the downtown.

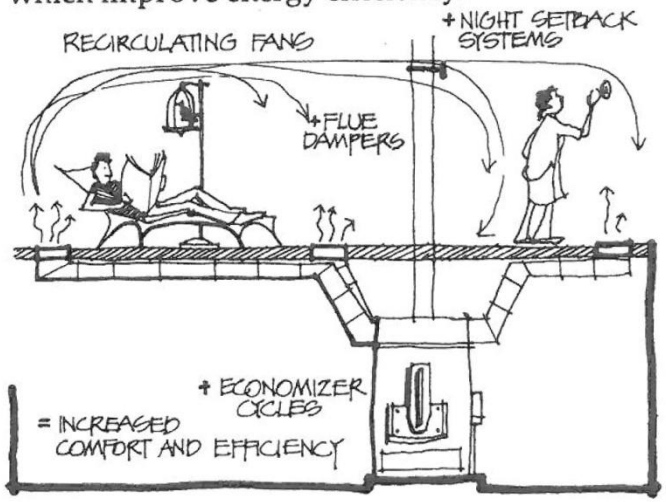
Photo courtesy Amy Cole-Ives, Sutherland Conservation & Consulting

HEATING/VENTILATING/AIR CONDITIONING SYSTEMS

7. THE HEATING SYSTEM—If your present heating system is old or inefficient, it is probably wasting energy. Have it checked and consider replacing it if possible.

Since a wide variety of systems and heating units are available, look carefully at the benefits and disadvantages of each one.

Are there options for the system which will help you save money in the long run? Economizer cycles, night setback systems, flue dampers, and recirculating fans are all devices which improve energy efficiency.



HEATING/VENTILATING/AIR CONDITIONING SYSTEMS

- Carefully evaluate existing HVAC systems to see if they can be upgraded rather than replaced.
- If obsolete, replace existing heating and cooling systems with new systems to take advantage of recent significant improvements in energy efficiency, occupant comfort, and air quality.

ELECTRICAL SYSTEMS

- Use energy-efficient lighting (CFL, LED) and appliances (Energy Star).
- Use on-demand water heaters.
- Use modern system controls
- Consider solar electric power generation (consult local zoning ordinances).

PLUMBING SYSTEMS

- Use high-efficiency, low-flow plumbing fixtures.
- Use on-demand water heaters.
- Consider solar hot water system (consult local ordinances).

SITE: SECRETARY'S GUIDELINES

- Retain plant materials, trees, and landscape features which perform passive solar energy functions such as sun shading and wind breaks.

SETTING (DISTRICT/NEIGHBORHOOD): SECRETARY'S GUIDELINES

- Maintain those existing landscape features which moderate the effects of climate on the setting such as deciduous trees, evergreen wind-blocks, and rivers, ponds, or harbors.
- Avoid stripping the landscape features and landforms so that the effects of wind, rain, and sun result in accelerated deterioration of the historic buildings.

CONCLUSION

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Photo courtesy Rockland Main Street; Peter Gross, Architect

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