Carson City Planning Division
2621 Northgate Lane, Suite 62
Carson City, Nevada 89706
(775) 887-2180
Plandiv@ci.carson-city.nv.us
www.carson-city.nv.us

MEMORANDUM

To: Historic Resources Commission **F-1**

From: Jennifer Pruitt, Principal Planner

Date: May 13, 2010

Subject: HRC-10-020
Renewable Energy Discussion

DISCUSSION:

This is a discussion only item, to evaluate the possibility of the Historic Resources Commission creating standards associated with Renewable Energy Projects in the Historic District.

Staff has assembled a packet of information that includes state law, the Carson City Municipal Code applicable sections, ITS Number 52 Incorporating Solar Panels in a Rehabilitation Project and relevant articles.

With the HRC's direction, the Planning Division staff will research and prepare draft standards related to renewable energy for the HRC's review and approval on the July 08, 2010 Historic Resources Commission meeting.

National Park Service
U.S. Department of the Interior
Technical Preservation Services

ITS Number 52

Interpreting The Secretary of the Interior's Standards for Rehabilitation

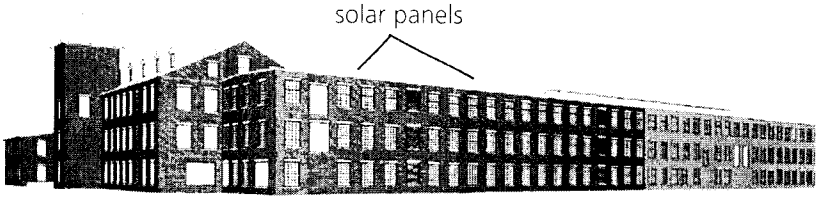
Subject: Incorporating Solar Panels in a Rehabilitation Project

Applicable Standards:
2. Retention of Historic Character
9. Compatible Additions/Exterior Alterations

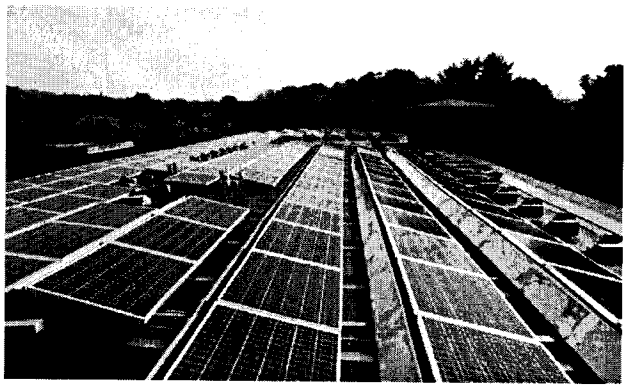
Issue: Enhancing the energy efficiency of a historic building is important. To that end, it is often possible to install features such as solar panels and photovoltaic cells provided they are installed in a sensitive manner. Because these elements must be positioned to take advantage of unobstructed sunlight, the roof of a historic structure is an obvious location. The roofline of a historic building is often a distinctive feature. Therefore, the installation of solar panels should conform to guidance regarding rooftop additions, i.e. that they be minimally visible, to avoid altering the historic character of the building. Historic buildings with a flat roof or parapet can usually accommodate solar panels because the panels will be hidden, while properties with a hipped or gabled roof are generally not good candidates for a rooftop solar installation. Solar panels on historic buildings should not be visible from the public right of way such as nearby streets, sidewalks or other public spaces.

In circumstances where solar collectors are not placed on rooftops, they should only be positioned in limited or no-visibility locations in secondary areas of the property. Vegetation or a compatible screen may also be an option to further reduce the impact of these features on a historic property. For some historic buildings, it may not be possible to incorporate solar panels and meet the Secretary of the Interior's Standards for Rehabilitation.

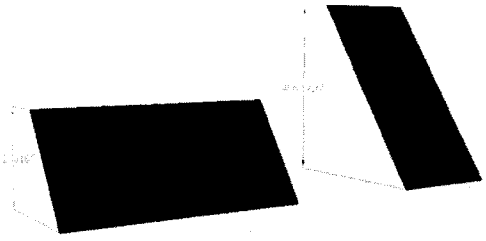
Application 1 (*Compatible treatment*): The rehabilitation of this mid-nineteenth century mill incorporated a large, roof-mounted photovoltaic installation. Although the historic building does not have a parapet wall at the roofline, the height of the building and the arrangement of the panels render the entire installation invisible from the ground. It is important to note that the panels are placed horizontally. Had the panels been installed with a vertical tilt, the angle required to maximize efficiency would have caused the panels to extend significantly higher above the roof. Simply changing the direction in which the panels are tilted can affect their visibility and reduce their impact on the character of the historic property.



Because of the size of this historic mill, a large array of solar panels could be installed on the flat roof without being seen from the ground.



Solar panels installed on the flat roof.

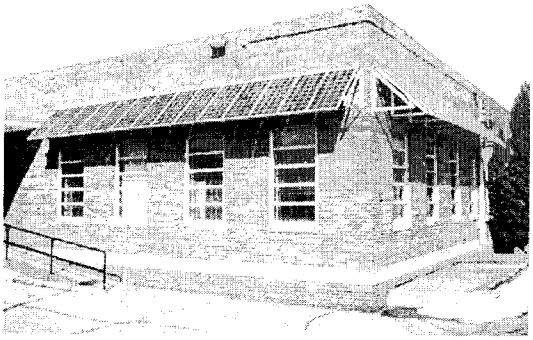


By placing the panels horizontally, the overall height of the installation and its visibility is reduced.

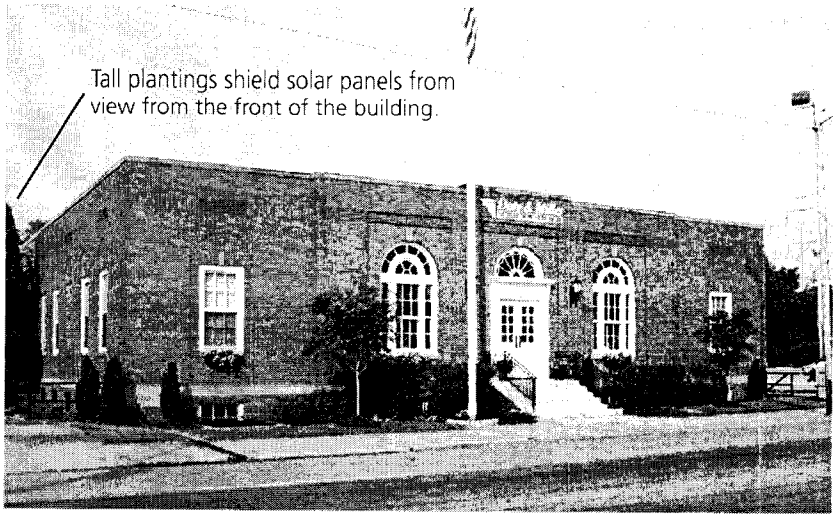
Application 2 (*Incompatible treatment*): During the rehabilitation of this late-nineteenth century commercial building, a conspicuous rooftop monitor with prominent solar panels and skylights was constructed on the one-story structure. The size and finish of this rooftop addition are incompatible with the historic character of the building. However, the building could have accommodated both skylights and solar panels if they had been installed differently. An alternative design that could have met the Standards would have included low-profile skylights and solar panels concealed behind the parapet wall.

The addition of a large rooftop monitor featuring skylights on the front slope and solar panels on the rear slope is not compatible with the historic character of this small, one-story commercial building.

Application 3 (*Compatible treatment*): The rehabilitation of this historic post office incorporated solar panels as dual-function features: generation of electricity and shading for south-facing windows. In this instance, the southern elevation of the building is also a secondary elevation with limited visibility from the public right of way. Additionally, because this area of the building is immediately next to the post office's loading dock, it has a more utilitarian character than the primary facades and, therefore, can better accommodate solar panels. Because the panels are in a suitable location at the rear of the property and are appropriately sized to serve as awnings, they do not affect the overall historic character of the property. Additionally, a screen of tall plantings shields the solar panels from view from the front of the building, further limiting their visibility.

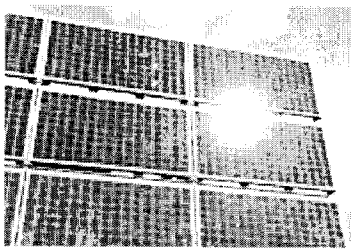


Above: Shown from the rear of the property, these solar panels serve a secondary function as awnings to shade south-facing windows. Because of their location at the back of the building immediately adjacent to a loading dock, the installation of these panels does not affect the historic character of the property.



Left: The solar panels are not visible from the front of the building. Additionally, even if the vegetation were removed, the installation would only be minimally visible along an alley at the rear of a secondary side elevation.

Jenny Parker, Technical Preservation Services, National Park Service



SOLAR AT HOME

THE TRIALS, TRIBULATIONS AND REWARDS OF GOING SOLAR

Mar 26, 2010 11:30 PM in Energy & Sustainability | 38 comments

Are old houses doomed? The conflict between historic preservation and energy efficiency

By George Musser

Editor's Note: Scientific American*'s George Musser will be chronicling his experiences installing solar panels in Solar at Home (formerly 60-Second Solar). Read his introduction here and see all posts here.*

As readers of this blog know, our family has done a huge amount to button up our Victorian-era house. Today when I hear the word "gun", I think caulk, not Glock. Our basement floor is littered with scraps of rigid foam board and drips of spray foam. But is it enough? Yesterday, listening to a panel discussion on climate change at the 2010 State of the Planet conference at Columbia University, I got the sinking feeling it's not. The U.S. needs to cut emissions by 80 percent and I doubt there's any way our house can do its part or even come close. Will old houses like ours be part of the low-carbon future? Or do they ultimately need to be torn down, leaving deep scars in our cities and towns?

My wife and I always wanted an old house. McMansions leave us cold -- although, after all the time, money, and sweat we've poured into our place, I'm beginning to see their attraction. Our efforts last year reduced air leakage by just over 10 percent, which was deflatingly meager. After more weatherizing, the house is comfier, with fewer drafts, a more uniform temperature, and a slower cooling-off rate in winter. But I still dread the day of the month when we get our heating bill.

Even our energy auditor says he's running out of ideas for easyish steps we could take. Upgrading appliances is hard to justify economically. Air-sealing the house to modern standards would mean ripping off the siding and wrapping the house from the outside. Replacing the gas boiler and steam radiators with a geothermal heat pump and forced air would run $68,800, of which state subsidies would cover about half. That estimate was the funniest thing I'd heard all day. And the sticker price wasn't the real shock. Rather, it was the fact that the system would lower our heating bill by only about a third.

Newer construction can give you a factor of 10 since it's easier to fit than retrofit. In our September 2005 issue, energy conservation pioneer Amory Lovins described his own house in Colorado. It is so superinsulated that it never needed central heat. In December I visited 41 Cooper Square, a LEED-certified classroom and laboratory building at Cooper Union, and was astounded by the sheer number of green features and design principles that are simply impossible to incorporate in any building after the fact.

In an essay last year, preservationist Sally Zimmerman of Historic New England argued that the demands of energy conservation threaten old houses. She cited one retrofit near Boston that cost $100,000. It had to be done with extreme care since old houses were designed to breathe, and reducing their air circulation can cause moisture buildup and mold growth. The homeowner has a fascinating blog that makes you realize how intimidating the endeavor is. Zimmerman wrote: "Perhaps the most likely outcome of a large-scale push toward deep-energy retrofits of older, less well-maintained homes is an increase in whole-house teardowns as owners and developers weigh the costs of new construction against these modifications."

I asked Lovins whether my house is hopeless and he reassured me it isn't. Having worked with him in the past, I know he's not a man to sugarcoat things, so if he says my house is salvageable, I tend to believe him in spite of my worries otherwise. In general, he says it should be feasible to cut an old house's energy use by a factor of two to four. His group, Rocky Mountain Institute, helped to retrofit a building for which historic preservation was paramount: 1600 Pennsylvania Avenue. True, cost wasn't much of an object. But Lovins says that new technologies and techniques are coming within everyone's reach. For instance, Serious Materials is working on an adaptive window glazing whose infrared emissivity would vary with temperature -- keeping in heat during the winter, keeping it out

during the summer.

As if my opposite numbers at *New Scientist* magazine had read my mind, they published an article today on how old houses not only can be saved, but have to be. It would take decades to turn over an entire nation's housing stock, and the rebuilding would itself consume energy. The article mentioned a promising new technology for retrofits: Spacetherm, an insulation panel with more than twice the insulation value of ordinary rigid foam boards.

Here are some other tips I've gathered:

- **Guiltlessly avail yourself of government subsidies.** Many respondents to my blog have complained that taxpayers shouldn't pay for energy retrofits or solar panels. I disagree. In addition to stimulating the economy, which benefits us all, subsidies correct a market failure: retrofits and renewables do pay for themselves, but many homeowners can't float the cost in the meantime. So the subsidies should be seen as an investment that we taxpayers will eventually recoup. President Obama's proposed HomeStar program would provide juicily large tax credits for weatherizing. Those who still have an aversion to subsidies can consider commerical alternatives such as solar-leasing programs and Property Assessed Clean Energy bonds, which, in effect, spread the cost of energy improvements over successive owners of a house.

- **Old houses can teach new tricks.** Not everything about old houses is un-green. Many of them were built with better materials and greater attention to natural air circulation. Our house's tin roof not only has survived one and a half centuries, but is better than most modern roofs at reflecting unwanted solar heat. Restored and coated white, it kept our house cool enough last summer that we didn't need to run our air-conditioners even a single minute.

- **Plug air leaks first.** Our energy auditor impressed on us that air infiltration is the single biggest energy sink, and James Brew, an architect at Rocky Mountain, agrees: "You are proper in addressing air leakage as a first priority in these vintage homes -- most assume it's insulation (slowing heat conduction), but the largest energy drain is infiltration and ex-filtration. With a very thorough approach to this, and your added insulation work, you should be able to reach a place where your actual peak demand is reduced enough to begin evaluating equipment sizing."

- **Preservationists need to take the long view.** Friends of ours wanted to install solar panels on their roof, but our town's historic preservation commission blocked them, saying the panels (unlike ours) would have been visible from the street. I admire the impulse: so much of our country's architectural heritage has been lost already. But if old houses can't be brought up to modern standards, their very survival is at stake. Saving them may mean bending preservation standards. Peter Troast of Energy Circle, a startup company that offers advice and sells products to reduce home energy use, recently

suggested that historic preservation guidelines could slow or stop the retrofits of millions of homes. "A hard line position that the exterior building envelope of historic structures can't be touched means they can never achieve deep energy reductions," he wrote. "That would effectively condemn our aging buildings to hospice."

I'd love to hear other people's experiences with retrofits and advice for what I can do to wring out more savings from my house.

George's home, courtesy of him

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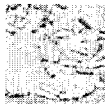
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Senate Bill No. 114–Senator Schneider

CHAPTER.....

AN ACT relating to energy; requiring the Director of the Office of Energy to make certain determinations relating to systems for obtaining solar energy; prohibiting certain restrictions on the use of systems for obtaining solar energy or wind energy; and providing other matters properly relating thereto.

Legislative Counsel's Digest:

Existing law sets forth a prohibition against covenants, restrictions or conditions contained in deeds, contracts or other legal documents which prohibit or unreasonably restrict an owner of property from using a system for obtaining solar energy on his property. (NRS 111.239, 278.0208) **Sections 2 and 3** of this bill include within the prohibition any such covenant, restriction or condition which has the effect of prohibiting or unreasonably restricting the property owner from using a solar energy system. **Sections 2 and 3** also describe an unreasonable restriction on the use of a system for obtaining solar energy as including: (1) the placing of a restriction or requirement that decreases the efficiency or performance of a system for obtaining solar energy by more than 10 percent of the amount that was originally specified for the system, as determined by the Director of the Office of Energy; and (2) the prohibition of a system for obtaining solar energy that uses components painted with black solar glazing.

Section 1 of this bill requires the Director, if requested to make a determination concerning the efficiency or performance of a system for obtaining solar energy pursuant to **section 2 or 3**, to make the determination within 30 days after receiving the request. If the Director needs additional information to make the determination, **section 1** authorizes the Director to request that information from the person requesting the determination and requires the Director to make the determination within 15 days after receiving the additional information.

Sections 1.5 and 2.5 of this bill set forth a prohibition against covenants, restrictions or conditions contained in deeds, contracts or other legal documents, and against local ordinances, regulations or plans, which prohibit or unreasonably restrict an owner of property from using a system for obtaining wind energy on his property. **Sections 1.5 and 2.5** describe an unreasonable restriction on the use of a system for obtaining wind energy as the placing of a restriction or requirement on the use of a system for obtaining wind energy which significantly decreases the efficiency or performance of the system and which does not allow for the use of an alternative system at a substantially comparable cost and with substantially comparable efficiency and performance. **Sections 1.5 and 2.5** do not prohibit reasonable restrictions: (1) imposed pursuant to a determination by the Federal Aviation Administration that the installation of the system for obtaining wind energy would create a hazard to air navigation; or (2) relating to the height, noise or safety of a system for obtaining wind energy.

THE PEOPLE OF THE STATE OF NEVADA, REPRESENTED IN SENATE AND ASSEMBLY, DO ENACT AS FOLLOWS:

Section 1. NRS 701.180 is hereby amended to read as follows:

701.180 The Director shall:

1. Acquire and analyze information relating to energy and to the supply, demand and conservation of its sources.

2. Utilize all available public and private means to provide information to the public about problems relating to energy and to explain how conservation of energy and its sources may be accomplished.

3. Review and evaluate information which identifies trends and permits forecasting of the energy available to the State. Such forecasts must include estimates on:

(a) The level of demand for energy in the State for 5-, 10- and 20-year periods;

(b) The amount of energy available to meet each level of demand;

(c) The probable implications of the forecast on the demand and supply of energy; and

(d) The sources of renewable energy and other alternative sources of energy which are available and their possible effects.

4. Study means of reducing wasteful, inefficient, unnecessary or uneconomical uses of energy and encourage the maximum utilization of existing sources of energy in the State.

5. Encourage the development of:

(a) Any sources of renewable energy and any other energy projects which will benefit the State; and

(b) Any measures which conserve or reduce the demand for energy or which result in more efficient use of energy.

6. In conjunction with the Desert Research Institute, review policies relating to the research and development of the State's geothermal resources and make recommendations to the appropriate state and federal agencies for establishing methods of developing the geothermal resources within the State.

7. Solicit and serve as the point of contact for grants and other money from the Federal Government and other sources to promote:

(a) Energy projects that enhance the economic development of the State;

(b) The use of renewable energy; and

(c) The use of measures which conserve or reduce the demand for energy or which result in more efficient use of energy.

8. Coordinate the activities and programs of the Office of Energy with the activities and programs of the Task Force, the Consumer's Advocate and the Public Utilities Commission of Nevada and other federal, state and local officers and agencies that promote, fund, administer or operate activities and programs related to the use of renewable energy and the use of measures which

conserve or reduce the demand for energy or which result in more efficient use of energy.

9. ***If requested to make a determination pursuant to NRS 111.239 or 278.0208, make the determination within 30 days after receiving the request. If the Director needs additional information to make the determination, he may request the information from the person making the request for a determination. Within 15 days after receiving the additional information, the Director shall make a determination on the request.***

10. Carry out all other directives concerning energy that are prescribed by the Governor.

Sec. 1.5. Chapter 111 of NRS is hereby amended by adding thereto a new section to read as follows:

1. Except as otherwise provided in subsection 2, any covenant, restriction or condition contained in a deed, contract or other legal instrument which affects the transfer or sale of, or any other interest in, real property and which prohibits or unreasonably restricts the owner of the property from using a system for obtaining wind energy on his property is void and unenforceable.

2. The provisions of subsection 1 do not prohibit a reasonable restriction or requirement:

(a) Imposed pursuant to a determination by the Federal Aviation Administration that the installation of the system for obtaining wind energy would create a hazard to air navigation; or

(b) Relating to the height, noise or safety of a system for obtaining wind energy.

3. For the purposes of this section, "unreasonably restricts the owner of the property from using a system for obtaining wind energy" includes the placing of a restriction or requirement on the use of a system for obtaining wind energy which significantly decreases the efficiency or performance of the system and which does not allow for the use of an alternative system at a substantially comparable cost and with substantially comparable efficiency and performance.

Sec. 2. NRS 111.239 is hereby amended to read as follows:

111.239 1. Any covenant, restriction or condition contained in a deed, contract or other legal instrument which affects the transfer ~~[,]~~ ***or*** sale ***of,*** or any other interest in , real property ~~[that]~~ ***and which*** prohibits or unreasonably restricts ***or has the effect of prohibiting or unreasonably restricting*** the owner of the property from using a system for obtaining solar ~~[or wind]~~ energy on his property is void and unenforceable.

2. For the purposes of this section, [~~"unreasonably restricts the use of a system for obtaining solar or wind energy" means~~] ***the following shall be deemed to be unreasonable restrictions:***

(a) The placing ***of*** a restriction or requirement on the use of [~~such~~] a system ***for obtaining solar energy*** which [~~significantly~~] decreases the efficiency or performance of the system ***by more than 10 percent of the amount that was originally specified for the system, as determined by the Director of the Office of Energy,*** and ***which*** does not allow for the use of an alternative system at a ***substantially*** comparable cost and with ***substantially*** comparable efficiency and performance.

(b) The prohibition of a system for obtaining solar energy that uses components painted with black solar glazing.

Sec. 2.5. Chapter 278 of NRS is hereby amended by adding thereto a new section to read as follows:

1. Except as otherwise provided in subsection 2:

(a) A governing body shall not adopt an ordinance, regulation or plan or take any other action that prohibits or unreasonably restricts the owner of real property from using a system for obtaining wind energy on his property.

(b) Any covenant, restriction or condition contained in a deed, contract or other legal instrument which affects the transfer or sale of, or any other interest in, real property and which prohibits or unreasonably restricts the owner of the property from using a system for obtaining wind energy on his property is void and unenforceable.

2. The provisions of subsection 1 do not prohibit a reasonable restriction or requirement:

(a) Imposed pursuant to a determination by the Federal Aviation Administration that the installation of the system for obtaining wind energy would create a hazard to air navigation; or

(b) Relating to the height, noise or safety of a system for obtaining wind energy.

3. For the purposes of this section, "unreasonably restricts the owner of the property from using a system for obtaining wind energy" includes the placing of a restriction or requirement on the use of a system for obtaining wind energy which significantly decreases the efficiency or performance of the system and which does not allow for the use of an alternative system at a substantially comparable cost and with substantially comparable efficiency and performance.

Sec. 3. NRS 278.0208 is hereby amended to read as follows:

278.0208 1. A governing body shall not adopt an ordinance, regulation or plan or take any other action that prohibits or unreasonably restricts ***or has the effect of prohibiting or unreasonably restricting*** the owner of real property from using a system for obtaining solar ~~[or wind]~~ energy on his property.

2. Any covenant, restriction or condition contained in a deed, contract or other legal instrument which affects the transfer ~~[,]~~ ***or*** sale ***of,*** or any other interest in , real property ~~[that]~~ ***and which*** prohibits or unreasonably restricts ***or has the effect of prohibiting or unreasonably restricting*** the owner of the property from using a system for obtaining solar ~~[or wind]~~ energy on his property is void and unenforceable.

3. For the purposes of this section, ~~["unreasonably restricting the use of a system for obtaining solar or wind energy" means]~~ ***the following shall be deemed to be unreasonable restrictions:***

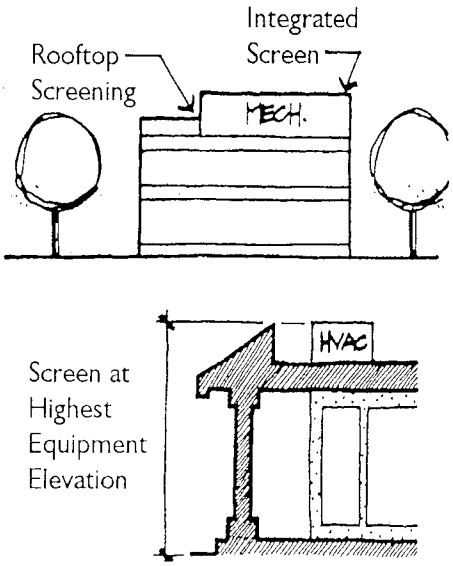
(a) The placing ***of*** a restriction or requirement on the use of ~~[such]~~ a system ***for obtaining solar energy*** which ~~[significantly]~~ decreases the efficiency or performance of the system ***by more than 10 percent of the amount that was originally specified for the system, as determined by the Director of the Office of Energy,*** and ***which*** does not allow for the use of an alternative system at a ***substantially*** comparable cost and with ***substantially*** comparable efficiency and performance.

(b) The prohibition of a system for obtaining solar energy that uses components painted with black solar glazing.

Sec. 4. This act becomes effective upon passage and approval.

1.1.4 All building elevations shall receive architectural treatment, except in special situations where an elevation is not visible from an adjoining property or street.

1.1.5 Materials and finishes shall be selected for architectural harmony and enhancement of the architectural theme as well as aesthetic quality, durability and ease of maintenance. Materials, finishes and colors shall be varied where appropriate to provide architectural interest. The number of building materials generally shall be limited to three and these materials shall not stop abruptly at corners, but continue to side or back elevations. Smooth faced block or fabricated metal wall panels are not allowed as the predominant building material.



Typical Equipment Screening

1.1.6 Exterior building colors should blend with surrounding development and not cause abrupt changes. Primary building surfaces (excluding trim areas) should be muted or earthtone in color. Bold colors shall be avoided except when used as accent or trim.

1.1.7 Except as otherwise provided in this section, roof mounted equipment within commercial, industrial, office, public or multi-family districts shall be screened from view from a public right-of-way and adjacent property through the use of architectural means such as parapet walls and equipment wells. Screening of roof-mounted equipment from view must be integrated into the building design. All equipment shall be located below the highest vertical element of the building. Wall mounted air conditioning units shall be integrated into the design and/or screened. Roof-mounted solar panels are excluded from the requirement for screening. Roof-mounted mechanical support and accessory mechanical equipment for solar panels shall be screened architecturally and integrated to match the existing roof and/or building materials.

On sites exhibiting topographic relief effecting visual screening capabilities, site-obscuring screening shall be provided to visually screen the equipment at a minimum of 100 feet from the site.

1.1.8 Reflective, untreated roofs shall be prohibited unless painted flat, non-glossy paint to compliment or match the primary color of the primary exterior building material(s).

18.05.075 Manufactured Home Installation within a Single Family Zoning District.

1. The placement of a manufactured home in accordance with this section must apply under the requirements of this Chapter and Division 1 of the Development Standards.

2. For the purpose of this Chapter, the term "primarily" shall mean "fifty-one percent" ("51%") and the term "immediate vicinity" shall mean "within three hundred feet (300')" of the subject parcel, excluding commercial, multi-family and industrial development.

3. The owner/owner's agent shall satisfy the requirements of providing written and photographic documentation indicating the manufactured home has siding and roof pitch/slope and covering consistent with what is primarily used in the immediate vicinity.

4. The owner/owner's agent shall satisfy the requirements of providing documentation indicating that the foundation of the manufactured home will be masked architecturally with materials primarily used by other structures in the immediate vicinity.

5. The owner/owner's agent shall provide a copy of the purchase agreement, with elevations and floor plans of the unit including proper dimensions.

6. The owner/owner's agent shall provide a copy of CC&R's or written documentation of the non-existence of CC&R's within the subject area.

7. The placement shall comply with all Covenants, Conditions and Restrictions (CC&R's) of the subdivision/PUD where the manufactured home is proposed to be located.

   a. The owner/owner's agent shall arrange for a pre-placement inspection appointment prior to placement of the manufactured home on the subject site.

8. The owner/owner's agent shall arrange for a pre-placement inspection appointment prior to placement of the manufactured home on the subject site.

18.05.080 Private Use Wind Energy Conversion Systems. In order to balance the need for clean, renewable energy resources with the protection of the health, safety and welfare of the community, the purpose of this section is to regulate private use wind energy conversion systems (WECS) for the production of electricity for use on the subject site and for net metering through the power company.

1. Applicability and Definition.

   a. Private Use Wind Energy Conversion Systems (WECS). A private use wind energy conversion system consists of a wind turbine, tower, and associated control or conversion electronics for the purpose of providing electrical power to a lawful principle use. A system having a rated capacity of 10 kilowatts (kW) or less for residential use or 100 kW or less for non-residential uses shall be

considered a private system for the purposes of these regulations. Not more than one machine shall be allowed per parcel of land when the size of the parcel is less than one acre in size. WECS are considered accessory uses as stated in CCMC 18.03.010 (Words and Terms Defined), Accessory Building or Accessory Structure and Accessory Use, and are allowed in all zoning districts.

b. Wind Machine. The individual component of a Wind Energy Conversion System that converts kinetic energy from the wind into electrical energy, independent of the electrical conductors, electrical storage system, electrical metering, or electrical inverters. This term shall include the towers or supporting structures.

c. Building Code(s). All codes, ordinances, policies and procedures, and standards adopted and enforced by the Carson City Building Division.

d. Fire Code(s). All codes, ordinances, policies and procedures, and standards adopted and enforced by the Carson City Fire Department.

e. FAA. The use of this acronym shall denote the Federal Aviation Administration, or any other applicable authority that regulates air safety within the Carson City jurisdiction.

f. Private use wind energy conversion systems shall be allowed as accessory uses in all Public zoning districts without the requirement of Special Use Permit approval provided the system meets all other requirements of this section.

g. All proposed Private Use Wind Energy Conversion Systems located within the Carson City Historic District must receive review and approval from the Historic Resources Commission, in addition to any other required approvals, prior to submission of a building permit.

2. Standards. All Wind Energy Conversion Systems are subject to and must comply with the following provisions of this section:

a. Location. A minimum parcel size of one acre is required for the placement of any horizontal axial wind turbine. Vertical axial wind turbines are permitted on any parcel. No part of a wind energy conversion system shall be located within or over drainage, utility or other established easements.

b. Number per parcel. A maximum of one wind machine per parcel is permitted on parcels less than one acre in size; a maximum of one wind machine per acre is permitted on parcels greater than one acre in size.

c. Setbacks. Minimum setbacks for private use wind machines shall be:

i) A minimum of 1.1 times the total extended height from the project property lines adjacent to a residential, Conservation Reserve or Agricultural zoning district.

ii) Guy wire anchors may not extend closer than 10 feet from any property line.

iii) A 10 foot minimum setback from any part of the machine, rotors or guy wires to the property line of any other non-residential zoning district.

iv) Wind machines shall not be located within the front yard setback nor within the street-side setback of any parcel of land in residential zoning districts.

d. Height. The maximum total extended height of Wind Energy Conversion Systems is 60 feet.

i) Tower Height shall mean the height above adjacent grade of the fixed portion of the tower, excluding the wind turbine itself.

ii) Total Extended Height shall mean the height above adjacent grade to a blade tip at its highest point of travel and including any other portion of the Wind Energy Conversion System.

e. Lighting. Wind system towers shall not be artificially lighted unless required, in writing, by the Federal Aviation Administration (FAA) or other applicable authority that regulates air safety. Where the FAA requires lighting, the lighting shall be the lowest intensity allowable under FAA regulations; the fixtures shall be shielded and directed to the greatest extent possible to minimize glare and visibility from the ground; and no strobe lighting shall be permitted, unless expressly required by the FAA.

f. Access. All wind machine towers must comply with the following provisions:

i) The tower shall be designed and installed so that there shall be no exterior step bolts or a ladder on the tower readily accessible to the public for a minimum height of 12 feet above the ground. For lattice or guyed towers, sheets of metal or wood or other barrier shall be fastened to the bottom tower section such that it cannot readily be climbed; and

ii) All ground-mounted electrical and control equipment shall be labeled or secured to prevent unauthorized access.

g. Rotor Safety. Each wind machine shall be equipped with both manual and automatic controls to limit the rotational speed of the blade within the design limits of the rotor. An external, manual shut-off switch shall be included with the installation. The minimum distance between the ground and any protruding blades utilized on a private wind machine shall be 10 feet as measured at the lowest point of the arc of the blades.

h. Noise. All wind machines shall comply with the noise requirements in this section. These levels, however, may be exceeded during short-term events such

as utility outages and severe wind storms. A manufacturer's sound report shall be required with a building permit application.

i) No wind machine or combination of wind machines on a single parcel shall create noise that exceeds a maximum of 25 decibels (dBA) at any property line where the property on which the wind machine is located or the abutting property is one acre or less or a maximum of 50 decibels (dBA) at any other property line. Measurement of sound levels shall not be adjusted for, or averaged with, non-operating periods. Any wind machine(s) exceeding these levels shall immediately cease operation upon notification by Carson City and may not resume operation until the noise levels have been reduced in compliance with the required standards and verified by an independent third party inspector, approved by Carson City, at the property owner's expense. Upon review and acceptance of the third party noise level report, Carson City will allow operation of the affected wind machine(s). Wind Energy Conversion System(s) unable to comply with these noise level restrictions shall be shut down immediately and removed upon notification by Carson City, after a period established by Carson City.

ii) Sound below 20 Hertz. No wind machine or combination of wind machines shall be operated so that impulsive sound below 20 Hertz adversely affects the habitability or use of any off-site dwelling unit, hospital, school, library or nursing home.

i) Aesthetics and Maintenance.

i) Appearance. Wind machines, unless subject to any applicable standards of the FAA, shall be a non-reflective, non-obtrusive color such as tan, sand, gray, black or similar colors. Galvanized steel or metal is acceptable for the support structures. Any painting or coating shall be kept in good repair for the life of the wind machine. In addition, any changes to the approved color shall result in notification by Carson City that the affected wind machine(s) shall cease operation until a color correction has been made. If the affected wind machine(s) are not repainted, using an approved color, within the period established by Carson City, the owner shall remove the affected Wind Energy Conversion System(s).

ii) Electrical Wires. All electrical wires leading from the tower to electrical control facilities shall be located underground.

iii) Maintenance. Wind machines shall be maintained in good repair, as recommended by the manufacturer's scheduled maintenance or industry standards, and shall be free from rust.

j. Signs/Labels. The only advertising sign allowed on the wind machine shall be a manufacturer's label, not exceeding one square foot in size, located on the generator housing.

k. Compliance with FAA Regulations. All wind machines shall comply with applicable FAA regulations, including any necessary approvals for installations.

l. Ice Throw. The potential ice throw or ice shedding from the proposed wind machine shall not cross the property lines of the site.

m. Certified Safe. Evidence shall be submitted with a building permit application that the wind machine has been constructed in accordance with accepted industry standards and certified safe.

3. Repair and Removal of Wind Machines. Any wind machine found to be unsafe by an official of the Carson City Building Division shall immediately cease operation upon notification by Carson City and shall be repaired by the owner to meet federal, state, and local safety standards or be removed within six months. Wind machines that are not operated for a continuous period of 12 months shall be removed by the owner of the wind machine.

a. When a wind machine is removed from a site, all associated and ancillary equipment, batteries, devices, structures or support(s) for that system shall also be removed. For the purposes of this section, non-operation shall be deemed to include, but shall not be limited to, the blades of the wind machine remaining stationary so that wind resources are not being converted into electric or mechanical energy, or the wind machine is no longer connected to the public utility electricity distribution system.

4. Mounting of Wind Machines. Attachment of the wind machine, including any support or structural components, to any building or structure shall be in strict compliance with regulations of the Carson City Building Division.

5. Compliance with Regulations.

a. All systems shall comply with applicable fire and building codes.

b. All standards are absolute. Once wind machines are permitted, the owners have the option of compliance with the standards or discontinuation of operations. If the operation of the wind machine(s) does not comply with the provisions of this article, the operator shall promptly take all measures necessary to comply with these regulations, including, but not limited to, discontinued operation of one or more wind machines.

c. Variations to the regulations and standards of this section may only be permitted by special use permit, approval of which shall be pursuant to Title 18, Section 18.02 (Special Use Permits).

CHELTENHAM TOWNSHIP

Where Growth is a Tradition

HISTORIC PRESERVATION AND SUSTAINABILITY

This document is intended to provide guidance to property owners in Cheltenham Township on sympathetic "green" retrofits for existing buildings. The goal is to reduce the overall energy consumption associated with existing and historic buildings, while at the same time maintaining the historic character of Cheltenham's neighborhoods. It is written from the viewpoint of preservation and is not intended to act as a thorough discussion on "green" building technology.

Climate change is an ever-growing concern throughout the world and within our communities. As a result, goals for reducing energy consumption have been set at all levels of government, from the world stage to municipal governments. This raises a number of critical questions at the local level of government: What can our communities do to stem the tide of climate change? How is preservation related to environmental sustainability, and can preservation help achieve sustainability goals? How can homeowners, with the help of local government, adapt historic properties to be more energy efficient while maintaining the historic character of the properties?

Residential buildings are responsible for a large portion of the energy consumed in the United States. They currently account for 20.5% of the overall carbon emissions and 36% of all of the electricity that is consumed. With a number of improvements in energy efficiency, the energy consumption statistics associated with residential use can be drastically reduced.

Note the shade provided by the porches and the surrounding trees. These elements keep the house cooler in the summer months.

These guidelines were developed in conjunction with Cheltenham Township's Boards of Historical and Architectural Review (BHAR). The BHARs review Certificate of Appropriateness (COA) applications for proposed exterior alterations that are visible from the public right-of-way within the LaMott and Wyncote Historic Districts. The COA applicant is responsible for complying with the provisions of the Zoning and Building Codes at the time of application. The applicant must obtain a COA as well as all necessary permits prior to proceeding with any work. For more information, or to obtain permit applications, please call the COA Administrator at 215-887-6200, extension 215.

This brochure is intended only as a guide, is not regulatory in nature, and should not replace professional guidance. Although the information presented in this brochure is based on current knowledge and practices, Cheltenham Township and its historic preservation consultant, Cultural Heritage Research Services, Inc. (CHRS, Inc.), do not accept liability for any losses or damages resulting from its use.

The "greenest" buildings are those that are already standing. Existing buildings, including historic buildings, represent an energy investment that has already been expended in the procurement, manufacture and transport of materials, and the construction process itself. To demolish an existing building to build a new "green" building in its place is counter-productive to the concept of energy conservation. By some estimates, it would take over 65 years to recoup the energy savings of demolishing an existing building and replacing it with a new "green" building. Preserving materials in place, with sensible, sympathetic "green" retrofits, is an efficient use of resources. Although historic buildings utilize older technologies, they can be *more* efficient than those buildings constructed in recent years. For example, the United States General Services Administration, which is the single largest property owner in the nation, completed energy audits on its buildings and found that the utility costs associated with historic buildings were, on average, 27% less than those costs in more modern buildings (www.preservationnation.org/issues/sustainability/additional-resources/sustainability-numbers.html).

Note the extensive surrounding trees, deep porch, and masonry walls. These elements assist in keeping historic houses cooler in summer months.

The National Park Service and the Secretary of the Interior's Standards and Energy Conservation

In the United States, the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (*Standards*) is the basis for most preservation regulations at the local, state and national levels of government. The *Standards* is divided into four different philosophical categories: Preservation, Rehabilitation, Restoration and Reconstruction. The most commonly used approach, Rehabilitation, can easily dovetail with "green" building practices, but may require innovative and creative design solutions to both meet the *Standards* and the energy conservation goals. In the *Standards* for Rehabilitation, Preservation, and Restoration, different methods to increase energy efficiency are briefly discussed, but not in a substantive way. Due to the complex nature of most projects involving historic buildings, property owners must seek out creative solutions, involving a team of professionals including conservators, historic preservationists, architects, and engineers to determine the best balance between energy goals and retaining historic fabric to comply with the *Standards.*

The *Standards* does not provide specific advice. Instead, it offers brief, general guidelines. For example, the discussion of historic windows as energy efficient, which is an undoubtedly complex subject, is limited to the following (www.nps.gov/history/hps/tps/standguide/rehab/rehab_energyeff.htm):

Recommended:

- Utilizing the inherent energy conserving features of a building by maintaining windows and louvered blinds in good operable condition for natural ventilation
- Improving thermal efficiency with weather-stripping, storm windows, caulking, interior shades, and if historically appropriate, blinds and awnings
- Installing interior storm windows with air-tight gaskets, ventilating holes, and/or removable clips to ensure proper maintenance and to avoid condensation damage to historic windows
- Installing exterior storm windows which do not damage or obscure the windows and frames

Not Recommended:

- Removing historic shading devices rather than keeping them in an operable condition

- Replacing historic multi-paned sash with new thermal sash utilizing false muntins
- Installing interior storm windows that allow moisture to accumulate and damage the window
- Installing new exterior storm windows which are inappropriate in size 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

Also at the Federal level, the National Park Service's *Preservation Brief 3: Conserving Energy in Historic Buildings* and *Preservation Brief 24: Heating, Ventilating, and Cooling Historic Buildings* offer more detailed approaches for reconciling increased energy efficiency and maintaining the historic character of buildings.

Appropriate Methods for "Greening" Historic Buildings

If you own an historic home, what can you do to "green" your building without detracting from the historic character? Before beginning any major alterations, it is imperative to look at the *entire* building with a whole-building energy audit by a professional energy auditor. This will illuminate areas where energy is being lost, the manner in which it is being lost, and how it is used in your building. An energy audit is necessary because it will maximize the return on investment into the property.

Before you get started on projects to increase the energy efficiency of your historic building, it is important for you, and any contractors involved in the project, to understand that the needs of historic buildings are different from those of modern buildings. Factors to keep in mind as you are planning your projects include: the construction techniques employed in building, how you can minimize damage to the historic fabric, the need for your building to "breathe," ways to minimize damage through unwanted condensation, and the movement of moisture through the historic fabric. Historic buildings were constructed as a system, so careful consideration must be given in order to understand the implications of changing elements of the entire system. Although it is important to make sure your building is energy efficient, you should consult with a professional to make sure that your building maintains healthy air cycling.

Areas that may be altered to improve energy efficiency, while at the same time preserving the character of historic buildings are: insulation, draft proofing, modifications to windows and doors, efficient appliances, HVAC, landscaping, solar panels and rainwater retention systems. Please consult Cheltenham Township's Engineering, Zoning and Inspections Department to determine if your "greening" plans require any permits or Board of Historical and Architectural Review (BHAR) approval of Certificate of Appropriateness (COA) applications.

Using exterior storm windows is an effective method for reducing energy losses in historic buildings.

Any time you make changes to your mechanical systems or make your building unusually air tight, it is important to contact Cheltenham Township's Building and Zoning Department in order to make sure your building systems are functioning properly and that they are maintaining adequate combustion air and air cycles within the building.

Insulation

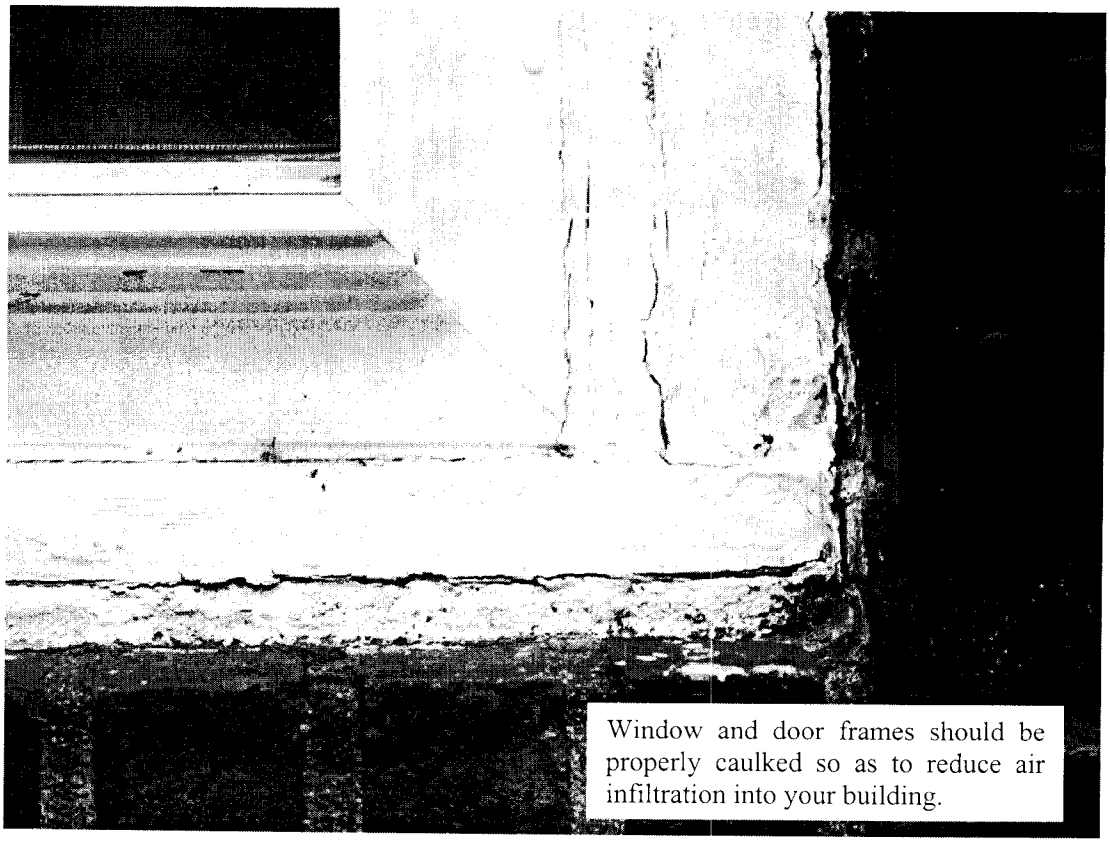
Adding insulation in key areas may reduce the heat loss in the winter and heat gain in the summer months. Care should be taken and a professional should be consulted during this process in order to develop a system that will work within the context of your whole building. This will help to create a building that is energy efficient, while at the same time maintaining healthy air cycles within your building. The insulation needs of a load-bearing masonry building are very different than those of a wood-framed building. When selecting methods for insulation, it is important to consider moisture and condensation concerns, "stack effect," roof shape and pitch, and interior finishes (such as drywall versus plaster). If done properly, adding insulation will not affect the historic character of a property and will result in energy savings.

Draft Proofing

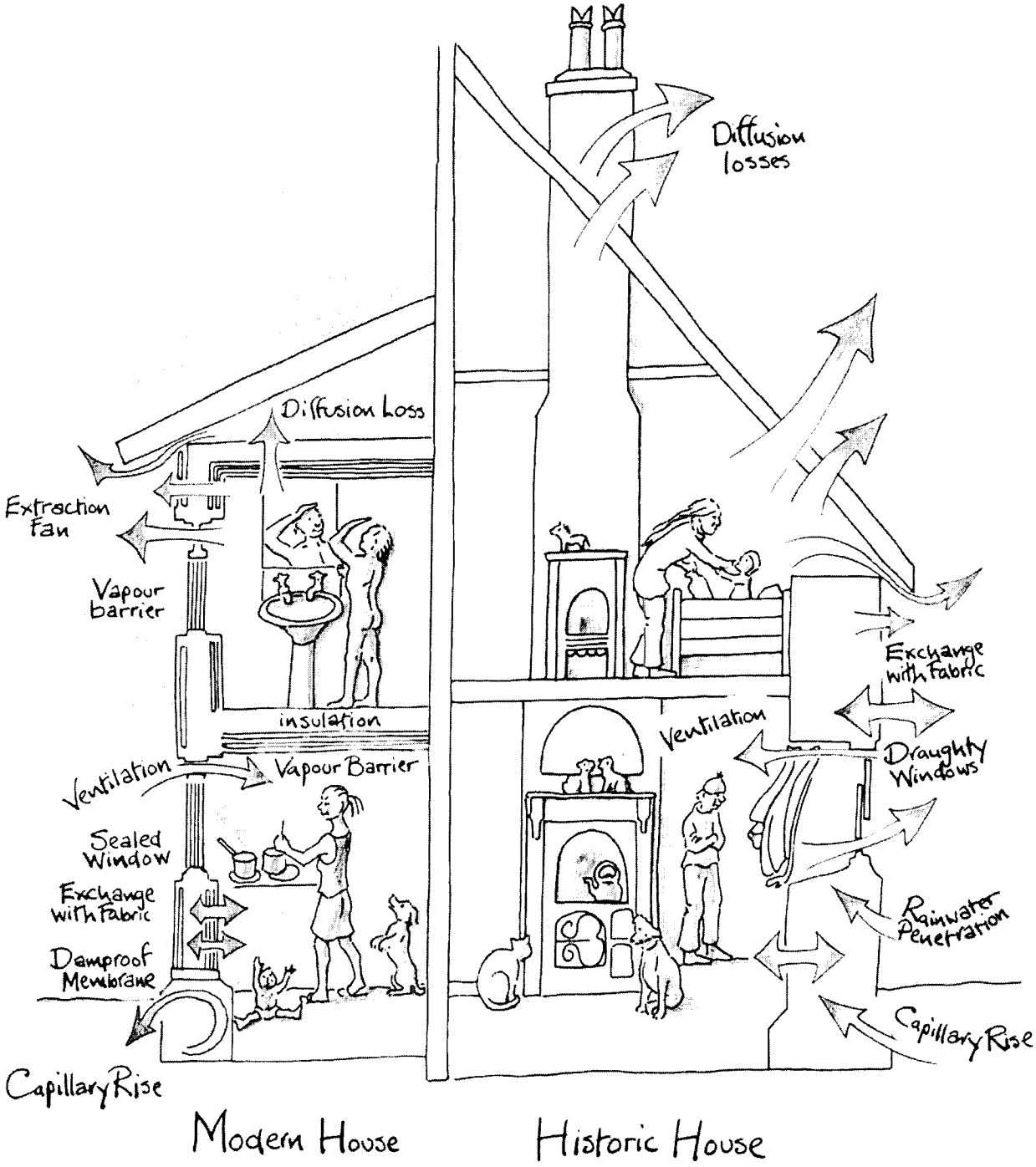
Draft proofing your building will increase the comfort levels of the inhabitants. This can include caulking around windows and doors, adding weather stripping around windows and doors, caulking interior wood trim, assuring that dry-walled areas are properly finished (especially at the wall-ceiling juncture), making sure that masonry walls are properly and completely pointed, and adding insulation around electrical outlets and light switches on exterior walls (foam pads, available from most hardware stores, can be placed on the bottom side of the plate and can be effective at reducing drafts). Note that buildings require proper ventilation, so if necessary, involve a professional. It is best to follow the manufacturer's recommendations and use high-quality, silicone caulk that matches your wood trim. If you cannot find a caulk to match, most silicone caulks can be painted to match after the caulk has fully cured.

HVAC

If your current heating and cooling systems are outdated and inefficient, working with a professional energy auditor will be especially worthwhile in order to find the most efficient system within the context of your building. If a professional is not involved with the installation, it is best to research and seek out products with an ENERGY STAR® rating. Adjusting the thermostat to maintain cooler temperatures in the winter and warmer temperatures in summer months will reduce energy costs. Furthermore, homeowners should also consider installing timed thermostats that automatically adjust the temperature of the house on a schedule.



Window and door frames should be properly caulked so as to reduce air infiltration into your building.



Historic homes and modern homes have different needs. For example, to maintain adequate ventilation, historic homes need to cycle air through the building at a rate of nearly twice that of modern homes. Most historic homes exceed this rate of air transfer, so draft proofing is generally recommended. If you are unsure of your ventilation rates, please consult a professional energy auditor. (Graphic is from "Energy Conservation in Traditional Buildings," printed by English Heritage in 2008. Accessible at www.climatechangeandyourhome.org.uk/live/content_pdfs/526.pdf.)

Windows

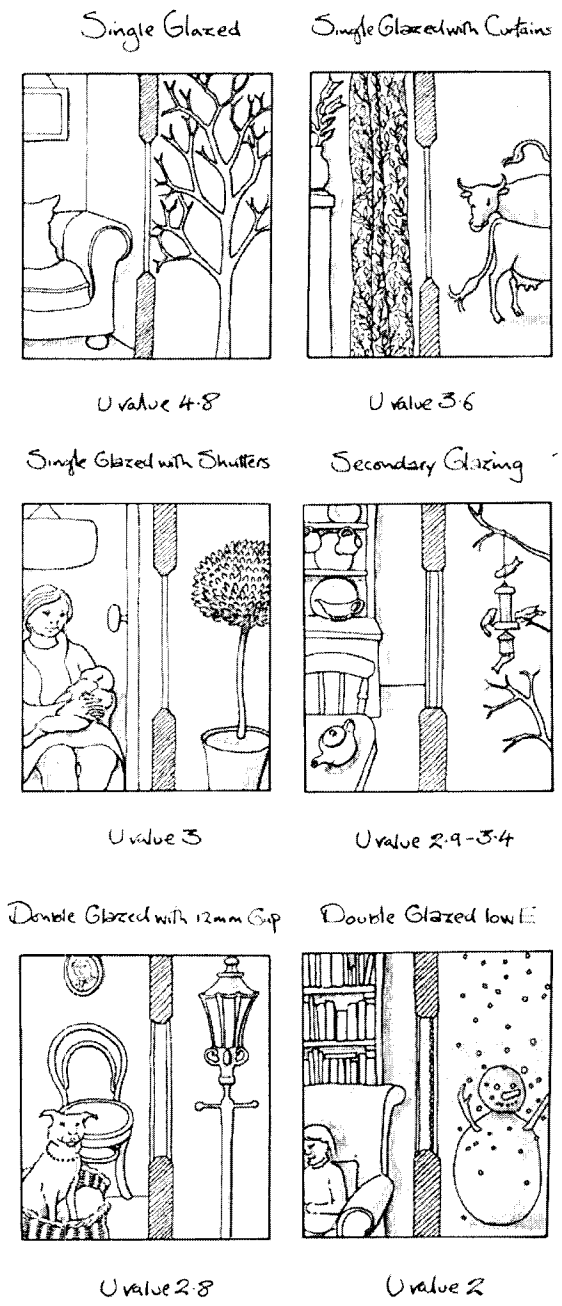
It is often incorrectly assumed that in order to increase the energy efficiency of a house, you must replace the historic windows. Oftentimes the cost associated with replacement windows is not necessarily recouped in energy savings. Furthermore, historic windows that are in good repair and in proper working order, especially when combined with exterior storm windows and weather stripping, can perform almost as well as modern replacement windows. It is advantageous to repair and retain the historic windows because it maintains the historic character of the building and does not result in landfill waste. Before replacing historic windows with modern windows, an analysis should be completed in order to evaluate the potential costs and savings benefits in a whole-building energy audit. If an entire-building audit is not a feasible alternative for you, window performance should be analyzed to fully understand the potential gains or losses associated with changing the window system. If exterior storm windows are not present, the installation of exterior storm windows should be considered; this treatment is preferred to removing historic windows because it is a reversible treatment.

Doors

Doors in historic buildings, especially at the primary entrance, are often character-defining features. Similar to windows, when historic doors are in proper working order, they can perform nearly as well as modern replacements. Historic doors should fit snugly in their frames, with care taken to ensure that there are no gaps or areas of potential air infiltration. Weather stripping will further assist in reducing air infiltration.

Appliances

When replacing appliances, it is best to replace older appliances that are at the end of their lifespan with efficient, ENERGY STAR® units to reduce energy consumption. Energy savings can result from small steps, such as replacing incandescent light bulbs with compact florescent light bulbs.



Different U-factors for alternate window configurations and treatments (Note that this graphic originates from the United Kingdom, where the U-Factor is referred to as the U Value. Graphic is from "Energy Conservation in Traditional Buildings," printed by English Heritage in 2008. Accessible at http://www.climatechangeandyourhome.org.uk/live/content_pdfs/526.pdf).

Definitions

R-Value: The R-value is a measurement of an object's resistance to heat loss, so higher R-values are an indicator of higher energy efficiency.

U-Factor: The U-factor measures the rate of heat transfer through an object, so the lower the U-factor, the lower the amount of heat loss (see the figure for illustrations showing U-factors for different window configurations).

Stack Effect: The stack effect is movement of air through a building or chimney due to the changes in air density that result from changes in temperature or humidity.

Alternative Energy Sources

The installation of solar panels within historic districts and on historic buildings may present a conflict with the *Standards* if done unsympathetically. When considering the installation of solar panels on an historic property, the visual and physical impact to the property must be considered and steps must be taken to minimize the impacts. For example, in order to meet the *Standards*, solar panels should be located on the back elevation or on an outbuilding, rather than on an elevation that will be visible from the street. It bears noting that even when a creative design team is employed, the introduction of solar panels to historic properties will not always meet the *Standards*. If the panels are to be installed on an historic roof, the historic fabric of the building may be damaged, which does not comply with the *Standards*.

Geothermal energy may, in many cases, be a more appropriate form of alternative energy source in historic districts. Geothermal systems are more easily camouflaged and will not have the same visual impact within an historic district.

Landscaping

Oftentimes, landscaping plays a key role in reducing energy costs. For example, deciduous trees planted near the south elevation of a building can play a role in cooling the house in the summer, whereas planting evergreen trees near the north and west elevations creates a wind block. It is important to install all plantings away from your building in order avoid trapping unwanted moisture. When possible, landscape with native plant material.

Rainwater Retention

Rainwater retention systems can be installed to conserve rainwater for landscaping purposes. Care should be taken during installation to minimize the visual impacts from the pedestrian level at the sidewalk.

Suggested Further Reading

National Trust for Historic Preservation Sustainability Forum:
http://www.preservationnation.org/issues/sustainability/

Secretary of the Interior's Standards for the Treatment of Historic Properties:
http://www.nps.gov/hps/tps/standguide/

Making Your Historic Building Energy Efficient, Volumes 1 and 2, prepared for the City of Boulder, Office of Environmental Affairs by Synertech Systems Corporation:

http://www.preservationnation.org/issues/sustainability/additional-resources/boulder_sustainability_volone.pdf

http://www.preservationnation.org/issues/sustainability/additional-resources/boulder_sustainability_voltwo.pdf

U.S. Department of Energy, Energy Efficiency and Renewable Energy:
http://www1.eere.energy.gov/buildings/residential/cold.html

United States Green Building Council:
http://www.usgbc.org/DisplayPage.aspx?CMSPageID=124

This document was initiated and overseen by Cheltenham Township and made possible through a grant provided by the Pennsylvania Historical and Museum Commission.

Please contact the Township to see if your "greening" project requires a permit. Please call the COA Administrator at 215-887-6200, extension 215.

This project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior. However, the contents and opinions contained herein do not necessarily reflect the views or policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.

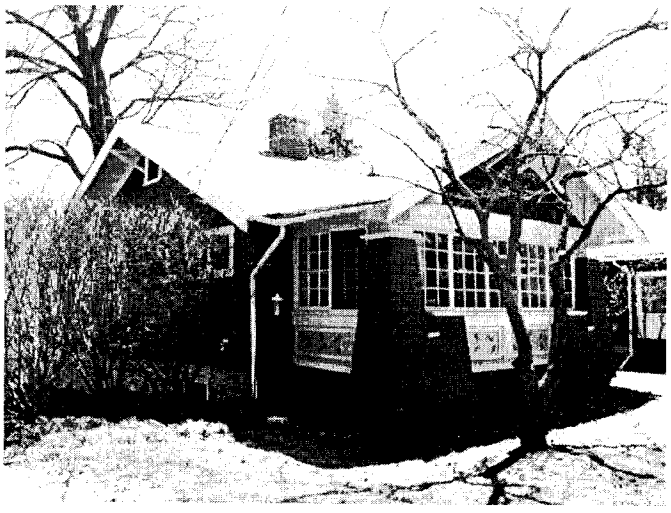
This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in federally assisted programs. If you believe that you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity, National Park Service, 1849 C Street NW, Washington, DC 20240, or visit www.doi.gov/diversity/civil_rights.html.

CHRS, Inc., of North Wales, Pennsylvania prepared this publication.

Opportunities for Quick "Green" Fixes on Historic Buildings

If you are not ready to call in an energy audit professional, you can begin "greening" your building with some straightforward alterations that will increase energy savings and at the same time preserve the historic character of Cheltenham's historic buildings. **Please consult Cheltenham Township's Engineering, Zoning and Inspections Department to determine if your "greening" plans require any permits or BHAR approval of COA applications.**

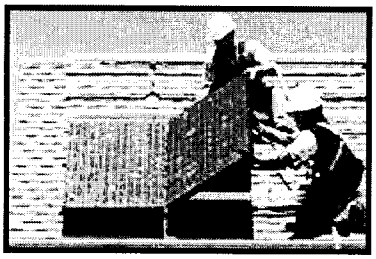
- Caulk the interior casings and frames around your windows and doors to seal any air leaks
- Add weather stripping to your doors and windows
- Make sure that existing storm windows are in good operation and repair as necessary
- Ensure that the glazing putty on historic windows is in good condition and patch or replace as necessary
- Make use of interior and exterior shutters
- Add plastic sheeting between your curtains and windows during colder winter months to reduce heat loss and drafts
- In summer months, make full use of operable double-hung sash to naturally increase the airflow and ventilation
- Install interior curtains; if installed over a window opening with single glazing, this alone can change the U-factor for the opening from 4.8 to 3.6
- Caulk the exterior junction between window frames and exterior walls with a high-quality, silicone caulk, following the manufacturer's recommendations
- Seal leaks that are around electrical outlets and light switch plates on exterior walls
- Caulk your baseboards and interior wood trim to seal air leaks
- Replace incandescent light bulbs with compact fluorescent bulbs
- Install a rainwater retention barrel that utilizes your building's existing gutter system
- Make sure that your exterior masonry is properly pointed, and consult a professional prior to conducting this work
- Plant deciduous trees on the southern elevation to slow solar gain in summer months
- Plant evergreen trees along the north and west elevations to lessen the effect of winter winds
- When introducing new plant materials or landscaping, use native species



Breckenridge encourages solar panels for historic district

Solar Energy

Tuesday, 03 June 2008 09:55



Breckenridge officials are grappling with how to usher eco-friendly solar panels into the town's historic district while preserving its renowned Victorian charm. With a new ordinance, the town cautiously is moving toward encouraging solar power in the downtown area, provided that cells are kept mostly out of sight.

In the historic district, property owners may not install solar devices if the town determines them "detrimental to the character" of the vintage buildings.

"That perplexes me," said Breckenridge author and historian Mary Ellen Gilliland, "because the green side of me says, 'Yes,' and the historic side of me says, 'Don't change buildings in the historic district.'"

The ordinance, which is expected gain final approval on June 10, creates standards for solar panels and other photovoltaic devices in the town's development code and includes more flexible guidelines outside the downtown district.

The historic-district code is "one of the toughest sections" said town manager Tim Gagen, and because solar panels "stick out," they've previously been more difficult to accept.

"Technically in the historic district, when you keep up your home, you're supposed to use the same historic windows — late 1800s to 1900s, single pane," Gagen said, adding that this isn't especially energy efficient.

Newer products that mirror the historic elements are available, he said, and the town has worked for the past several years to make the code more conducive to energy efficiency.

The new ordinance calls for solar devices to be coordinated with the roof's color and run parallel to the original roofline.

Sean McPherson is a mechanical engineer with Innovative Energy, a Breckenridge company that installs solar panels. He said such guidelines are generally not feasible.

McPherson said solar panels must face south, tilted at an optimal angle of 45 degrees. He said custom-colored panels might be available, but the cost would be "through the roof."

Breckenridge Mayor Pro-tem Eric Mamula said the town had difficulty determining guidelines pertaining to the historic district.

"It's sort of the starting point, and we'll see how it goes," Mamula said. "If we have to fine tune the thing, I think we will."

Sun power rises

Mayor John Warner supports "adaptive re-use," which improves a historic building, "making it as energy efficient as possible without changing the character."

One enticing technology, he said, involves roof-integrated solar systems that use photovoltaic cells in devices similar to shingles.

But McPherson said such cutting-edge systems haven't been proven to "hold up in alpine environments," and installers have few high-efficiency options other than the more-traditional panels.

The average home requires about 30 solar panels, which each span about 2-1/2 feet by 5 feet and do not lie flush with the roof, McPherson said.

"What's the aesthetics of a power substation or lines all over the county?" he said.
Julia Skurski, a town planner, said Breckenridge has approved 16 solar projects, including those yet-to-be installed.

"People are starting to rough-wire for solar panels so they can install them later if they want to," she said. "We've seen a trend toward that, and we've really seen panels picking up here."

The town intends to install solar panels on the Timberline child-care center and the town data center. Town manager Gagen said an audit of buildings is being conducted to determine other sites with potential for solar devices.

Other towns with historic districts, such as Idaho Springs and Black Mountain, N.C., also have begun approving solar panels on old buildings.

But Denver suburb Greenwood Village recently rejected a request from a car-wash operator to install solar panels, citing appearance.

Breckenridge historian Maureen Nicholls said she's "very surprised" that the town is encouraging solar devices within the historic district.

"I'm glad the town is maybe seeing the light. You do have to change with the times, maybe a little bit," she said.

Town council member Jeffrey Bergeron supports the move toward solar energy in the historic district, even at the risk of alienating purists.

"In the old days, we could be very rigid about maintaining a precise historical character," he said. "When you look at it in terms of today's times, in terms of escalating energy costs and just what's the right thing to do for the planet, I think you have to be a lot more flexible."

Source: Summit Daily

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