IS IT WORTH SAVING? A DECISION-MAKING GUIDE TO PURCHASING A HISTORIC HOME

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Chapter 1: Introduction

Introduction

Historic preservation is broadly defined as the “process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property” (Swanke Hayden Connell Architects, 2000, p. xxv). In other words, it is the maintenance and repair associated with historically prevalent structures in order to avoid “extensive replacement” and “new construction” (Swanke Hayden Connell Architects, 2000, p. xxv). The meaning of preservation tends to vary amongst professions as well as individuals. Some might consider replacing a majority of a buildings’ original materials but maintaining the historic feel to still be preservation, while others replace little to no original materials and consider that to be the real definition of preservation. For the context of this paper, the definition is to maintain the upmost character of the era and construction in which the structure was initially built while avoiding significant alteration/replacement of the original materials. Similarly, sustainability efforts have an ongoing focus on the use of historic places as one of the greenest practices. As Elefante (2007) stated “The greenest building is...one that is already built” (p. 26). Many people tend to overlook the idea of preservation as one of the best ways to be sustainable, and because of this, earth’s resources are becoming diminished and inner cities (where most of these buildings reside) have rising vacancy rates.
To put preservation in context, potential buyers must realize that “about 6 percent of the existing building stock was constructed before 1920” (Elefante, 2007, p. 27). These past eras produced buildings before the trends of sustainability, climate control, and energy-efficiency were prominent in society. The durability factor of these structures was manufactured to withstand natural elements while harboring longevity, but the focus on cost-effective materials, quick-turnaround construction and mass-production of housing was overlooked in comparison to the current era. Modern society focuses on the minimalistic use of materials, as many resources are more quickly depleting. The fact is that many of these older homes tend to be built much more durably. Planners, homeowners and community members oftentimes see these structures as a negative, but with these buildings already having been constructed, it would be more “green” to make use of these structures rather than demolishing them to construct new ones.

Throughout this paper there will be a definitive focus on these definitions to better educate the reader as well as maintain a consistent view of preservation and sustainable practices. The end result will be a decision-making guide that can help individuals weigh the options associated with purchasing a historic home. The purpose of this decision-making guide is to better educate potential homebuyers interested in purchasing such historic homes. More broadly the guide will suggest alternatives for weighing each decision a homebuyer must contemplate in order to make the best choice relating to their own preference of investment, value, and personal interest in the home. These alternatives are intended to help the buyer become more knowledgeable of common issues associated with older homes as well as the benefits of restoration. Even if the end result for the individual is a decision not to purchase a particular historic home or simply to purchase a newer one, the options are intended to be
recognized by the individual. Not all buildings are meant to be saved, but overall, this guide will answer the question: *Is the building worth saving?*

**Problem Statement**

Many homebuyers tend to focus on the negative attributes of older homes, including:

- Restrictions and regulations
- Existing damage
- Maintenance costs
- Energy-efficiency issues
- Older plumbing
- Outdated wiring
- A limited number of bathrooms
- Single-panel windows
- Non-working windows
- Rehabilitation costs
- Accessibility issues
- Fire protection
- Existing lead based paint

In reality, the inventory of vacant historic homes is heightening and there needs to be action taken in order to stop this ever-rising issue. Planners are being forced to think of preservation as a “major regulatory activity, whose accommodation requires careful analysis and planning” (Robins, 1995, p. 95). The practice of accommodating existing, historic buildings will help bridge the gap of knowledge between features of new and old structures, to a changed way of thinking, as it pertains to their values. This means that homeowners need to see these older buildings as being part of the ongoing, valuable inventory rather than as a long-term challenge or an issue that can simply be solved with demolition. “Popular perception is that only new buildings constructed using the latest green products are sustainable” (Ware, 2011, p. 3). Leitmann (1999) describes the conservation of existing buildings as the third of four measures used to conserve energy. These buildings have already been through the construction process,
making the energy and resources needed to make them livable, far less than new construction. Having this lowered value of embodied energy can offset downfalls related to energy efficiency. This being said, there is significant value to the reuse of existing buildings especially when it comes to the cultural heritage. Energy efficiency is only one of many values to restoring historic homes. Leitmann (1999) stated a measure of sustaining cities as conservation of cultural and historic landmark buildings. Cultural relevance is a difficult trait to correctly mimic and once these landmarks are altered or destroyed they cannot always be brought back to their original significance (or splendor). One problem we face is the defacement or destruction of the buildings themselves and what they actually represent to the community and individual's character.

There are some people who simply focus on their desire to start with a clean slate and may prefer a newly constructed home in the suburbs so that they have the freedom to enjoy a large yard and a customized building made of new materials. Many such homebuyers fail to realize some of these traits can be achieved within historic structures while achieving higher standards of energy efficiency and long-term investment. There are also individuals who want the city lifestyle of walkability and little yard maintenance, etc. but can’t connect with the existing structures and/or don’t see the value in restoring them. This decision-making guide will help to educate both of these types of buyers as well as others on the value of historic homes and how they might be able to find what they are looking for without sacrificing their own preferences.

Within the field of urban planning, we face the ongoing issue of preventing urban sprawl while promoting infill development. Making the value of historic housing more knowledgeable is one of the best ways to save these buildings and limit urban sprawl. There are also many other issues that arise when people start to move further from the inner city, allowing relevant
structures to deteriorate. Traffic begins to increase and reliance on vehicles for basic needs becomes more common. An invisible barrier tends to form between those in the suburbs and those in urban neighborhoods as their distance and cultural differences vary. Another goal of this decision-making guide is for the knowledge being portrayed to help educate various unfamiliar individuals while contributing to infill development. Keeping all these factors in mind, the homebuyer will begin to self-identify with their own needs and the type of lifestyle they wish to portray to make the most valuable decision for themselves.
Chapter 2: Background Information

Background

In the past, historic preservation has had little integration in terms of long-range planning. Robins (1995), restates Professor Baer’s proposals to focus on historic districts, to “devise new techniques…in thinking about preservation over the long-term,” and to anticipate “future trends for consideration by policymakers” (p. 96) There is significant need for tools such as this decision-making guide to better educate individuals to protect the future for historic preservation. Oftentimes planning and preservation practices collide. More recently the two have been studied collectively. By doing so, discrepancies within the research of both fields are more likely to be resolved.

There have also been efforts to stop the initial process of historic deterioration within the United States, most of which revolve around the National Trust for Historic Preservation. Of course there are always activists trying to save even the worst of properties including those with little to no historic value. There are laws and regulations created to help educate and guide unfamiliar individuals in the right direction. The Advisory Council on Historic Preservation (ACHP) has a “section 106 regulations summary” which is a guide to help individuals better understand these regulations as well as other related guides. “Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the
effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment” (ACHP, 2013). The guide is free and easily accessible for those with internet access. It explains the process, how they identify historic sites, adverse effects of the sites, how to resolve adverse effects, and implementation. Similarly, the ACHP has created a more extensive guide that can be viewed at: http://www.achp.gov/docs/CitizenGuide.pdf. Though this guide merely summarizes an outline of the guidelines, the goal is similar to that of the current work.

Another relevant guide is the “Field Guide to Local Preservationists.” This guide is yet another document associated with the National Trust for Historic Preservation. Its purpose is to educate individuals on the idea of “local preservationists.” This approach is similar to that of the decision-making guide in that it educates the individual on issues associated with preservation. However, it is different in that it defines the role of local preservationists and how they can contribute to their local community rather than the specific needs of the local community individuals. This guide can be found at: http://www.preservationnation.org/who-we-are/fieldguide/LP_FieldGuide_Partners.pdf.

Finally, there is “The Secretary of Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, & Reconstructing Historic Buildings.” This guide is specifically designed to provide advice for the preservation and protection of cultural resources, specifically those listed, or eligible for listing, in the National Register of Historic Places. It includes aspects of building exterior and interior materials, features, and building sites. This guide can be found at: http://www.nps.gov/tps/standards/four-treatments/treatment-guidelines.pdf.
Objectives

There are not many guides directed towards individual preference when considering historic relevance. This is why the goal of this decision-making guide, is to help make potential homeowners more knowledgeable about the potential decisions that can transpire when purchasing a historic home. Specific areas of concern will include: The site, exterior and interior condition of the building, structural stability, basement and attic needs, condition of systems (HVAC, plumbing, electrical, etc.), and insulation. Examples of questions that may be answered with this guide include: Is a historically relevant home with an unstable foundation worth saving? What makes a home historically significant? What do I look for in a good quality historical home?

Within the existing knowledge of historic homes, many people wonder if there is true value within the small remains left of many of the once beautiful structures populating the past. Existing research has aimed to save these buildings’ integrity or be resourceful with their remains. The difference with this guide is that it will help individual buyers find their own meaning of value within the buildings rather than create a blanket statement for all differentiating structures in existence. This guide will also touch on points relating to use of green building practices as well as appropriate maintenance indicators during the preservation process.

Methodology

When going through the process of evaluation for historic structures, it is important to understand that they are all different and will have different features to look for, from their varying eras. That being said, a simplified view of how these decisions can sustain a more green
structure, are based off of the following 9-point metric. Though this guide can help identify areas of focus but homebuyers should also make the following sustainable considerations:

- Reducing Waste
- Up-cycling of material
- Reuse of material
- Use of environmentally sensitive materials
- Integrating site design
- Reducing energy use
- Reducing water consumption (municipal system)
- Aligning thermal and pressure boundaries
- Cool roofs

These terms are ways to utilize green building while considering the best possible preservation tactics in the process. Keep in mind, historic preservation is a sustainable building practice in itself and should be considered so during the building process, as a viable option.

According to the *Standards for Preservation and Guidelines for Preserving Historic Buildings* (1992), the approach to preservation can be assessed by the following seven points, of which will be highlighted in this decision-making process:

- Choosing preservation as a treatment
- Identify, retain, and preserve historic materials and features
- Stabilize deteriorated historic materials and features as a preliminary measure
- Protect and maintain historic materials and features
- Repair (stabilize, consolidate, and conserve) historic materials and features
- Limited replacement in kind of extensively deteriorated portions of historic features
- Energy efficiency/accessibility considerations/health and safety code considerations

These considerations are tied into the methods in which this guide analyzes the integrity of historic structures.

In addition, the need for the method of which the decision-making process is laid out is in accordance of the structure in which the potential homeowner is analyzing. For a majority of the levels, this process includes an analysis of the condition of a specific system.
discussion of such system, the homebuyer will be prompted with specifics of the evaluation. They will then be asked to rate the condition as Excellent, Good, Fair, or Poor (in most cases). Within each of these levels, it is indicated as to severity of each factor and how it might negatively affect the purchase of a home. For the condition evaluation, it is important to rate the condition in that category if any of the factors listed in said condition are present. These levels were chosen based on factors indicated within The Secretary of the Interior’s Standards for the Treatment of Historic Properties as well as the authors own personal education and work experience.

Outline of Levels

• Level 1: Is it worth saving?
• Level 2: Major Structural Aspects
• Level 3: Roof
• Level 4: Historic Windows
• Level 5: Electrical System
• Level 6: Plumbing System
• Level 7: HVAC System
• Level 8: Basement and Attic
• Level 9: Historical Relevance
• Level 10: Exterior Physical Aspects
• Level 11: Interior Physical Aspects
Chapter 3: Historic Preservation Guidelines

The Decision-Making Guide

Level 1: Is it *Worth Saving*?

This is the first and most difficult level of the decision-making guide. When making the big decision to purchase any historic home, there will always be that feeling of: *Is it really worth saving?* When considering these options the buyer must focus on the significance to their personal preference as well as the later interpreted economical and physical factors. If a structure is in need of significant work, but it has been passed down through the family for generations, it may be worth saving for the buyer. If the structure is in good condition but the surrounding neighborhood is mostly vacant or in economic distress, a revitalization of this neighborhood (leading to a rise in housing values) might be more of a long-term investment that the buyer is not willing to wait for (housing value, neighborhood stability, safety, etc.).

The buyer must remember that even if a building is not on *The National Register of Historic Places* it may still be of historical significance. “Work on recognized or eligible historic buildings generally requires review, input and/or acceptance by various local, state and federal agencies” (Swanke Hayden Connell Architects, 2000, p. 4). Many individuals just do not have the time, funds and/or patience to endure this process, and some states have differentiating criteria for what is historic. On the plus side, there are many financial incentives that can be
granted to homeowners willing to sustain the application of historic preservation and/or rehabilitation. “The fact is buildings of architectural and cultural importance are represented in all decades of history” (Swanke Hayden Connell Architects, 2000, p. 3). In order to better understand what makes a property significant in the professionals’ standards the buyer must consider the following terms of evaluation delineated by Swanke Hayden Connell Architects (2000):

- The locale’s specific history and development
- The individual property’s architectural merit and association with important events and persons
- The property’s construction materials and remaining integrity

When considering these factors, the buyer must make definite decisions. There will likely be times where there is a fine line between the options, but they must remember that it is not beneficial to move forward without a definite answer. Choose yes or no to answer the first question: Is it worth saving?

- Yes: There is some significance of the structure to the potential homeowner’s personal preference. The overall investment does not seem that it will be underserving but that it would be a considerable investment, and/or the relevance of the structure is of historical relevance. The age and integrity of the building may be of considerable value (as defined below by ACHP (n.d.)). If the potential homebuyer’s answer is yes, they should proceed to level 2.

  - **Significance**: Is the property associated with events, activities, or developments that were important in the past? With the lives of people who were historically important? With distinctive architectural history,
landscape history, or engineering achievements? Does it have the potential to yield important information through archaeological investigation about our past?

- **Age and Integrity.** Is the property old enough to be considered historic (generally at least 50 years old) and does it still look much the way it did in the past?
  
  - **No:** The structure is to the point where the overall investment is significant enough so that even if historical relevance were present, it would not be *worth* saving by the potential homeowners’ personal preference. If the buyer answered no, there would be no need to evaluate the structure further.

**Level 2: What is the condition of the major structural aspects?**

The second level of the decision-making guide is another major decision on the part of the homeowner. If the buyer is unable to correctly analyze the major structural condition of the building, they could be in for an expensive mistake later in their project. Many older buildings will have been sitting for decades when they “ripen for historic preservation” (Baer, 1995). Armesto, Arias, Roca & Lorenzo (2008) explain that over time many buildings have a great deal of damage to their materials including partial or total degradation of the structure as a whole. With this possibility in mind, many of these buildings have had no maintenance whatsoever during this period of vacancy. Even with the potential for degradation, in some cases, the buyer may emotionally connect with the house to the point that the structural issues may not phase the fact of its overall value. This brings back the question of “*Is it worth saving?*” as differentiating factors for each individual. When analyzing these structural aspects it is important to pay
attention to potential present and future deficiencies. Many of these concepts can be related to load bearing aspects of the structure, which can easily become a major safety hazard. On the bright side, “most structural deficiencies can be rectified using simple reinforcement techniques, preferably using the same kinds of materials as are currently in place” (Swanke Hayden Connell Architects, 2000, p. 120).

During an evaluation of the building, it is important to analyze all present structural system aspects, some of which may include: foundation, loadbearing walls, columns, roof trusses, posts and beams, vigas, or stone foundation walls. (Weeks & Grimmer, 1995). They should be looking for signs of deficiency such as, but not limited to: bowing, cracks, mold, unleveled surfaces and deterioration of such aspects; Other signs of issues specifically related to the foundation might include: doors not opening properly, gaps at the corner of fascia trim, gaps between the garage floor and pavement, windows that are difficult to open or close, gaps above kitchen cabinets, unleveled floors, curling or tearing of existing sheetrock repairs, and leaks and cracks in and around the fireplace (Foundation Repair Network, 2003). Through this assessment, the potential buyer must understand that there are many structural aspects that might be unexposed or less easily fixed. If they feel there are cases that may be detrimental, it is important to have a professional analyze these aspects before removal as they could both define the buildings’ historic character as well as be significant support for the structure. This should be done early in the project planning stages.

The Secretary for Interiors Standards for the Treatment of Historic Properties (1995) has recommends the following steps for structural systems within historic properties:

1. Identifying, retaining, and preserving
2. Stabilizing
3. Protecting and Maintaining
4. Repairing (Limiting replacement)
These and practices not recommended are further defined in Appendix A.

Choose the appropriate level when considering the overall condition of the structural aspects of the building:

- **Excellent:** All structural aspects are in perfect working/supportive condition. There are no visible major cracks within the foundation. There are no issues of stabilization or deterioration. (Even if the buyer feels that all structural aspects are in excellent condition, it is still possible there may be some hidden issues when the inspection of the home is conducted.)

- **Good:** Most structural aspects may not be perfect but are in need of minor repairs or stabilization techniques.

- **Fair:** A majority of the aspects are in significant disrepair and though fixing them might be a major expensive they are likely still salvageable.

- **Poor:** One of more of the major aspects is in such disrepair that it would need to be completely replaced.

**Level 3: What is the condition of the Roof?**

The roof is considered one of the major structural aspects, essentially because without a solid roof, there are all other sorts of potential risks that can arise. The pending condition of the roof can be such a varying and impactful entity of the character and physical structure that it should be assessed separately. When analyzing the roof, it can be beneficial to analyze it in different types of weather, if possible. For example, in the colder months if there are spots where snow is melted on the roof, these are referred to as hot spots and indicate that the heat is escaping from this area. This can be a simple issue of insulation, but can also be a leader to other damage.
Hot spots are illustrated in the following image and can better be illustrated from the chart in Appendix B:

![Hot spots on a roof](image1.png)

*Figure 1: Hot spots on a roof. Retrieved from: Houle Insulation Inc.*

There are also always issues of leakage that need to be considered in roofing. If possible, potential homebuyers should take a look at the house during/after a big rainstorm where there are usually signs of water spots within the interior ceilings or attic. It is possible that such water spots may stem from another issue such as a sprinkler system or water line break, but likely have to do with deficiencies of the roof. An example of such water spots can be seen in the following images:

![Water damage caused by a poor roofing system](image2.png)

*Figure 2: Water damage caused by a poor roofing system. Retrieved from: Floridian Public Adjusters.*
Other aspects that can signal a poor roof are: bowing, signs of deteriorated/missing shingles, granule loss, general old age (may not be specified by previous owner) and any curls or cracks.

When it comes to roofing, there is also the controversy over preserving historic roofs. “When identifying, retaining, and preserving roofs and their functional and decorative features that are important in defining the overall historic character of the building” (Weeks & Grimmer, 1992). Of course, the buyer may not have a choice sometimes as to what the previous owner has done to the existing roof, but where possible, it is important to be knowledgeable of the guidelines to maintaining a historic roof as well as if there are any restrictions.

There have been issues in the past with historic roofing materials as it pertains to cost-effectiveness, ease of installation, and functionality. For example, Willbee (2007) indicated that within historically significant buildings, it has been a struggle to identify alternative roofing materials for cedar shakes and shingles, as they can more easily become a fire hazard within certain geographic areas. Willbee (2007) also states that using some of the newer materials or those made as “lookalikes” can have adverse physical effects on historical buildings as well as their significance. Therefore it is always beneficial to look into any new materials added to a building, whether it’s professionally done or installed by the homeowner. These issues can be avoided by following the Secretary of the Interior’s Standards and Guidelines for Treatment of Historic Properties, (see, Appendix C). Other types of historic roofing materials from the 17th and 18th centuries might include: clay-tile, sheet-metal, slate, corrugated metal, galvanized metal, tin-plate, copper, lead, and zinc; while roof shape features might include: cresting, dormers, cupolas, and chimneys (Weeks & Grimmer, 1992). “New roofing materials developed
in the early 20th century include *built-up roll roofing*, and *concrete, asbestos, and asphalt shingles*” (Weeks & Grimmer, 1992).

As recommended in the *Standards for Preservation and Guidelines for Preserving Historic Buildings*, the following guidelines should be considered when dealing with a historic roof:

- **Identify, retain, and preserve:** It is important to define the overall character of the building, which would include the roof shape, features, materials, and patterns. In this step it is not recommended to alter any of these features as it may diminish the historic character of the building.

- **Stabilize:** It is recommended to “stabilize deteriorated or damaged roofs as a preliminary measure, when necessary, prior to undertaking appropriate preservation work” (Weeks & Grimmer, 1992). Failing to stabilize can once again cause a greater financial investment as well as further damage to historic character.

- **Protect and maintain:** In order to protect and maintain the standard for historic roofs it is important to utilize typical roof maintenance such as cleaning downspouts and gutters, replacing deteriorated flashing, checking roof sheathing for proper venting (to prevent water/moisture damage and avoid insect infestation), provide adequate anchorage for roofing material, and using plywood and building paper to protect the roof until it can be properly repaired. It is not recommended to use roof fasteners such as nails and clips as these materials can “accelerate deterioration.”
• **Repair:** In order to properly repair a roof it is important to reinforce the historic materials using the appropriate “recognized preservation methods.” It is not recommended to remove materials that could have been repaired, using improper techniques or failing to reuse these materials when only the “roofing substrate needs replaced.”

• **Limit replacement:** This step is the most highlighted in that it can make the biggest difference in the preservation process whether that is positive or negative.

Within the *Standards for Preservation and Guidelines for Preserving Historic Buildings* Weeks & Grimmer (1992) directly states the following recommendation:

Replacing in kind extensively deteriorated or missing parts of roof features or roof coverings when there are surviving prototypes such as cupola louvers, dentils, dormer roofing; or slate, tiles, or wood shingles on a main roof. The new work should match the old in material, design, color, and texture; and be unobtrusively dated to guide future research and treatment. (p. 25)

This more basically indicates that unless absolutely necessary, don’t replace anything, and if it’s absolutely necessary, do it to mimic the historic character/guidelines. More detailed descriptions of these guidelines can be found at:


When evaluating the *roof* of the building, what is its condition? When considering this question, the buyer must analyze whether they are willing to invest a great deal into a building with a damaged roof. Damage to the roof can be a great expense in itself with the addition to further damage caused to structural and cosmetic features of the building. The recommendation
here might be to consider buildings within the good and excellent category unless; once again there is greater significance of the building to the buyer.

- **Excellent:** The roof is of historic relevance to the character of the building. It is in perfect condition with no leakage, missing materials, holes or physical damage (including bowing, indentation or unevenness). The appropriate measures have been taken to maintain its general quality and historic relevance such as consistent materials, stabilization, and structural support.

- **Good:** There may be some slight damage such as that from weather or wear and tear. This damage should be easily repairable or simple maintenance issues. Long-term failure to maintain the roofing would likely lead to further unforeseen damage and should be analyzed in more depth.

- **Fair:** This may indicate that the roofing is not of historic relevance, in which case there are not as strict guidelines when pertaining to its replacement. This condition may also indicate greater physical damage to the roof such as ventilation issues, severe weather damage, bowing or other physical deformities as well as damage to the building itself caused by the damaged roof.

- **Poor:** This level of condition would indicate that the roof is not structurally sound, meaning it has the potential to be a safety hazard. This would be indicated by caving of the roof, *severe* damage to the structure of the building, and/or partial to full absence of the roof altogether. It is not recommended that the roof be maintained at this point but that any reusable materials are salvaged where possible.
Level 4: What is the condition of the Historic Windows?

“Windows are the most visible, yet commonly under-appreciated components of older and historic homes and buildings” (National Trust for Historic Preservation, n.d.). Windows can be another major expense that people don’t always consider. Historic windows in particular have been an ongoing controversy within the preservation field as to whether they should be replaced, covered, or repaired. Many historic windows still have the original character but are not usable in the sense of efficiency or functionality. In many of these cases homeowners opt-out of the replacement option and instead install storm windows over the original ones. This way, the character of their style does not get replaced but is instead protected as well as creating a more energy-efficient alternative. This process can also help protect the windows from future damage. An example of use of storm windows is illustrated in the following image:

![Figure 3: ecoREHAB house before and after renovation with storm windows. Retrieved from: ecoREHAB.](image)

There are many myths as to whether historic windows are a major loss of energy. People tend to overlook the fact that when many of these buildings were constructed, they were the only thing standing between those that resided in the home and the natural elements. That being said, even with less advanced technology, these homes tend to be built with added durability and were meant to last for longer timespans. As the National Trust for Historic Preservation (n.d.) states,
original historic windows serve a great purpose, they are the buildings inside-outside connection, providing ventilation, light, and can function as emergency egress. “Above all, they offer clues to a building’s history because they integral aspects of architectural design” (National Trust for Historic Preservation, n.d.).

Windows are commonly perceived as a major energy loss factor. Even with so many companies pushing homeowners to replace these windows, in the long-term, the major expense associated with this replacement is often more than the energy savings gained within the windows’ lifespan. National Trust for Historic Preservation (n.d.) states:

People jump to replace their historic windows because companies promise that their replacement windows will not only save them time and money, but that their products and services are the “green” thing to do…One reason why it is tempting for homeowners to replace their original historic windows is because they can immediately see a difference when a window is replaced.

This type of positive reinforcement has led many homeowners to replace windows that could’ve been repaired otherwise for less financial and historic damage. The National Trust for Historic Preservation (n.d.) suggests the following considerations when deciding if it is necessary to repair or replace a home’s historic windows:

1. Are my windows an important architectural or defining feature of my home?
2. Are there ways I can retrofit my windows to achieve greater energy efficiency?
3. Will replacement windows last as long as my originals?
4. Will replacement windows “fit” the character of my home or detract from it?
When it comes time to consider the windows, the homeowner must understand that “most older windows, especially wood windows, can be easily repaired by a DIY-er or by hiring a qualified contractor…Problems arise from a lack of maintenance, water and condensation damage, and ultra violet light degradation” (National Trust for Historic Preservation, n.d.). That said, if the house is repaired and then continuously maintained, many of these issues could be avoided before they continuously deteriorate the windows. Various case studies, in which historic window replacement was the chosen option, are highlighted in Appendix D.

What is the overall condition of the historic windows within the home?

- **Excellent:** All windows are in functional condition. There are no visible cracks, missing components, damages, or deterioration in the glass or frames; there is no air escaping any of the gaps (should be caulked), there are no loose or missing components (such as hardware), there is no build-up of paint, and weather-stripping is likely present to limit heat-loss.

- **Good:** The windows may have minor amounts of air escaping that can easily be sealed with caulk, and if there are any loose parts, they can easily be adjusted. There may be minor physical/cosmetic damages that can easily be fixed or may just be unnecessary to alter at this time. The windows should be functional, or easy to make functionary by the homeowner or a contractor (e.g. paint build-up causing the windows not to open). In this stage the homebuyer may benefit from use of storm windows to protect and maintain historic windows.

- **Fair:** The windows may not be functional at this stage and could potentially be considered for replacement depending on other factors. Glass may be missing but with the potential for replacement. Escaping air is more likely significant and may
take more constructive fixing rather than just sealing. Weather stripping is likely absent or in disrepair, components may be severely damaged or missing, and the windows themselves may no longer be of significance to the historic value of the house.

- **Poor:** Windows would be severely damaged to the point replacement if not absent completely. Wood windows may have rotted from long-term deterioration, or be damaged by other natural and man-made factors. At this stage the house itself may still be a reasonable purchase but windows would need to be a major consideration expense-wise.

**Level 5: What is the condition of the Electrical System(s)?**

Though some aspects of historic homes are a decision-making process, the electrical system is something that requires constant upgrading. Unless the building was updated by a professional and is documented as being up-to-code, it is something that should be inspected in depth. According to Curry (2009), if the house was built more than 40 years ago without an electrical update, the system’s wiring should be replaced for safety concerns. Additionally, Curry (2009) has constructed a list for homeowners to help identify the potential warning signs of outdated, old wiring:

- Breakers trip or fuses blow regularly.
- A tingling sensation when someone touches a wall switch, appliance, or receptacle.
- Dimming and flickering lights.
- A burning, smell in a particular room or from an appliance.
- Discolored outlets and switch plates that are warm to the touch.
- Ungrounded outlets throughout the house (ungrounded outlets accommodate only two-prong plugs).
- A lack of ground fault circuit interrupter (GFCI) outlets in the bathrooms, kitchen, and other areas that may be exposed to damp and wet conditions.
• The house was built more than 40 years ago.

When making these considerations, homeowners should ponder the fact that even if the current electrical system is in poor shape, this is an expense that would be beneficial to upgrade in an older home and could ensure safety and efficiency within its investment. Many older systems tend to not be able to support larger and newer technologies such as TV’s, computers, and air conditioning units. Considering these factors, if the homebuyer decides to update the electrical system, it’s recommended that they account for future technology enhancements. They should also keep in mind, that altering the electrical system could have adverse effects on the physical historic elements. The homebuyer should consider consulting both an electrical professional and person with knowledge of historic renovations. If the home has minimal issues, other than the electrical system, it may still be worth saving. These systems need regular updating and the cost may be worth investing into a home when most other homes might need the same update within a few years. That being said, the homebuyer must now weigh their options and consider the following question: What is the current condition of the electrical system in the historic home?

  o **Excellent:** The system is up-to-date and has no signs of outdated or old wiring. There are a sufficient amount of plugs throughout the house for the needs of the users. There are no potential issues that may arise from inadequate energy sources for the users within the household.

  o **Good:** There may be some minor updates needed that would be of limited expense. Most of the signs of outdated wiring are absent but due to the age of the system there is potential that it may need updating within the near future.
- **Fair:** Several of the signs of outdated/old wiring are present, though it has yet to cause any known safety hazards. At this step it would be wise to update the system immediately.

- **Poor:** The electrical system is extremely out of date and a clear safety hazard to the home. This could be of the homeowners own knowledge acquired from a professional or from various signs indicated from the above list. The system should not be used or tampered with until a professional updates/inspects it.

**Level 6: What is the condition of the Plumbing System(s)?**

The plumbing system of any home historic or not, is always an expensive fix that can sneak up on the homeowner unexpectedly. Plumbing issues can arise from basic factors such as roots and even more prominently, age. According to Swanke Hayden Connell Architects (2000) historic plumbing systems include: water supply piping, waste water piping, rainwater leaders, and plumbing fixtures, and typically these systems are made of cast iron, copper, or lead. When considering capacity, it would be wise to study the original structure of the building. Many homes receive renovations and extensions with added plumbing fixtures that the original piping may not support. These types of extensions can also cause increased deterioration in addition to existing damage. “Water damage due to a leaking pipe can have dire consequences to historic finishes, especially wood and plaster” (Swanke Hayden Connell Architects, 2000, p. 124). Older piping systems are at risk of being clogged, leaking, damaged, and/or deteriorated and can cause addition harm to other areas of the house. Many piping systems can be damaged by factors as simple as poor maintenance or overgrown rooting systems. It is important to have a professional analyze unexposed piping to evaluate the level of damage present. It is also beneficial to check if
the home has been weatherized if it’s been sitting vacant during colder winter months. If winterization has not been done correctly, pipes may have frozen or burst causing more issues for the homeowner.

Whether the homebuyer plans on fixing the issues themselves or having a professional do the work, historic finishes are something to keep in mind. Swanke Hayden Connell Architects (2000) gives examples of some of these finishes to be: ornamental tile, marble floors, wainscots, marble and metal partitions, wood-paneled stalls and entrance doors, porcelain plumbing fixtures, nickel-plated fixtures, stall partition hardware, and mirror frames. Many of these factors are historically significant and can be easily damaged by changes to the plumbing system. Additionally, replacement fixtures tend to struggle to fit into existing support systems. For this reason, fixtures should only be replaced if absolutely necessary and even so, salvage wherever possible. Though the average homeowner cannot analyze the entire plumbing system, they should evaluate visible features and weigh the options in order to decide: What is the condition of the Plumbing System(s)?

- **Excellent**: All original fixtures are in place and in both mechanically and cosmetically pristine condition. This means that there are no signs of backup, sludge, deterioration, cracks, or other erosion. Though this condition may not be likely in many historic homes, utilizing the correct maintenance can have increased benefits for the longevity of the home.

- **Good**: There may be some minimal damage to plumbing fixtures, but the overall damage to the rest of the system is maintained and still functional. There may be some need for repair but it can be done without any extensive damage to the original materials.
○ **Fair:** At this level of conditioning there may be more extensive damage to the original plumbing fixtures or they may be replaced/absent. The system itself may have signs of deterioration that results in damaged piping or backup. Historic materials may have been damaged or removed from plumbing renovations in the past. Some of the historic integrity may have been compromised and parts of the system may need major replacement.

○ **Poor:** The plumbing piping is in need of major repair and will likely need to be replaced. Other aspects of the system such as fixtures are also severely damaged such as being cracked or unstable. Backups, burst pipes, or other visible signs of poor maintenance may be present.

**Level 7: What is the condition of the HVAC System(s)?**

The HVAC system is oftentimes out of date or even absent in many historic homes. The homebuyer will likely encounter homes that were originally built without a need for these systems at all. This can be another difficult endeavor because when the homes were not built to require such systems, oftentimes, there isn’t the adequate space or ductwork in place to install the new system. “Sensitively installing ductwork in buildings designed to accommodate only heating and natural ventilation presents one of the greatest challenges involved in upgrading historic buildings to meet current codes and comfort standards” (Alderson, 2009, p. 1). Though this can become an issue, it is occasionally something that can be worked around. The homeowner must again be careful of altering the historic integrity of the building and its materials in the process. Alderson (2009) explains that fan coil units are a popular choice for historic buildings because of their ease of exchange for radiators and that their pipes are smaller.
and less intrusive than the ducting required for forced air systems. “Using ducts to meeting ventilation requirements only enables use of smaller ducts that would be required to meet both ventilation and temperature conditioning requirements” (Alderson, 2009, p. 1). There are many tactics such as those specified that can help save the homeowner money while still maintaining the appropriate standards for historic and non-historic homes.

Updating the HVAC systems can be an opportunity to install more energy-efficient units. Even so, “all HVAC upgrades in historic buildings require RHPO review, beginning early in project planning, to ensure that preservation compliance requirements are met for timely project completion” (Alderson, 2009, p. 1). Many buildings are built with more, hefty climate-control features. Alderson (2009) explains to reduce the impact to historically significant spaces the homebuyer should “make the most of a buildings original, passive climate-control features” (p. 1). By doing this, they will not only reduce the impact of installation but also save money, and reduce system requirements. If installation of a new system is necessary, there is a less invasive option (where applicable) that the homebuyer can add exposed ductwork to many historic buildings due to the commonly high ceilings. This practice creates a modern and desirable look while having minimalistic negative effects on the historic materials. Exposed ductwork is also helpful for future changes to the system as it maintains a desirable ease of access. On the other hand, Alderson (2009) indicates that the appropriate concealment, configuration, and routing of such ductwork can create a desired aesthetic success for HVAC retrofitting projects in these historic homes.

When it comes to cooling, it is no surprise that cooling systems are less common in historic homes than heating systems, especially those built prior to World War II. “Low profile window units and freestanding portable AC units are additional alternatives for historic spaces
requiring supplemental cooling, where other options cannot meet the preservation and
performance requirements of the space” (Alderson 2009, p. 1). It is important to lay out any
necessary proposed configurations in any system early in the development. This way if there are
any construction issues they can be hatched out early on.

This is another system that would likely be updated and maintained regularly.

Additionally, since this system is commonly not up to standard in older homes, it may not be a
deal breaker for the purchase of a historic home where it is damaged or absent. When updating,
remember that this is a chance to invest in a more energy-efficient system. Most heating and
cooling systems are built with several levels of energy-efficient standards. If it is within the
homeowners budget, the purchase of a more efficient system along with the proper insulation
may save a lot more in the long run as well as add value to the home. Though for this document
the focus is on historic homes, guidelines for the updating of HVAC systems in public facilities
can be found in Appendix F and are also beneficial for all homeowners. The potential homebuyer
must now consider: What is the condition of the HVAC System(s)?

- **Excellent:** The HVAC system is up-to-date and any installation has not done any
  harm to the historic significance to the building. The HVAC system is likely
  energy-efficient and up-to-code. The system serves the needs of the home
  consistently.

- **Good:** The HVAC system may have caused some minor damage to historic
  materials during replacement/repair. It does not need further
  updating/replacement at this time but may in the near future. The system may
  need minor maintenance or repairs.
o **Fair:** The HVAC system may be in need of more major repairs or be in need of potential replacement. Historical aspects may be extensively damaged or absent from system repairs.

o **Poor:** The system is in need of replacement whether it is in place or absent. Historical aspects have been extremely damaged or removed due to the systems presence, installation, or repair, and are unable to be repaired at this point.

**Level 8: What is the condition of the Basement and/or Attic?**

Though basements and attics seem to be of little value to the overall living space of a house, they can give hints to the deficiencies within the buildings. As previously mentioned attics can hide deficiencies in the roofing system. Both basements and attics can also be hiding other indicators such as mold, water damage, leakage (air), and unstable structural deficiencies.

One of the biggest issues is airflow, both positive and negative. If there isn’t enough airflow, but moisture gets into the basement or attic, the homeowner may find mold, which can lead to damage, and health issues. If there is too much air escaping on the other hand, there will be issues of energy loss and potential for moisture coming in. The following chart in Figure 4 illustrates the most common areas that air escapes a home:
The good part about the issue of air leaks is that once the homeowner can figure out where the leak originates, it can typically be sealed without the need to hire a professional but by using common practices such as caulking, sealants and insulation. The National Trust for Historic Preservation (n.d.) indicates within their chart on curbing air infiltration, that if the leak is between the foundation and sill, the homeowner can use caulk or expandable foam. If it’s in the attic floor, they should seal any penetrations such as wiring or plumbing, and insulate between joints, and for attic hatches, they simply need to insulate the attic opening. For basements as a whole, the walls and ceiling can also be insulated for higher efficiency.
Water damage in the attic and basement can stem back to other factors of the home such as a poor gutter system for the basement or a damaged roof for the attic. Though the source is not always known, there are ways to cure common moisture issues. Waterproofing the materials (especially those below ground in basements) can help insure that the moisture does not enter in this fashion as well as help with insulation. “Even older concrete block foundations, with original waterproofing and drain systems, can become quite damp after many decades” (Kibbel, n.d.). For this reason, it is important to continually maintain the potential for water condensation entering both the basement and attic.

Older basements can also have more physical deficiencies. The homeowner might notice that many of the basements have low ceilings, differing surface materials, or old holding cells for gas or oil. Though they may not be an issue that has to be fixed for the safety of a home, these issues can be more extensive if the homeowner were to ever want to finish the basement or attic. When evaluating an attic or basement, it is important to look for specific issues. RedBeacon (n.d.) has created the following checklist for inspecting an attic:

- Make sure that all the vents, of whatever types may be installed, are clear and air is able to flow without hindrance. If the attic has soffit vents it is important to ensure that the vents have not been blocked at the rear by insulation material. Installing baffles will keep the soffit areas clear and ensure proper ventilation.
- In the case of a ridge vents, check to see if the sheathing under the vent is cut back by at least the 3 inches that are needed to ensure proper air flow.
- If there are roof vents, blockages caused by animal and bird’s nests, leaves etc. are common. Clean these vents out regularly.
- Pay special attention to the areas around the chimneys, roof vents, skylights, and valley areas. These are where rotted sheathing caused by water leakage is most often found.

- Check the insulation in the attic for damage and have and repairs done as fast as possible. Remember that hot air rises and heat loss through the attic can have a significant impact on utility bills. For insulation, be effective, 10 to 12 inches is the optimum thickness.

- Complete a detailed inspection for mold, which is a common problem with attics. If mold is present or any other back or unknown substances on the sheathing, obtain professional help to resolve the problem, which could lead to serious health issues.

- Check the wood or engineered trusses for bowing or cracks. If there is any bowing, additional support may be required.

Many buildings might not have direct access to the attic, though when the building is professionally inspected, they will likely access and assess the attic. As it pertains to the basement, RightWay Waterproofing Co. (n.d.) has explained the 10 most common basement issues as pertaining to humidity, appearance, smells, window leaks, leaking or flooding, sump pump failure, basement floors sinking or cracking, and mold. All of these aspects are typically visible and if present, the homeowner will need to hire a professional in order to fix the problem.

Keeping these factors in mind, basement and attic issues, though commonly overlooked, can be major indicators of other problems. The homeowner must consider if these factors are related to the structure of these spaces or outlying issues. This is typically done within a general
inspection but can also be double checked by the potential homebuyer. Now the question being asked, what is the condition of the Basement and/or Attic?

- **Excellent:** Both the attic and basement (if applicable) show no signs of damages such as cracking, water, air leakage, blockage, or mold. Both spaces are up-to-code and are not in need of further maintenance or repair at this time. There doesn’t seem to be any issue of structure support within either space.

- **Good:** There may be some water damage, air leakage, or minimal mold, but they are all at the level to where they can be fixed by the homeowner and will not be of great expense/time. There may be some minor cracks but nothing that alters the integrity of the structural foundation.

- **Fair:** There may be more major damage from water, air leakage, or mold. The repairs and maintenance are likely out of the hands of the homeowner. The space may contain unsafe/out-of-date holding containers that are in need of removal or damaged materials. The sump pump may have failed.

- **Poor:** The structure is not sturdy/safe. Cracked or extremely damaged foundation is present. Black mold, asbestos, or radon may be present (after receiving the appropriate tests.) Ceiling, walls, or floors are extremely damaged and likely bowing.

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**Level 9: Analyze the Historical Relevance.**

Weeks & Grimmer (1992) state historic relevance as the following:

The building site consists of a historic building or buildings, structures, and associated landscape features within a designed or legally defined parcel of land.
A site may be significant in its own right, or because of its association with the historic building or buildings. The relationship between buildings and landscape features on a site should be an integral part of planning for every work project. When considering the historical relevance of a building, there are always differentiating factors, some of which require great attention to detail. Some builders will mimic the historic look, while others will renovate and replace or even cover the historic aspects for later use. The aspect of historic relevance is one of the most valuable resources because it consists of both architectural and cultural heritage. “Nowadays, the architectural and cultural heritage is recognized as a fragile and irreplaceable resource that should be preserved and transmitted to future generations (UNESCO, as cited in Armesto, Arias, Roca, & Lorenzo, 2008). Armesto, Arias, Roca & Lorenzo (2008) also explain that many of the protection policies for these structures are not as efficient as they need to be in order to support the lack of interest on the part of individual citizens. However, there are many incentives for those homebuyers willing to invest in historic homes (see, Appendix E). The homeowner must now consider, is the building historically relevant?

- **Relevant:** There has been a significant event, activity, or development on the property in the past. The property is associated with a person who is of historic importance. The property is of distinctive architectural history, landscape history, or engineering achievement. The property has yielded important information through archaeological investigation.

- **Unknown:** The historic relevance of the site is unknown or unclear at this time.

- **Not Relevant:** There have been no significant events, activities, or developments on the property in the past. The property is not associated with any person who is
of historic importance. The property is not of distinctive architectural history, landscape history, or engineering achievement. The property has no potential to yield important information through archaeological investigation about the past.

Level 10: What is the condition of **Exterior-Physical Aspects**?

When analyzing the exterior aspects of a building, history is often “hidden” in plain sight. Many owners opt to cover up portion of buildings rather than replace them. These practices can save both time and money as well as preserve the option of restoration of ever desired in the future. Though these tactics have their benefits, it can also damage the historic features beneath.

There are many different factors the homebuyer can consider during this evaluation. Now that the buyer has some ideas of the structural aspects, the remaining aspects tend to be more minimal. The exterior material can give major indicators of its’ history as well as its condition. Factors the homebuyer should consider are highlighted by Weeks and Grimmer (1995) as: masonry (stone, mortar), wood, architectural metals, roof, windows, entrances and porches. Though this guide already covers the roof and windows, these other factors can highlight discrepancies within the remaining exterior.

The siding of the home is considered one of the major exterior aspects. It may be of historical significance but it also protects the house from weathering and other elements. “Typical historic siding materials are wood, stone and brick. Stone frequently was used for foundations and trim elements although a few commercial structures are entirely stone. Other materials include stucco and concrete block” (City of Aspen Historic Preservation Design Guidelines, n.d., p. 39). Figure 5 illustrates the various styles of siding that the homeowner might see present.
If the exterior of the building is painted or the homeowner desires to paint it in the future it is important to know whether this paint is significant to the home’s historic value. Local vendors and preservationists can often guide the homeowner in the direction of appropriate paint colors for the era and style of their home.

The other important factor to assess is the presence of architectural features. Many historic or even just older homes will have unique designs still in place. If the homeowner decides to, they can repair or replace these features using identical salvaged materials. If there are is presence of unique woodwork, masonry, metals, or other features, the homeowner should
consult with a historic preservation professional before making any alterations to the features. Weeks & Grimmer (1995) explains types of masonry might include materials such as limestone, marble, granite, slate, fieldstone, and brick (terra cotta or adobe) and although these are some of the most durable of historic building materials, they are also very susceptible to damage by improper maintenance, repair, and cleaning. Wood is another essential material to historic structures. Though it is more brittle than some masonry techniques, it can be used for “architectural features such as clapboard, cornices, brackets, entablatures, shutters, columns, and balustrades. These wooden features, both functional and decorative, are often important in defining the historic character of the building” (Weeks & Grimmer, 1995, p. 4) Wood is also beneficial because it can be carved and sculpted to mimic existing features.

Metal is another material often present in these structures. It was often created by the more skilled designers and was more costly. “Metals commonly used in historic buildings include lead, tin, zinc, copper, bronze, brass, iron, steel, and to a lesser extent, nickel alloys, stainless steel and aluminum” (Weeks & Grimmer, 1995, p. 5). These materials are more long lasting but can rust and deteriorate if not properly maintained.

With this in mind, the potential homebuyer must now decide: What is the condition of

Exterior-Physical Aspects?

- **Excellent**: All exterior finishes are in perfect condition; any original architectural aspects are still in place and good, physical condition. The integrity of the structures’ exterior has not been altered or damaged. None of the exterior has been covered up.
- **Good:** Some of the architectural materials may have been damaged, altered, or removed but can be repaired or replaced to the correct historic standards. Other exterior factors may be in need of minor repair.

- **Fair:** A majority of the architectural aspects have been removed. Original siding may have been replaced, damaged or covered up with newer non-significant materials.

- **Poor:** The original exterior aspects are extremely damaged or removed.

**Level 11: What is the condition of Interior-Physical Aspects?**

When analyzing the interior aspects of a building, there are similar aspects to those of the exterior. Owners can sometimes “hide” the historical aspects under more contemporary features. For example, installing tiles or carpet over original hardwood floors, or painting original woodwork. These aspects can be both easy and difficult to change back to their original beauty.

If the woodwork is painted the homebuyer can carefully heat the area with the appropriate tools, peel away the paint, and refinish the wood. If there’s carpet in an old house the potential homebuyer could peel back a piece around a threshold or vent and see what flooring is beneath. This is where the aspect of surprise can often come into play, and the homebuyer may be getting something of more value than they initially expected. Identifying the historic relevance of the interior is a whole other level of historical significance. Many of these aspects can be more easily replaced and altered to fit the needs of the home. Since this is such a broad category to evaluate it is important to research the era in which the proposed home is built to get more definite details of it’s image. Based on the era of the home, the homeowner must now consider, what is the condition of **Interior-Physical Aspects**?
- **Excellent**: Original woodwork (if relevant) is in place. Original flooring, wall, and ceiling materials are in place and in good condition. Little to no original aspects have been removed. There is no major damage to the interior finishes or fixtures.

- **Good**: Minor cosmetic issues may be present, though much of the original materials are in place. If there are any alterations to the original floor plan or styles they are minimal and can be returned to their original form if necessary.

- **Fair**: There may be existing, interior walls, though they are in need of severe repair. These walls may be within the range of replacement although they also could be within the realm of extensive repair. A significant amount of the original materials have been altered or replaced. The structure need repair prior to livability.

- **Poor**: There are likely little to no existing walls. Any existing walls would be unreparable but rather need to be replaced. Flooring may be in need of structure or physical repair before the building can be utilized for renovation. Ceilings may be missing or in need of structural repair. Original trim and woodwork is absent or severely damaged to the point of replacement. The structure is not likely in livable condition.
Chapter 4: Conclusion

Summary and Conclusions

When considering all of these aspects, the homeowner has many decisions to make in regards to their future in the historic preservation world. Many of these aspects can now be more easily evaluated through this guide, and where necessary, a professional can be consulted. When considering these various factors it is important to always remember that the removal of historic aspects can be one of the most damaging factors for these older homes. It can alter the integrity of the building as well as damage existing materials. When returning to the statement “Is it worth saving?” these existing materials all have a major influence on how the decision will commence.

As all of these factors are valuable to the worth of the building, it is important to know which factors have more weight on each structure’s integrity. As previously highlighted, even a building near to demolition and ruin may be ideal for renovation if it has strong historic or personal significance. That being said, significance is of the highest value, as there is no price that can completely resemble such importance.

Cost is almost always an issue when preservation comes to mind. As this guide has indicated, some of the most major expenses are related to the structural aspects, as they are the buildings support as well as safety for the household. The roof, though having a separate category for this evaluation, is considered to be part of the structural system. The roof is also a
major weighing point, and though continuous maintenance is necessary with all systems, existing issues with the roof can cause issues in several other aspects of the home. These structural aspects should therefore take a heavy weighted value on the decision-making process.

Throughout this guide the major systems of homes have been highlighted. Though plumbing systems are likely the most expensive to repair and replace, plumbing, electrical, and HVAC systems are all factors that can commonly become an issue. Once again, all of these systems are not ideal for the homeowner to want to repair and replace, but they can be a chance for heightened energy-efficiency and less future maintenance. It is important to keep these systems up-to-date and to safety standards. For these reasons, though it is not a necessary replacement cost, it may not be as highly weighed on a negative standpoint to defer from the purchase of a home, since these systems need to be updated often anyways.

Historic windows are a continued controversy within older homes. Replacement of such windows is oftentimes unnecessary even though it is commonly pushed on homeowners. Many historic windows can be repaired to preservation standards or even protected by storm windows. For this guide it is important to remember that these windows should only be replaced if absolutely necessary. Historic windows are valued at a medium weight on the decision to purchase a home, but would likely need to be considered with other negative factors to be deny such a purchase.

Physical aspects both interior and exterior both contribute to the integrity of the building. When renovating a home, many or these features will likely need to be repaired, or replaced (when absolutely necessary). Though the physical aspects are not the direct contribution to the value of these features, it is instead their ability to designate historic significance. That being said, these aspects once again hold a medium value when concerning the overall purchase of the
home. An example might be if these aspects are in perfect condition but previous owners have replaced the original materials, the value would be far less than if there were existing materials in need of minor repair.

Finally, in evaluation of the basement and attic, both spaces extremely important to the wellbeing of the home. Basements and attics are more of indicators that bring back to the condition of the structure and other more important physical aspects. Both spaces can help homeowners get a better understanding of the condition of other systems and indicate weaknesses in the building. Though not direct contributions, both the basement and attic are both valuable aspects for further evaluation.

In conclusion, all of the aspects within this decision-making guide have a value to the homeowners’ decision. Though some have more significance, they all play a part in the process leading to ownership of a historic structure. Saving these structures can help contribute to infill development, which reduces urban sprawl and further deterioration. Many of these structures are built to withstand more harsh conditions than is commonly realized. As stated by Elefante (2007) “The greenest building is...one that is already built.” After reading this guide, the potential homebuyer must finally answer the question: Is it worth saving?
References


Structural Systems

**Recommended**

*Identifying, retaining, and preserving* structural systems—and individual features of systems—that are important in defining the overall historic character of the building, such as post and beam systems, trusses, summer beams, vigas, cast iron columns, above-grade stone foundation walls, or load-bearing brick or stone walls.

*Stabilizing* deteriorated or damaged structural systems as a preliminary measure, when necessary, prior to undertaking appropriate preservation work.

*Protecting and maintaining* the structural system by cleaning the roof gutters and downspouts; replacing roof flashing; keeping masonry, wood, and architectural metals in a sound condition; and ensuring that structural members are free from insect infestation.

Examining and evaluating the existing condition of the structural system and its individual features using non-destructive techniques such as X-ray photography.

**Not Recommended**

Altering visible features of historic structural systems which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Overloading the existing structural system; or installing equipment or mechanical systems which could damage the structure.

Replacing a loadbearing masonry wall that could be augmented and retained.

Leaving known structural problems untreated such as deflection of beams, cracking and bowing of walls, or racking of structural members.

Utilizing treatments or products that accelerate the deterioration of structural material such as introducing urea-formaldehyde foam insulation into frame walls.

Failing to stabilize a deteriorated or damaged structural system until additional work is undertaken, thus allowing further damage to occur to the historic building.

Failing to provide proper building maintenance so that deterioration of the structural system results. Causes of deterioration include subsurface ground movement, vegetation growing too close to foundation walls, improper grading, fungal rot, and poor interior ventilation that results in condensation.

Utilizing destructive probing techniques that will damage or destroy structural material.
**Recommended**

**Repairing** the structural system by augmenting or upgrading individual parts or features using recognized preservation methods. For example, weakened structural members such as floor framing can be paired with a new member, braced, or otherwise supplemented and reinforced.

**Not Recommended**

Upgrading the building structurally in a manner that diminishes the historic character of the exterior, such as installing strapping channels or removing a decorative cornice; or damages interior features or spaces.

Replacing a structural member or other feature of the structural system when it could be augmented and retained.

The following work is highlighted to indicate that it represents the greatest degree of intervention generally recommended within the treatment Preservation and should only be considered after preservation, stabilization, and repair concerns have been addressed.

<table>
<thead>
<tr>
<th>Recommended</th>
<th>Not Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limited Replacement in Kind</strong></td>
<td></td>
</tr>
<tr>
<td>Replacing in kind those visible portions or features of the structural system that are either extensively deteriorated or missing when there are surviving prototypes such as cast iron columns and sections of loadbearing walls. The new work should match the old in materials, design, color, and texture; and be unobtrusively dated to guide future research and treatment.</td>
<td>Replacing an entire visible feature of the structural system when limited replacement of deteriorated and missing portions is appropriate.</td>
</tr>
<tr>
<td>Considering the use of substitute material for unexposed structural replacements, such as roof rafters or trusses. Substitute material should, at a minimum, have equal loadbearing capabilities, and be unobtrusively dated to guide future research and treatment.</td>
<td>Using material for a portion of an exposed structural feature that does not match the historic features; or failing to properly document the new work.</td>
</tr>
<tr>
<td></td>
<td>Using substitute material that does not equal the loadbearing capabilities of the historic material or design or is otherwise physically or chemically incompatible.</td>
</tr>
</tbody>
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Appendix B: Hot Spot Indicators (Retrieved from: *SELA Roofing and Modeling*, “Snow and Ice Removal”)

Roofs

**Recommended**

*Identifying, retaining, and preserving* roofs—and their functional and decorative features—that are important in defining the overall historic character of the building. This includes the roof’s shape, such as hipped, gambrel, and mansard; decorative features such as cupolas, crested chimneys, and weathervanes; and roofing material such as slate, wood, clay tile, and metal, as well as its size, color, and patterning.

*Protecting and maintaining* a roof by cleaning the gutters and downspouts and replacing deteriorated flashing. Roof sheathing should also be checked for proper venting to prevent moisture condensation and water penetration; and to ensure that materials are free from insect infestation.

Providing adequate anchorage for roofing material to guard against wind damage and moisture penetration.

Protecting a leaking roof with plywood and building paper until it can be properly repaired.

*Repairing* a roof by reinforcing the historic materials which comprise roof features. Repairs will also generally include the limited replacement in kind—or with compatible substitutive material—of those extensively deteriorated or missing parts of features when there are surviving prototypes such as cupola louver, dentils, dormer roofing; or slates, tiles, or wood shingles on a main roof.

*Replacing* in kind an entire feature of the roof that is too deteriorated to repair—if the overall form and detailing are still evident—using the physical evidence as a model to reproduce the feature. Examples can include a large section of roofing, or a dormer or chimney. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.

**Not Recommended**

Radically changing, damaging, or destroying roofs which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

Removing a major portion of the roof or roofing material that is repairable, then reconstructing it with new material in order to create a uniform, or “improved” appearance.

Changing the configuration of a roof by adding new features such as dormer windows, vents, or skylights so that the historic character is diminished.

Stripping the roof of sound historic material such as slate, clay tile, wood, and architectural metal.

Applying paint or other coatings to roofing material which has been historically uncoated.

Failing to clean and maintain gutters and downspouts properly so that water and debris collect and cause damage to roof fasteners, sheathing, and the underlying structure.

Allowing roof fasteners, such as nails and clips to corrode so that roofing material is subject to accelerated deterioration.

Permitting a leaking roof to remain unprotected so that accelerated deterioration of historic building materials—masonry, wood, plaster, paint and structural members—occurs.

Replacing an entire roof feature such as a cupola or dormer when repair of the historic materials and limited replacement of deteriorated or missing parts are appropriate.

Failing to reuse intact slate or tile when only the roofing substrate needs replacement.

Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the roof or that is physically or chemically incompatible.

Removing a feature of the roof that is unrepairable, such as a chimney or dormer, and not replacing it; or replacing it with a new feature that does not convey the same visual appearance.
The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of Rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.

<table>
<thead>
<tr>
<th>Recommended</th>
<th>Not Recommended</th>
</tr>
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<tbody>
<tr>
<td><strong>Design for the Replacement of Missing Historic Features</strong></td>
<td>Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial, and physical documentation.</td>
</tr>
<tr>
<td>Designing and constructing a new feature when the historic feature is completely missing, such as chimney or cupola. It may be an accurate restoration using historical, pictorial, and physical documentation; or be a new design that is compatible with the size, scale, material, and color of the historic building.</td>
<td>Introducing a new roof feature that is incompatible in size, scale, material and color.</td>
</tr>
<tr>
<td><strong>Alterations/Additions for the New Use</strong></td>
<td>Installing mechanical or service equipment so that it damages or obscures character-defining features, or is conspicuous from the public right-of-way.</td>
</tr>
<tr>
<td>Installing mechanical and service equipment on the roof such as air conditioning, transformers, or solar collectors when required for the new use so that they are inconspicuous from the public right-of-way and do not damage or obscure character-defining features.</td>
<td>Radically changing a character-defining roof shape or damaging or destroying character-defining roofing material as a result of incompatible design or improper installation techniques.</td>
</tr>
<tr>
<td>Designing additions to roofs such as residential, office, or storage spaces; elevator housing; decks and terraces; or dormers or skylights when required by the new use so that they are inconspicuous from the public right-of-way and do not damage or obscure character-defining features.</td>
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Appendix D: Repair or Replace Old Windows (Retrieved from: National Trust for Historic Preservation, “Repair or Replace Old Windows”)

**CASE STUDY: A Material Issue**
A series of 1930s duplexes in this neighborhood were designed in the Tudor Revival architectural style. Each features large window openings, prominent bays as a central focus, and original steel casement windows. Original windows are a primary character defining feature.

A. Both sides of the duplex feature original rolled steel casement windows with interior storm window inserts.
B. Both sides of the duplex have replacement windows. The one to the left more closely mimics the lines and details of the original steel casements, though the new windows are a mixture of fixed and double-hung sash units and the proportions are not an exact match. The unit to the right also features fixed and double-hung sash replacement windows. In this case, the result is less successful with white vinyl casing and a central picture window missing any muntin pattern.

**CASE STUDY: In-Kind Replacement**
In this dramatic before and after transformation, a severely deteriorated and abandoned duplex was recently rehabilitated. The project preserved important character-defining features, including replicating original windows with new replacement units. The original windows — simple wood-on-wood double-hung sashes — had long disappeared as the building fell into decline and years of vacancy. When replacing a historic window, it is important to retain original window casings and trim when possible. These details often have stylistic features associated with the building’s architecture style. In this example, the decorative carved wood casings were intact even though the windows were not.

A. Original windows are missing but decorative casings and openings remain.
B. New wood double-hung sash windows were chosen to fit the original openings and the decorative casings were repaired and retrimmed. New windows replicate the originals in terms of size, type, proportion and materials.
CASE STUDY: Size Matters
In these two examples, original windows were replaced and the openings were reduced to accommodate a much smaller replacement window.

A. Two-arched nine-over-one double-hung sash windows are in danger of losing meeting rails and paint build-up. They can be easily repaired and still maintain the character of the building.

B. An identical building with replacement windows. Stock units were used with aluminum in-fill around the opening. The difference in character between A and B is dramatic.

C. The upper story windows of this 1840s commercial structure were replaced with stock units with in-fill at the top and bottom.

CASE STUDY: Close, But Not Enough
Two similar houses, both Tudor Revival style and dating to the 1920s or early 30s. Both featured tall casement windows, whereas only one retains the original windows today.

A. Steel casement windows with fixed transoms and side-lights featuring interior storm windows. These windows are a character-defining feature of the house.

B. Replacement windows attempt to match with casement style units yet the proportion, pattern, width and lack of a true divided-light miss the mark.

C, D. The differences between the original and replacement are readily seen, where the wider casing and surround are much prominent on the replacement windows.

**20% Tax Credit**

A 20% income tax credit is available for the rehabilitation of historic, income-producing buildings that are determined by the Secretary of the Interior, through the National Park Service, to be “certified historic structures.” The State Historic Preservation Offices and the National Park Service review the rehabilitation work to ensure that it complies with the Secretary’s Standards for Rehabilitation. The Internal Revenue Service defines qualified rehabilitation expenses on which the credit may be taken. Owner-occupied residential properties do not qualify for the federal rehabilitation tax credit. Learn more about this credit before you apply.

Each year, Technical Preservation Services approves approximately 1000 projects, leveraging nearly $4 billion annually in private investment in the rehabilitation of historic buildings across the country. Learn more about this credit in Historic Preservation Tax Incentives.

**10% Tax Credit**

The 10% tax credit is available for the rehabilitation of non-historic buildings placed in service before 1936. The building must be rehabilitated for non-residential use. In order to qualify for the tax credit, the rehabilitation must meet three criteria: at least 50% of the existing external walls must remain in place as external walls, at least 75% of the existing external walls must remain in place as either external or internal walls, and at least 75% of the internal structural framework must remain in place. There is no formal review process for rehabilitations of non-historic buildings. Learn more about this credit in Historic Preservation Tax Incentives.

**Tax Benefits for Historic Preservation Easements**

A historic preservation easement is a voluntary legal agreement, typically in the form of a deed, that permanently protects an historic property. Through the easement, a property owner places restrictions on the development of or changes to the historic property, then transfers these restrictions to a preservation or conservation organization. A historic property owner who donates an easement may be eligible for tax benefits, such as a Federal income tax deduction. Easement rules are complex, so property owners interested in the potential tax benefits of an easement donation should consult with their accountant or tax attorney. Learn more about easements in Easements to Protect Historic Properties: A Useful Historic Preservation Tool with Potential Tax Benefits.

PBS 100 Facilities Standards for the Public Buildings Service

Mechanical Engineering – Alterations in Existing Buildings and Historic Structures (Excerpts)

When a system is designed, it is important to anticipate how it will be installed, how damage to historic materials can be minimized, and how visible the new mechanical system will be within the restored or rehabilitated space. The following guidelines shall be followed for HVAC work in historic buildings:

- Reduce heating and cooling loads to minimize size and other impacts of modern equipment.
- Calculate the effect of historic building features such as wall thickness, skylights, and porticos, and interior design features such as draperies, shutters and window shades, and existing site features such as landscaping.
- Select system types, components, and placement to minimize alteration of significant spaces. In previously altered spaces, design systems to allow historic surfaces, ceiling heights, and configurations to be restored. Reuse of existing system components is only permitted with written documentation obtained from GSA Property Management and by the A/E certifying that the condition of the components warrants use.
- Retain decorative elements of historic systems where possible. Ornamental grills and radiators shall be retained in place.
- Design HVAC systems to avoid impacting other systems and historic finishes, elements and spaces.
- Place exterior equipment where it is not visible. Recess equipment from the edge of the roof to minimize visibility of the equipment from grade. Alternatively, explore creating a vault for easier access to large mechanical equipment. If equipment cannot be concealed, specify equipment housing in a color that will blend with the historic facade. As a last resort, enclose equipment in screening designed to blend visually with the facade.
- Locate equipment with particular care for weight and vibration on older building materials.
- If new ceilings must be installed, insure that they do not block any light from the top of existing windows or alter the appearance of the building from the outside. Original plaster ceilings in significant