



## **Narrative Section of a Successful Application**

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Division of Preservation and Access application guidelines at <http://www.neh.gov/grants/preservation/sustaining-cultural-heritage-collections> for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Preservation and Access staff well before a grant deadline.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

**Project Title: Improving Environmental Conditions to Preserve Collections**

**Institution: Litchfield Historical Society**

**Project Director: Julie Leone**

**Grant Program: Sustaining Cultural Heritage Collections**

## **Description of Project and its Significance**

The Litchfield Historical Society (LHS) seeks a Sustaining Cultural Heritage Collections Implementation Grant of \$399,412 from the National Endowment for the Humanities to execute specific recommendations made by an interdisciplinary team of experts consisting of an architect, engineer and museum conservator. The Society hired these consultants with funds provided by a 2009 NEH Sustaining Cultural Heritage Planning Grant. They were asked to review the building envelope (exterior), interior environment, and HVAC systems of the Society's four buildings – the Noyes Memorial Building, the Tapping Reeve House, the Litchfield Law School, and the Pamela Cunningham Copeland Curatorial Center. The overarching premise guiding the project for both consultants and staff is the creation of a preservation environment that provides the best possible conditions for the perpetuation of the collection with the least possible consumption of energy.

Each consultant submitted a final report to LHS. Staff processed these reports and created a five year plan for the institution to begin applying many of the proposed recommendations. The NEH Implementation grant is the first major step towards completing the goals outlined in LHS' plan.

The projects outlined in this grant focus primarily on the Noyes Memorial Building. Built in 1901, it is the Society's flagship building. The space underwent a \$2.5 million renovation in 1991 to upgrade exhibition galleries, create handicap accessibility, and install an HVAC system. Over the past twenty-one years, LHS has expended enormous financial resources and strained the HVAC system to maintain the "ideal" environmental parameters of  $70^{\circ} \pm 1^{\circ}$  and  $50\% \text{ RH} \pm 2\%$ . New research has demonstrated such restrictive conditions are not only unnecessary, but financially impractical and potentially harmful to collections. Leading conservators and curators in the museum and archives field now advocate for relative humidity levels between 30% and 60% while maintaining cooler temperatures.

Emboldened with this knowledge, LHS proposes to use the NEH Implementation grant to repair degraded brick and masonry and repair and/or replace ineffective gutters and leaders on the exterior of the building to tighten the building envelope and prevent moisture infiltration; update and repair the existing HVAC system in the Noyes Memorial Building in a thoughtful and cost effective manner; install an energy management system to integrate HVAC systems of all four museum buildings; purchase PEM2 dataloggers to more effectively monitor conditions in each building; update and replace inefficient, heat intensive lighting in the exhibition galleries and storage spaces; install space saver shelving to replace outdated and overcrowded stationary shelving in the Collections Storage room; and purchase supplies to rehouse specific collections.

Collectively these repairs and upgrades will significantly improve the existing museum environment and preservation conditions for the collection. A tightened building envelope and widened environmental parameters creates less reliance on the HVAC system. When it needs to operate, a more efficient system will consume less energy and condition the air more effectively. This ensures the perpetuation of the museum and archive collections for future exhibition, research and programming.

LHS understands that many other institutions are struggling with similar hurdles in the care of their collections. The staff will develop this project into a case study for publication and future presentations. Changes to the environmental conditions as improvements are implemented will be thoroughly documented and evaluated by the staff and outside consultants.

## Narrative

### Introduction

The Litchfield Historical Society (LHS) seeks a Sustaining Cultural Heritage Collections Implementation Grant of \$399,412 from the National Endowment for the Humanities to execute specific recommendations made by an interdisciplinary team of experts consisting of an architect, engineer and museum conservator. [Appendix A] The Society hired these consultants with funds provided by a 2009 NEH Sustaining Cultural Heritage Planning Grant. [Appendix B] They were asked to review the building envelope (exterior), interior environment, and HVAC system of the Society's four buildings – the Noyes Memorial Building, the Tapping Reeve House, the Litchfield Law School, and the Pamela Cunningham Copeland Curatorial Center. Each consultant reviewed the museum spaces based on their expertise and submitted final reports to the staff with recommendations on how to improve the overall environmental conditions for the collections housed within these buildings.

The overarching premise guiding the project for both consultants and staff is the creation of a preservation environment that provides the best possible conditions for the perpetuation of the collection with the least possible consumption of energy. This grant project focuses on implementing passive alternatives to costly energy consuming HVAC systems including repairs to the exterior of the buildings to minimize water and air infiltration; refurbishment of lighting and shelving in collections storage spaces; and widening temperature and relative humidity parameters to minimize the use of HVAC systems. When repairs, refurbishments or replacements to the HVAC system are necessary, the Society will focus on finding the most cost effective and energy efficient solutions.

### Strategic Planning

Since the early 1990s, LHS has based all institutional planning on a series of long range and strategic plans. The 2004 Strategic Plan will guide operations through 2011. A team will be created to draft a new Strategic Plan in January 2011. The current document outlines immediate and short term strategies for regular progress toward the long term goals. The plan guides the Society in fulfilling its mission, establishing programmatic priorities and providing guidelines for the allocation of resources. In addition, the plan identifies potential funding sources including the operating budget, public and private grants, designated funds, and special fundraising efforts. The Society worked with Laura B. Roberts, principal of Roberts Consulting in Cambridge, MA to develop the plan. The planning committee of the Board of Trustees and key staff members met with Roberts over a five-month period, between December 2003 and April 2004, reviewing the strengths of the Society, the challenges facing the institution, and opportunities for the future. The planning committee met with the leadership and in some instances the entire body of specific museum sub-committees and with local stakeholders. The committee reviewed documents and other reports prepared by staff and museum consultants. The Board of Trustees contributed to an assessment of the organization's strengths, weaknesses, opportunities and threats and was kept informed of the committee's progress at their regular monthly meetings. The professional staff reviewed an early draft of the goals and objectives and their comments were invaluable in revising the plan and setting priorities. The full Board discussed the goals and objectives and worked with the committee to further refine the organizational priorities before the final document was produced.

The current Strategic Plan includes four goals, representing priorities identified by the Planning Committee. The plan focuses on major issues and includes *pro forma* budgets for the term of the plan. The plan is organized around themes or issues, such as balance or service, rather than functional areas, such as programming or collections, so that the whole plan will affect the organization in an organic way.

This project will directly satisfy several objectives set out in the current Strategic Plan and at the same time will lay the ground work for the development of new activities central to the Society's mission.

Goal Four of the Society's Strategic Plan states that "Expansion into new areas of service demands that we exercise wise stewardship of all our assets: people, facilities, collections and finances."

The Strategic Plan priorities this project will address include:

- Budget for and schedule regular maintenance and major and minor capital improvements to buildings and their systems and interiors
- Create secure, climate-controlled or -modified collections storage

Through a capital campaign and personal bequest the LHS constructed the Pamela Cunningham Copeland Curatorial Center in 2007. This building, located on the grounds of the Tapping Reeve House property, provides three floors. A grant from the Institute for Museum and Library Services provided acid free boxes, tissue paper and other storage supplies to re-house collections as they moved into the new storage facility.

In 2008, LHS received a grant from the Connecticut Trust for Historic Preservation to hire the architectural firm of Faesy-Smith Architects PC. The architects evaluated the Noyes Memorial Building's envelope (or exterior) and made recommendations concerning necessary upgrades to the roof and building exterior. Their report was presented to LHS in January 2010 and included recommendations for such repairs as replacing and repairing areas of the masonry and gutters, and replacing the roof. [Appendix C] LHS plans to move forward with these repairs in the fall of 2011.

LHS hired Accutemp Heating and Cooling as the museum's new HVAC service provider in 2009. Joe Guenther, owner of Accutemp, has been working closely with the Curator over the past year to implement critical upgrades and changes to the existing HVAC systems. Accutemp has begun the process of researching ways to make each building's system operate more efficiently. Guenther recently partnered with Environmental Systems Corporation (ESC) to complete a comprehensive review of the systems in all four museum buildings and devise operating parameters for the HVAC systems that conserve energy while still effectively conditioning the collections environment. [Appendix A1]

The Society maintains a Facilities Committee consisting of key staff, board members and community members with expertise and/or experience in such fields as conservation, restoration, architecture, engineering and HVAC. This committee meets quarterly to discuss issues related to the exterior of the buildings, the HVAC systems, and building landscapes. Committee chair and LHS board member, John LaGattuta speaks regularly with the Curator and Director and advocates to the Board for the necessary repairs and maintenance of the four museum buildings.

### **History of the Society & Significance of Collections**

The town of Litchfield, situated atop a hill in Northwestern Connecticut, encompasses 57.3 square miles and has a population close to 8,000. The Historical Society draws its visitation from the local community as well as from the many national and international tourists to the area. Litchfield County is a well-known tourist destination, second only to Mystic as the most popular in the state. Litchfield village, a National Landmark District, is comprised of many examples of Colonial Revival homes, which together with summer gardens and spectacular fall foliage draw large numbers of vacationing families and organized tour groups. Last season the museums drew visitors from 39 states and 27 foreign countries.

The Litchfield Historical Society is a private non-profit organization founded in 1856 to collect, preserve, and interpret the history of Litchfield, Connecticut. The Society owns and occupies four buildings that are integral to the architectural fabric of the town of Litchfield. The Noyes Memorial Building, constructed on Litchfield's green in 1901, is the only Beaux Arts building in town. The Tapping Reeve House (1774) and the Litchfield Law School (1784) the first law school in America are National Historic Landmark sites and rank among the most historically important properties in Connecticut. In 2007, the Society completed construction on the Pamela Cunningham Copeland Curatorial Center located behind the Tapping Reeve House. This state of the art collections storage facility resembles an 18<sup>th</sup> century barn on the exterior seamlessly blending the building into the historic fabric of the site.

The Noyes Memorial Building houses the Litchfield History Museum, the Helga J. Ingraham Memorial Library, collections storage spaces, and staff offices. The Tapping Reeve House & Law School, located approximately half a block from the Noyes Memorial Building, also contains a secure, climate-controlled storage area for case furniture pieces. The sites allow for a variety of exhibitions, interpretive and educational programs, research opportunities, and special events for the organization's 500 members and 14,000 annual visitors. The American Association of Museums awarded the Litchfield Historical Society accreditation in 1992, and re-accreditation in 2003. The Society has an annual operating budget of \$450,000 (FY2010). The full-time staff consists of the Director, Curator of Collections, Curator of Library & Archives, Curator of Education, and Visitor Services & Membership Manager. In addition, the Society currently supports three grant funded positions - a Project Researcher and two Project Archivists. Supplemental staff includes ten part-time and seasonal employees and close to 60 volunteers.

From its beginnings, the Litchfield Historical Society's collection has reflected and supported the mission of preserving and interpreting all aspects of Litchfield history by representing the people, architecture, organizations, and institutions of Litchfield, from pre-European settlement to the present day, through exhibitions, educational programs and publications. The collections of the Society are significant and diverse, and as a result, accurately represent the changing interests, demographics, and cultural history of the town of Litchfield.

Despite its inland location in the northwest Connecticut hills, Litchfield was a regional heart of culture, education, and Federalist politics. The town began its ascent in 1751, when it became the county seat. In the aftermath of independence, the community embraced the strife of party politics and the bustle of the market economy. In American education, Litchfield was in the vanguard. Local lawyer Tapping Reeve developed the first curriculum for teaching common law and opened the first law school in the United States. His Litchfield students formed a network of leadership and influence that encompassed government, public service, business, and other areas of American life. Graduates include two vice-presidents, Aaron Burr and John C. Calhoun; 14 governors; 14 members of the federal cabinet; 28 U.S. Senators; 100 members of the House of Representatives; three members of the U.S. Supreme Court; and countless other state and local public officials.

Women also discovered unusual educational opportunities in the town. In 1792 Sarah Pierce founded the Litchfield Female Academy, a pioneering institution of female education. Her innovative curriculum that combined academic, practical, and ornamental courses expanded the world of more than 3,000 girls who attended the school over its 41 year history.

By 1810, Litchfield was the fourth largest town in the state. The collection's artifacts from this time include portraits of the town's families, art, furniture, and textiles produced by local artisans, as well as

objects that local merchants imported from China and London and sold to local families. The corresponding manuscripts include letters, diaries, journals, account books, and personal papers of the local residents, many of which directly relate to the artifact collection. In addition, the Litchfield Female Academy collections includes elaborate needlework pictures; clothing; drawings and watercolors; charts and maps; student diaries and journals; student albums and copybooks; catalogs; diplomas; play and essay manuscripts; schoolbooks; and correspondence between students and their families.

The Society's collections also contain many examples of artifact and library materials that local residents created, produced, or used in Litchfield that reflect the attitudes, beliefs, customs, habits, lifestyles, occupations, and socio-economic levels of the entire local community throughout its history. The museum houses outstanding collections of locally made furniture, papier mache objects and clocks, costumes, silver, household goods, and decorative arts. The Society's textile collection includes 2500 costume items, 100 quilts and coverlets, 30 samplers, and 12 needlework pictures. The Society also owns a fine collection of American paintings by Ralph Earl, James Sharples, Gilbert Stuart, Ammi Phillips, Ezra Ames, Eastman Johnson, Richard Jennys and George Catlin. There is also an extensive collection of portrait miniatures, many painted by local artist Anson Dickinson.

In 1991, the Society completed a \$2.5 million museum renovation and expansion of the Noyes Memorial Building. The Society added a climate control system to the building for the protection of the collections. The project doubled the Litchfield History Museum's available exhibition space, providing a total of three large and four small galleries. Recent exhibitions include *In Our Own Time: Modern Architecture in Litchfield, 1949-1970*, *To Please Any Taste: Litchfield County Furniture & Furniture Makers, 1780-1830* and *Goods for Sale! Cash, Credit & Trade in Litchfield, 1790-1850*.

The ground floor of the addition houses the Helga J. Ingraham Memorial Library. The adjacent Ching Reading Room comfortably accommodates up to 25 researchers. The room hosts small seminars, classes, and workshops. The Library houses information about Litchfield's 288 years of growth and change in demographics and landscape as reflected through the papers, publications, photographs, and ephemera of local residents, homes, businesses, institutions, and organizations. The Society is the only agency that actively collects these records. The Society's library holds the archives of many local institutions, including village churches; the Litchfield Garden Club; the Litchfield Red Cross; St. Paul's Masonic Lodge, the local chapter of Freemasons; and the local chapter of the D.A.R. The library also contains local and regional reference books and a local genealogical collection. Notable in the collection are fifty volumes of law students' notebooks, letters, journals, and account books, which relate to the Litchfield Law School and its students. The extensive rare book collection includes Tapping Reeve's personal law library; Litchfield Female Academy teacher John Pierce Brace's personal library; the libraries of the First Church of Litchfield and St. Paul's Masonic Lodge; and many volumes from the Litchfield Female Academy.

The Historical Society completed a major renovation and reinterpretation of the Tapping Reeve House & Litchfield Law School in 1998. The project included the development of a new exhibition and interpretive strategy, a complete renovation of the Reeve house structure, the installation of climate control throughout the museum, and the construction of a small addition to the rear of the house to accommodate a wheelchair ramp and visitor services. The permanent exhibition *The Noblest Study* uses everyday objects, portraits, and writings of students and townspeople to tell the story of the school, its founder, and its students. As they tour the museum, visitors investigate the lives and studies of the Litchfield students, as well as the impact the law school had on American politics, society, business, and legal education.

The Society has received several awards for exhibitions and programs. In 1991, the American Association of State and Local History (AASLH) gave the Society an Award of Merit for its exhibitions and programs following the renovation of the Litchfield History Museum. In 1994, the Society received an Award of Merit for the project *To Ornament Their Minds: Sarah Pierce's Litchfield Female Academy, 1792-1833*. The reinterpretation of the Tapping Reeve House & Law School won the 1999 Wilbur Cross Award from the Connecticut Humanities Council for outstanding contribution to the humanities. Most recently the Society won an Award of Merit from AASLH for the exhibition and accompanying exhibition catalog with searchable CD database *To Please Any Taste: Litchfield County Furniture & Furniture Makers, 1780-1830*.

### **Use of Collection**

In addition to the museum hours which allow visitors to view the exhibitions in the Noyes Memorial Building, the Tapping Reeve House and the Litchfield Law School, the Helga J. Ingraham Memorial Research Library is open to the public, free of charge, year round on a regular schedule for 20 hours a week and by appointment. The library's materials are included in an item-level card catalogue, as well as selected collections-level descriptions and finding aids available through the online tool Archon. Approximately 550 researchers, including elementary through graduate students, genealogists, homeowners, members of the media, and scholars visit the research library annually. The library serves around 500 more patrons each year by answering research requests made through the mail, telephone calls, and email.

The Curator of Library & Archives is currently administering two grant-funded projects which are enabling the creation of comprehensive online finding aids for archive collections dating before 1840 and generalized collection level descriptions for archive collections dating from 1840 to the present. These finding aids are available through the Society's Web site using Archon, an open-source archival management tool. In addition, a private donation to the archives is funding the automation of the Library's book catalog. The Society's book collection is now being added to reQuest, the Connecticut State Library on-line catalog.

With support from a *Museums for America Grant* from the Institute of Museum and Library Services in 2007, staff migrated item-level card catalogue descriptions for the object collection into a database. The Curator of Collections uses the database software *iO*, distributed by Selago, Inc. Over the past four years, the Curator completed a comprehensive inventory of the object collection. Each item in the collection has now been inventoried, photographed and re-housed. In 2004, the Curator of Collections and the Curator of Library & Archives worked to create a comprehensive registration manual to both document past practices and set guidelines for future accessions. Staff members use these guidelines when creating electronic records.

The Historical Society submitted a grant to the Institute for Museum and Library Services on November 1, 2010 to continue detailed processing for the archives collection dating from 1835 to 1935. In addition, the grant would support the launch of MWeb, a database platform created by Selago Inc. that will enable users to search the archival finding aids and museum database simultaneously. This endeavor will make the museum database accessible online to the public for the first time enabling unprecedented access to the museum's collections as well as eliminate the need for a user to search multiple databases to access the Society's entire holdings.

Currently, the Society makes stored object collections available to researchers by appointment and the staff makes every effort to accommodate requests to view objects not currently exhibited. The Curator of Collections routinely receives requests from visiting researchers to view items related to the Litchfield Female Academy including needlework pictures and watercolor art. Most recently, there have been research requests to study the Society's collection of early 19<sup>th</sup> century wooden flutes made by local musical instrument maker Asa Hopkins and to view paintings by local mid-twentieth century artist Nils Hogner.

The Society also provides access to its materials through publications and Web site. Three published catalogues detail specific parts of the collection. *Though Inanimate they Speak* (1990) features the Society's unparalleled collection of Ralph Earl paintings; *To Ornament their Minds* (1993) treats the organization's collection of documents and objects related to the Litchfield Female Academy; and *To Please Any Taste: Litchfield County Furniture & Furniture Makers, 1780-1830* (2008) presents a catalogue of 18<sup>th</sup> and 19<sup>th</sup> century furniture produced in the area and held in private and public collections. In 2011, LHS will publish a book on the history of Litchfield by architectural historian Rachel Carley and in 2013 a book on the Civil War letter of Litchfield resident Alva Stone. The Society's Web site offers information about the scope of the collection, history of the town, and links to the online catalogs Archon and reQuest.

As the collections continue to become more available to visitors and researchers, image requests have increased dramatically over the past decade. Most recently LHS has worked with Ken Burn's production staff to provide documentation related to Rev. Lyman Beecher for Burn's upcoming film documentary on Prohibition. Authors, such as Judith Reiter Weissman and Wendy Lavitt, in their *Laborers of Love: America's Textiles and Needlework, 1650-1930* (1994), Laurel Thatcher Ulrich in her work *Age of Hometown* (2001), and Martha Tomhave Blauvelt in her book *The Work of the Heart: Young Women and Emotion, 1780-1830* (2007) have all studied and published parts of the Society's collection. The museum's collection of Ralph Earl paintings, most notably the portraits of *Benjamin Tallmadge* and *Mary Floyd Tallmadge*, are frequently requested for publication as are objects and archives related to the Litchfield Female Academy and Litchfield Law School.

In response to researchers continued requests for information and images related to these two early educational institutions, the Historical Society began work in 2008 on the creation of *The Ledger* an online searchable database of students who attended the Litchfield Law School and Litchfield Female Academy. Scheduled to go live in September 2011, *The Ledger* will be a comprehensive research tool on the two schools. Each student will have his or her own page in the database which will include biographical information and career history, an image of the student if available, artifacts created or owned by the students and links to archival and museum collections housed at the Historical Society and in other institutions. The history of these two early educational institutions and the students who attended are sought after by countless researchers. *The Ledger* will provide access to the documents, material culture and research on the two schools with a few key strokes.

### **Current Conditions & Preservation Challenges**

At present the LHS has HVAC systems installed in three of its four buildings – the Noyes Memorial Building, the Tapping Reeve House, and the Curatorial Center. Both the Tapping Reeve House and the Curatorial Center employ Hydro-air systems. There is a difference between the two systems however. The Tapping Reeve House uses warm air for dehumidification while the Curatorial Center has free standing dehumidifiers on each floor of the building with pumps that force the water along tubes out of the building. The Noyes Memorial Building has a more involved system. This building uses hot water

for heat and chilled water for cooling; electric heat for dehumidification; and electric steam generated heat for humidification.

The Litchfield Law School is the only building that currently employs a more passive environmental system. The School has heat but has no air conditioning or humidification system. From December to mid April when the museum is closed, the heat is turned below 50° in the building. The Law School contains three museum artifacts with the remainder of the space occupied by reproduction benches and school desks. The three artifacts are carefully monitored for any changes or damage caused by humidity, pests, or other factors. They have remained in excellent condition throughout their exhibition in the building.

Collections are located in all four buildings whether in storage rooms or on permanent or temporary exhibition. The Curatorial Center is solely a storage facility. The building comprises three stories of collections storage. Small furniture and bound newspapers are housed on the basement level. The first floor has art storage racks, two map storage cases with blueprints and oversized archival items, and some large artifact storage. The second floor is for small objects and boxed items. The Noyes Memorial Building has object collections storage on the second floor of the building. The museum's textile collection and remaining small artifacts awaiting transition to the Curatorial Center are stored here. There is also a small art storage room on the second floor of this building. The ground floor houses the Helga J. Ingraham Memorial Library collection which is stored primarily on compact shelving. The History Museum also contains seven galleries of various sizes which hold temporary and permanent exhibitions.

The Tapping Reeve House contains *The Noblest Study*, a large permanent exhibition on the history of the Litchfield Law School and Litchfield Female Academy. Artifacts are housed in locked cases throughout the first floor of the building. The majority of the archives on display are reproduction and many additional images and items from the museum's collection are reproduced in panels and text labels throughout the exhibition. In 1998 as part of the renovation of the Tapping Reeve house an addition on the rear of the building created a climate controlled room for furniture storage. This space contains larger furniture items such as chest of drawers and desks. [Appendix D]

The museum staff has developed a Collections Manual, Collections Policy, Emergency Procedures Manual, and Integrated Pest Management Plan [Appendix E] in place to guide staff and volunteers in best preservation practices and collections and building care. These documents are regularly reviewed and updated as necessary. Currently the Collections Committee is in the process of reviewing the Collections Policy and recommending updates or changes. The Curatorial staff is also working with the Collections and Facilities Committees to complete a Disaster Preparedness Plan using Northeast Document Conservation Center's tool, dPlan. In addition, the Curator of Collections is in the process of drafting an Environmental Management & Facilities Care Plan. She is working with the Facilities Committee and Accutemp Heating & Cooling to document the HVAC systems in each museum building and outline a preservation strategy for the buildings and collections over the next five years.

A private security company monitors each location with burglar, fire, water, and low temperature alarms. The Fire Marshal routinely monitors fire extinguishers and has trained staff in the use of these devices. The Society also provided the fire department with an orientation to the buildings, describing the locations of collections storage areas and the special needs of the facilities.

In 2006, LHS purchased five HOBO data loggers for the collections and archives storage and exhibit areas in the Noyes Memorial Building. New humidity sensors were installed in these devices in

September of 2010 after comparison against a sling psychrometer showed the loggers to be out of calibration. While the HOBO data loggers have allowed the Curatorial staff to monitor the environment in this building, the devices have limitations. The amount of data that can be recorded over time before downloading is necessary is small and the accompanying computer software Boxcar Pro does not allow for intensive manipulation and analysis of the data.

This grant would enable the staff to purchase PEM2 data loggers developed by the Image Permanence Institute (IPI). The IPI also created the Website [www.PEMData.org](http://www.PEMData.org) to support the data retrieved from the PEM2 data loggers and enable museum staff to accurately analyze the information gathered by these devices. The Curator and Archivist gained familiarity with this system during a recent IPI workshop, and feel it would provide additional reporting and tracking capabilities that the HOBO software lacks. Museum conservator and consultant on this project Rick Kerschner recommends the Society purchase 10 PEM2 loggers, five for the Noyes Memorial Building, three for the Curatorial Center and two for the Tapping Reeve House at a cost of \$2990. In his words, “a monitoring system that is simple to operate and interpret is a crucial tool to evaluate adjustments to equipment and the resulting changes in environmental conditions.” [Kerschner 7 – Appendix F] In addition, the museum will purchase a Psychro-Dyne battery operated psychrometer for \$165 to periodically test the calibration of the PEM2 loggers and the Emerson controller’s that operate the air handling units in the museum spaces.

Three of the Society’s four buildings – Noyes Memorial Building, Tapping Reeve House and the Litchfield Law School – are historic structures. All three structures need extensive exterior repairs. Fasey & Smith Architects worked with the staff under the 2009 NEH Planning Grant to assess the exterior of each of these structures. Their reports provide a detailed analysis of the work necessary for all three buildings. [Appendix C] LHS is currently seeking funding from private foundations, other granting agencies and self-generated fundraising efforts to cover the cost of many of these repairs. The degradation of the brick, masonry, gutters and leaders on the Noyes Memorial Building directly impacts the environmental conditions of the collection in this space. The cost of these repairs is included in this grant project.

Moisture infiltration is an urgent concern for the Noyes Memorial Building. Deterioration to the brickwork and limestone on the building have allowed moisture to penetrate to the interior of the building, damaging plaster walls and elevating humidity levels in collections storage room located on the second floor of this building. [Appendix G] Kerschner noted in his report “tightening and improving the building structure to prevent water entry and improve the thermal characteristics of the building is a critical first step to improving interior environmental conditions.” (Kerschner 10 – Appendix F) Kerschner agrees with the staff that the humidity levels in this storage space will never be properly maintained or controlled while the exterior repairs remain incomplete. Energy will continue to be wasted as the HVAC system is taxed to continually condition overly humidified air infiltrating the space. This grant would enable the LHS to take the first and most immediate step in improving interior environmental conditions in the Noyes Memorial Building by repairing the masonry and stonework on the building and replacing or repairing gutters and leaders to move water away from the building more effectively.

The HVAC system installed in the Noyes Memorial Building is 22 years old and over the past several years has begun to show its age. The previous HVAC technician failed to properly manage the system and in 2009 LHS hired Accutemp to take over HVAC maintenance for all four museum buildings. Over the past year and a half, Accutemp’s owner Joe Guenther has spent countless hours at the Noyes Memorial Building providing many needed repairs and bringing the system back to operable conditions. Humidity levels this summer in the building, while still on the high end of acceptable levels, (averaging

between 60% and 65%) were the most consistent they had been in years. In consultation with Environmental Systems Corporation, Guenther has outlined a plan to overhaul the existing system in the Noyes Memorial Building. This plan utilizes energy efficient solutions that will financially benefit the institution, allow the HVAC to operate efficiently and maintain acceptable environmental parameters inside the museum. The grant will enable this work to be completed over the next two years. [Appendix A1]

In the past, museum staff worked to adhere to the narrow environmental parameters of  $70^{\circ} \pm 1^{\circ}$  and  $50\% \text{ RH} \pm 2\%$  for the Noyes Memorial Building, Tapping Reeve House and Curatorial Center. The museum has discharged enormous amounts of energy and resources over time to maintain these conditions. New studies within the museum and conservation community have showed that these parameters are not only economically unrealistic in terms of energy expelled by the constant running of HVAC systems but can also negatively impact museum collections. Jim Reilly of the IPI, Stefan Michalski of the Canadian Conservation Institute and Rick Kerschner of Shelburne Museum have all published and lectured on the necessity of museums to widen their environmental parameters both for the longevity of the collections and economic stability of the institutions. They agree that humidity should be maintained between 30% and 60% and temperatures kept cool while allowing for gradual seasonal variations. Passive measures, such as turning heat down in winter or implementing controlled shut offs of HVAC systems at night or when buildings are unoccupied are also being advocated by these experts. LHS plans to implement these new wider parameters and explore ways to implement passive alternatives into the HVAC schedule as part of this grant project.

The Noyes Memorial Building also maintains a lighting system in the exhibition galleries and collections spaces that is over 22 years old. The current system uses canisters made with a magnetic connection system. This method facilitates the transfer of electricity from the track to the canister; however, it is inefficient with canisters losing up to 30% of their energy during this exchange. These lights also generate excessive amounts of heat which negatively impact the environment of the museum spaces. This grant will enable the museum to update the lighting in the museum galleries, archives and collections storage room. Magnetic canisters will be replaced with electronic ones which operate more efficiently at less cost and emit less heat.

### **History of the Project**

LHS staff does not include a salaried facilities manager. The Society has always contracted with an HVAC technician to service and repair the systems in the Noyes Memorial Building, Tapping Reeve House and Curatorial Center. For many years the staff maintained the mentality of “set it and forget it” and only became concerned when the HVAC malfunctioned. In 2008, Curator of Collection Julie Leone and Director, Cathy Fields co-presented on the Curatorial Center project at the Conservation Center for Art and Historic Artifacts (CCAHA) workshop “A Space Odyssey: Storage Strategies for Cultural Collections.” During the two day workshop they heard presentations from conservators, architects and engineers who spoke about the widening environmental parameters being introduced into museum and archive storage spaces. These ideas were reinforced several months later when Leone attended another CCAHA workshop “Environmental Management: Stewardship and Sustainability for Cultural Collections.” These programs, coupled with enormous increases in energy bills for the museum, awakened the staff to the reality that “set it and forget it” was no longer acceptable. The staff needed to possess a basic understanding of how HVAC systems work and actively participate in setting, monitoring and adjusting the environmental conditions within the museums.

The knowledge that the museum community was embracing wider parameters encouraged the staff to pursue creating a plan for LHS that would incorporate these new guidelines into a comprehensive strategy that emphasized passive measures to create acceptable environmental conditions. This would be accomplished through minimizing air and water infiltration by tightening each building envelope; repairing, refurbishing and/or replacing aging HVAC systems in a thoughtful, cost effective and energy efficient manner; and replacing antiquated lighting with canisters and tracks that emit less heat and cost less to operate. With these goals in mind, LHS applied for a NEH Sustaining Cultural Heritage Collections Planning Grant in the fall of 2009. [Appendix B] The grant enabled the staff to hire Faesy-Smith Architects to assess the exterior of all four museum buildings, Fuss & O'Neill engineers to provide a diagnostic assessment of the HVAC systems, and Rick Kerschner, Director of Preservation and Conservation at the Shelburne Museum to inspect the health of the collections and advise the staff on appropriate environmental parameters for the collections' spaces.

Each consultant visited the museum individually during the summer and early fall of 2010. Leone worked closely with each consultant providing them with blueprints, information on the building's history, environmental readings for the various spaces, and unlimited access to each building. Each consultant also met with Joe Guenther, owner and operator of Accutemp Heating and Cooling, LHS' contract HVAC company. Guenther was able to inform each consultant as to the condition of the HVAC system in each building and discuss necessary repairs, replacements and challenges with each system.

Kerschner was the final consultant to visit the museum. His first day in Litchfield consisted of a roundtable discussion with Fields, Leone and Hocking representing LHS; John LaGattuta, LHS board member and Chair of the Facilities Committee; Joe Marcucio of Fuss & O'Neill; and Bob Faesy and Rich Vail of Faesy-Smith Architects. This meeting proved invaluable and allowed all of the participants to combine ideas and integrate their various expertise into a single strategy for LHS.

Each consultant submitted a final report to Leone upon the conclusion of their individual site visit. Staff processed these report and created a five year plan for the institution to begin implementing many of the recommendations advised in the reports. [Appendix H] Leone is in the process of creating a comprehensive Environmental Management & Facilities Care Plan for LHS which will drive the maintenance of the buildings and care of the collection over the next five years. The plan will also include comprehensive documentation of each air handling unit (AHU) and map out how conditioned air moves throughout the building. This document will be updated as changes to the HVAC system are made. It will provide the necessary documentation and institutional history for future staff and HVAC technicians to manage and maintain the system effectively.

When completed the plan will be submitted to both the Collections and Facilities Committee for review and approval and finally submitted to the Board of Directors for approval. This report will be complete prior to the awarding of NEH funding and ready when implementation begins in the fall of 2011.

A recent program further reinforced the staff's resolve to make these critical changes. Leone and Curator of Library & Archives Linda Hocking attended the two day "Sustainable Preservation Practices for Managing Storage Environments" workshop created by the IPI, funded by the NEH, and hosted by Yale University in October of this year. This workshop provided two days of intensive and immersive education on HVAC, environmental conditions, preservation strategies, energy consumption, and environmental management planning.

## Methods and Standards

For the purposes of this grant, the majority of the funding will focus on projects in and around the Noyes Memorial Building. The constant and overarching goal of the project is to create a preservation environment that provides the best possible conditions for the perpetuation of the collection with the least possible consumption of energy. The projected costs funded by this grant will result in a balanced relationship between the sealed building envelope and moderately conditioned interior environment. The HVAC system will operate efficiently and only when necessary. Negative environmental effects such as heat producing light canisters and inappropriate museum shelving will be removed and replaced.

The interior environment of the Noyes Memorial Building cannot begin to be addressed or adequately altered until the exterior of the building is repaired. Damaged masonry and stonework and ineffective gutters and leaders directly impact the collections environment by introducing moisture into the building. The HVAC system is taxed and sometimes unable to maintain humidity levels below 65% (which is the point when mold can begin to form.) The effect of this moisture intrusion is visibly evident on the interior walls on the north and west sides of the building. [Appendix G] Bubbling and flaking plaster and damage to interior masonry are found on all three floors of the building.

This is most threatening in the Collections Storage room located on the second floor of the Noyes Memorial Building. The air handling unit servicing this space operated almost continuously this summer to remove moisture from the air. HOBO datalogger readings from July 23 to August 19, 2010 in this room illustrate high humidity levels despite the efforts of the HVAC system. [Appendix I] Until the masonry and gutters are repaired, environmental conditions in this space will continue to remain erratic, costly to control and threatening to the preservation of the collections.

Faesy-Smith Architects inspected the building in December of 2009 and revisited the site in June of 2010 as part of the NEH Planning Grant. Their report details necessary repairs to the entire building envelope. It includes the restoration of masonry and stonework and repairs to gutters and leaders as well as replacing the roof, repairs to doors and windows, and improvements to the grounds around the building. [Appendix C] This report details the degraded condition of the gutters and leaders “to the point where they no longer are able to carry water.” (Faesy-Smith 12) This is exacerbated by the damage to the brick and stonework where “moisture has penetrated behind much of it, the water damage is so extensive in places that it has migrated to the interior of the building and is now damaging the plaster on the interior face of the walls.” (Faesy-Smith 22)

The architects generated an “Opinion of Probable Cost” for the project. This is located at the conclusion of the report. While many of these estimates are rough figures, LHS felt the overall cost of the project was high. The report approximated \$300,000 for the brick and masonry work and \$75,200 for repairs and/or replacements to gutters and leaders.

After receiving the report, LHS contacted Burlington Construction to obtain a second cost analysis. Burlington Construction is an area contractor with extensive experience renovating and restoring historic buildings. LHS worked with Burlington Construction in 1991 on the \$2.5 million renovation of the Noyes Memorial Building, in 1998 for the \$2 million renovation of the Tapping Reeve House and in 2007 for the \$450,000 design and construction of the Curatorial Center. Burlington Construction reviewed Faesy-Smith’s report and agrees with their assessment of the damage to the exterior and necessary repairs; however, they estimate \$135,000 for the masonry work and \$65,978 for the repairs

and/or replacements of the gutters and leaders. [Appendix A2] With NEH funding, LHS will partner with Burlington Construction to complete these repairs.

The additional repairs outlined by Faesy-Smith Architects will also be completed by Burlington Construction. They estimated \$600,000 for the entire project as opposed to the architect's price of \$996,077. LHS will seek funding for the work to replace the roof, repair the doors and windows and complete improvements to the grounds from private foundations, additional granting agencies and self-generated fundraising. The work is projected to begin in the fall of 2011.

Once the building envelope has been renovated and tightened, the staff and HVAC technician can better control and adjust the environmental conditions inside the building. The building will more easily retain acceptable ranges of temperature and relative humidity. Kerschner's report focused extensively on how LHS could maintain acceptable relative humidity parameters between 30% and 60% year round while under utilizing the current HVAC system to save on energy costs. He created seasonal schedules for each building and suggestions as to how the HVAC systems could be manipulated to more efficiently maintain these parameters. [Appendix F] The Curator has adopted these schedules for each building and already begun the implementation of these wider parameters in the museum spaces.

The goal is to maximize the efficiency of the HVAC system in each building. Particular attention will be paid to opportunities to under utilize or even turn off specific air handling units. Guenther has been working with this objective and adjusting the air handler units to maintain desired conditions while saving energy. During the summer of 2010, he modified each of the air handling units in the Noyes Memorial Building to push air across the coiling coil at the lowest fan speed. This provided cooler air temperatures while maintaining humidity levels below 65%. LHS saw a dramatic drop in their electric bill. In July, the Historical Society paid \$3195.62 for the Noyes Memorial Building. This dropped to \$2014.68 in August and to \$1836.23 in September. An even more dramatic difference was the amount of kilowatts per hour the museum consumed in September 2010 versus the previous month and year. In 2009, the Noyes Memorial Building consumed 854 kilowatts on average per day whereas the building only used 348 kilowatts per day in 2010.

Guenther plans to build on this success and continue to refurbish and repair the HVAC system in the Noyes Memorial Building. He has partnered with Environmental Systems Corporation (ESC) to create a long term plan for the system which examines each air handling unit individually, assesses the needs of the space a particular unit services and makes appropriate recommendations based on the museum's desired environmental parameters and capacity of the unit to meet these needs efficiently. They have designed a systematic approach which focuses on each of the specific seasonal needs of the building. When grant funding begins in September, Guenther and ESC plan to make specific alterations to the boiler and heating system in preparation for winter. ESC projects these repairs will cut LHS' oil bill by 40%. Once the repairs to the heating system are complete, Guenther and ESC will replace the chiller with an energy efficient model and focus on preparing the air handlers for dehumidification in the spring, summer and fall. They estimate \$98,580 for the complete refurbishment of the system in the Noyes Memorial Building and minimal repairs to the HVAC system in the Tapping Reeve House. [Appendix A1]

This cost includes the installation of an energy management system which will integrate the HVAC systems of the Noyes Memorial Building, Tapping Reeve House and Curatorial Center into single computerized system which will maintain and adjust the conditions in each building. ESC recommends an open source, non-proprietary program which requires no maintenance fee. The system is familiar to

the HVAC industry and can be maintained by any number of HVAC management companies if LHS should ever decide to terminate their relationship with Accutemp or ESC. The energy management system would be available to Guenther and key staff members through a password protected Website enabling adjustments to be made to the environmental conditions of a space with a few key strokes. In addition, Guenther could diagnose a problem before arriving at LHS allowing him to bring the necessary parts and equipment.

The engineering firm Fuss and O'Neill visited the museum as part of the NEH Planning Grant. They submitted a report to LHS detailing their recommendations for the HVAC system. [Appendix J] Several of these suggestions are echoed by Guenther and ESC such as replacing the chiller at the Noyes Memorial Building with a more energy efficient model and installing an energy management system for the complex of buildings. Fuss and O'Neill favor entirely replacing the HVAC system in the Noyes Memorial Building at a cost of \$400,000. In addition, they quote \$107,000 for the installation of an energy management system. Guenther and ESC advocate working with the existing system and replacing units only when necessary and in a systematic and cost conscious way. This approach is less invasive to the building and collections and more consistent with the Society's goal to maximize resources and minimize expenses.

While the repairs to the exterior of the building and HVAC system are being completed, the Curator will oversee the refurbishment of the 2<sup>nd</sup> floor Collections Storage room. This project will complete a multi-year effort by LHS to improve the physical storage conditions for the entire collection. The endeavor began with the planning, construction and completion of the Pamela Cunningham Copeland Curatorial Center. In conjunction with the construction of this building, the museum received a *Museums for America* IMLS grant in 2007 for \$70,560 to purchase space saver shelving for the new facility, HOBO dataloggers, supplies for rehousing specific collections and staff support to complete an inventory of the collection.

Simultaneously an anonymous donation was made to improve storage conditions in the Archives. Space saver shelving was purchased for the east side of the Archives to complement the existing row of space saver shelving on the west side of the room. Oversized bound newspapers previously housed on open cantilevered shelving were boxed and moved onto designated shelving in the Curatorial Center. A large map case was also moved to the Curatorial Center making room for the new Archive's shelving.

Since the completion of the Curatorial Center, the Curator has overseen the move of collections from previously overcrowded storage spaces into the new building. The Archives and Art Storage room in the Noyes Memorial Building and Furniture Storage Space in the Tapping Reeve House have now been reorganized. A small room on the ground floor of the Noyes Memorial Building, previously used for furniture storage but considered unsuitable, was repurposed for general non-collections storage once the furniture was removed. The refurbishment of the Collections Storage room and reorganization of the textile and personal artifact collections intended for permanent storage in this space is the final phase of this project.

The NEH Implementation grant will pay for the cost of installing space saver shelving in the Collections Storage room and the supplies needed to transition oversized flat textiles from boxes to rolled storage and rehouse some personal artifact collections. Currently the artifacts housed in this space are organized on non powder-coated metal shelving of two different types acquired over the years and not designed for museum storage. These racks, especially the oversized shelves currently holding textile storage, are arranged closely together to maximize space creating narrow aisles and logistical challenges when

extracting a box from a shelf. With only three shelves per oversized rack, the textiles boxes have become stacked four and five boxes high. [Appendix K]

The current room configuration also has storage racks placed directly in contact with the baseboard heaters that run around the perimeter of three sides of the room. While rarely used, these heaters provide the only source of heat for the space and cannot be removed. The space saver shelving would be designed with a minimum of a 12" gap between the end of a shelving unit and the baseboard heater. This would allow the heated air to circulate more freely around the room and not be in direct exchange with either the shelving or the collections.

The cost of shelving will include the installation of the tracks and six space saver shelf units. Each unit is five feet wide and approximately 85" high. The combined capacity of these six units will hold over 500 textile boxes each measuring 30" long x 17" wide x 6" deep. LHS currently owns approximately 375 textile boxes and 111 additional textile and personal artifact boxes ranging in size from 16 1/2" x 20 1/2" x 3 1/2" to 10 1/4" x 12 1/4" x 3". The remaining space will allow for future donations to the collection as well as expansion of currently overcrowded boxes. In addition to the units on tracks, two stationary rolled textile racks will be installed in the Collections Storage room. These racks will house the Society's quilt, flag and oversized flat textile collections which are currently boxed.

The Society has contracted with East Coast Storage Solutions of Newington, Connecticut. East Coast Storage Solutions has provided the space saver shelving for several spaces at the LHS including the Archives, Furniture Storage room at the Tapping Reeve House and the Curatorial Center. They estimate the cost for this project to be \$62,000. In addition, the grant will pay for \$7,359 in storage supplies such as tissue paper, batting, cotton twill tape and boxes to rehouse specific personal artifact collections and transition oversized textiles from boxed to rolled storage. [Appendix A3 & A4]

The installation of the shelving will not begin until January of 2012. In the interim, the Curator will move the remaining small decorative arts collection items to the Curatorial Center and, once the museum has closed for the season in November 2011, relocate the textile boxes into the Cunningham Gallery for temporary storage while the room is being renovated. Once all of the collections have been removed, the walls will be scrapped and repainted to repair the damage caused by the moisture infiltration. The space saver shelving will then be installed and textile boxes returned to their new storage locations in the Collections Storage room. The curator will work with interns during both the summers of 2011 and 2012 to document the relocation of collections items and update location records.

Another aspect of improving the physical storage conditions of the collection is the replacement of outdated, heat intensive and energy costly lighting in the Noyes Memorial Building. The track and canister system currently used in the building was installed in 1991 when the museum was renovated. While state of the art in 1991, today, these canisters negatively impact the museum environment and need to be replaced.

The track and canister system currently uses a magnetic connection system which allows the transfer of energy from the track to the light. The magnetic connection is unstable and on average loses 30% of its energy during the transfer. The proposed replacement for the current canisters uses an electronic connection which almost entirely reduces this energy loss making the lighting more efficient. In addition, the electronic canisters emit significantly less heat than the magnetic ones which currently affect the museum environment by raising the heat several degrees in the gallery spaces.

LHS has contracted with Litchfield County Electric to complete the work of installing new canister lighting in the Noyes Memorial Building's exhibition galleries and collections storage room. [Appendix A5] In addition, Litchfield County Electric will rezone the lighting in the Archives. Currently half of the archive stacks remain illuminated when a staff member is working in the space. The lights would be reconfigured so a small workspace at the front of the Archives could be individually lighted and archive stacks kept dark unless access needed.

Litchfield County Electric will also run an electrical line from an air handling unit on the second floor to the Cunningham Gallery below which the machine services. This will allow Guenther to install an Emerson sensor/controller directly into the space allowing more control over the temperature and humidity in this room. Currently adjustments can only be made directly at the air handling unit which is not easily accessible. Fabbri Electricians will also reconfigure the lighting control in the Cunningham Gallery installing a programmable light controller which will eliminate two bulky light switches and allow the staff greater diversity for operating the lighting in a room used as a lecture space, educational program room, and traveling exhibition gallery. The total cost for electrical work is \$12,340.

To summarize the project, the NEH Implementation grant will provide:

- \$3,155 to purchase 10 PEM2 dataloggers and a Psychro-Drone psychrometer
- \$135,000 to repairs brick and stonework on Noyes Memorial Building
- \$65,978 to repair and/or replace gutters and leaders on Noyes Memorial Building
- \$62,000 to install space saver shelving in the Collections Storage room in the Noyes Memorial Building
- \$7,359 to purchase supplies and boxes to rehouse textile and personal artifact collections housed in Collections Storage room
- \$12,340 to update lighting in exhibition and storage spaces in the Noyes Memorial Building
- \$98,580 to refurbish HVAC system at Noyes Memorial Building, minimal repairs to the HVAC system at the Tapping Reeve House and installation of an energy management system

## **Work Plan**

2010 (Pre-Award)

*June – December*

- Wider environmental parameters of 30% - 60% implemented in all four museum buildings (the Archives which contain more sensitive materials will be 30% - 55%)
- Guenther works with HVAC systems and make improvements
- HVAC systems documented in preparation of creation of Environmental Management & Facilities Care Plan
- Small decorative arts collections moved from Collections Storage room to Curatorial Center

2011

*January – March*

- Small decorative arts collections moved from Collections Storage room to Curatorial Center
- Environmental Management & Facilities Care Plan drafted and sent to committees for comments and approval
- Additional funding sought and obtained to complete repairs to exterior of Noyes Memorial Building

*April – September*

- Environmental Management & Facilities Care Plan completed and implemented

(Grant Period Begins)

*September - October*

- NEH Implementation funding received
- Work begins on brick and masonry repairs, gutter and leader repairs and/or replacements and roof replacement to Noyes Memorial Building
- Work begins on refurbishment of HVAC system in Noyes Memorial Building – work on furnace and heating system
- Energy management system installation begins with Noyes Memorial Building
- Updates to lighting in Noyes Memorial Building begins
- PEM2 dataloggers and psychrometer purchased
- Transition from HOBO dataloggers to PEM2 dataloggers, environmental monitoring continues throughout museum spaces

*November – December*

- Work concludes on exterior repairs to Noyes Memorial Building
- Textile and personal artifact collections removed to Cunningham Gallery (once museum closed for season) for temporary storage
- Boxes and supplies ordered to rehouse specific textile and personal artifact collections
- Work on Noyes Memorial Building heating system continues if necessary and/or work transitions to upgrading dehumidification capabilities in air handling units
- Energy management system installation continues with Noyes Memorial Building
- Updates to lighting in Noyes Memorial Building concludes
- Facilities Committee will meet quarterly or more if necessary to discuss and monitor progress of work

2012

*January – April*

- Collections Storage room walls repairs, scrapped and painted
- Space Saver Shelving installed in Collections Storage room
- Textile and personal artifact collections returned to Collections Storage Room
- Work continues, as necessary, on updating dehumidification capabilities of HVAC system in Noyes Memorial Building
- Energy management system installation concludes at Noyes Memorial Building
- Facilities Committee will meet quarterly or more if necessary to discuss and monitor progress of work

*May – August*

- Refurbishment of HVAC system in Noyes Memorial Building completed
- Repairs to Tapping Reeve House HVAC begun
- Tapping Reeve House and Curatorial Center tied into Energy Management System
- Curator, with assistance of summer interns, creates new locations for textile and personal artifact collections in Collections Storage room
- Curator, with assistance of summer interns, rehouses oversized flat textiles on newly installed rolled textile storage

*September – December*

- Repairs to Tapping Reeve House HVAC continued if necessary and completed
- Energy Management System fully operational
- Environmental Management & Facilities Care Plan updated as changes made to HVAC systems

*December*

- NEH Implementation Grant funding ends

2013

*January – September*

- Continue environmental monitoring of museum buildings using PEM2 dataloggers
- Curator works with Guenther and ESC to adjust HVAC systems as appropriate based on environmental monitoring data
- Curator will share progress with Kerschner and move forward on creating case study of LHS project for publication and/or presentation
- Environmental Management & Facilities Care Plan updated again if necessary
- Facilities Committee will meet quarterly or more if necessary to discuss and monitor progress of work

## **Project Team**

*Catherine Fields – Director*

Catherine Fields holds an M.A. in museum administration/American history from the University of Vermont and a B.A. in American history from the College of William and Mary. She has been Director of the Litchfield Historical Society for twenty-three years. In Litchfield she has been responsible for several ground breaking projects, including the 1994-98 renovation and reinterpretation of the Tapping Reeve House & Litchfield Law School and acted as project director for the NEH funded exhibition project *To Ornament Their Minds: Sarah Pierce's Litchfield Female Academy, 1792-1833*. She will be responsible for monitoring the costs of the grant and provide oversight for contractors as they work throughout the building.

*Julie Leone – Curator of Collections*

Julie Leone holds a B.A. in history from the University of Dayton and a M.A. in History and Museum Studies from the Cooperstown Graduate Program, State University of New York College at Oneonta. Prior to coming to Litchfield in 2005, she was the Curator at the Rye Historical Society in Rye, New York. The Curator's job responsibilities include both exhibition development and collections management. She will be the point person for the grant, coordinate with contractors to complete work and work closely with Guenther to document repairs and replacements to HVAC system. She will also be trained on the newly installed Energy Management System.

*Linda Hocking – Curator of Library & Archives*

Linda Hocking holds a B.A. in political science and history from Marist College and an M.S. in library and information science from the University of Illinois. She has been Curator of Library & Archives at the Litchfield Historical Society since November 2002. She was admitted to the Academy of Certified Archivists in 2005. The Archivist's job responsibilities include collections development, processing, research, reference, and public outreach. She will focus on documenting changes and improvements to the Archives specifically.

*Joe Guenther – Accutemp Heating and Cooling*

Guenther has been owner and operator of Accutemp Heating and Cooling for the past ten years. Prior

Joe

to opening his own business, he apprenticed with Scoville Plumbing and Heating and later worked for Barry Cone's Plumbing and Heating. Guenther was highly recommended to the Society and began working with the museum in the summer of 2009. He will be responsible for the repair and maintenance of LHS' HVAC systems and work with ESC to install and operate the Energy Management System. Guenther will continue to advise LHS staff on HVAC decisions.

*John LaGattuta – LHS Facilities Committee Chair*

John LaGattuta is the owner of Northwest Woodworks, a hand crafted furniture making shop specializing in the recreation and restoration of 18<sup>th</sup> and early 19<sup>th</sup> century furnishings. LaGattuta is a graduate of the North Bennett Street School in Boston, MA. He has served several terms on the Board of the Litchfield Historical Society and has been the long standing Chair of the Facilities Committee and Chair of the Collections Committee. He will coordinate with Leone to organize quarterly Facilities Committee meetings and stay up to date on the progress of the project.

*Richard Kerschner – Director of Preservation and Conservation, Shelburne Museum*

Rick Kerschner received his MA in History and Museum Studies from the Cooperstown Graduate Program and has been the Director of Preservation and Conservation at the Shelburne Museum since 1982. He is a regular speaker on environmental management for museums and has produced numerous publications on the topic. He remains on the forefront of this issue using his own experiences at the Shelburne Museum to inform other institutions on their environmental management strategies. Kerschner has agreed to remain on the project as a consultant and provide continued advice to Leone and Guenther as they move through the implementation phase of the plan.

### **Project Results and Dissemination**

The Noyes Memorial Building is the Society's flagship building and LHS will use this space as a case study. It plans to document how a combination of improvements to the building envelope; strategic and thoughtful repairs or replacements to an existing HVAC system; and upgrades to the storage environment such as shelving and lighting coupled with widened environmental parameters can improve the longevity of the collection while decreasing the utility bills and environmental impact of the institution. The NEH identified LHS' planning grant as a *We the People* project and requested staff produce a white paper at the conclusion of the grant period. Continuing to document its progress would provide a valuable resource for those studying environmental impact on collections. Kerschner agrees and concluded his report by saying,

*There is a lot of interest in implementing such practical climate solutions in historic houses but the results of such environmental actions have not been quantified or published. With your knowledge and interest in such environmental improvements and talented local consultants working on your team, Litchfield Historical Society is well positioned to conduct this practical research and publish the results. I would be glad to advise on how to structure such research and review articles for publication. (Kerschner 15)*

Leone will meticulously document the entire implementation process and work with Kerschner to quantify the results. In addition to the environmental conditions within the storage and exhibition spaces, changes to utility bills will be noted and innovative solutions to HVAC repairs documented.

Leone will author an article under Kerschner's guidance. She anticipates drafting a proposal for publication and submitting it to the American Association of Museums' *Museum News* magazine, New England Museum Association's *NEMA News*, Western Association of Art Conservation quarterly newsletter, and e-Conservation's online newsletter. Hocking will draft a second article focusing specifically on improvements to archives storage. She will submit a proposal for publication to the Council for Library Information Resources *CLIR Issues*, Society American Archivist *American Archivist*

*Journal*, and New England Archivists quarterly newsletter. Leone and Hocking will also create a power point presentation on the project to present at state, regional and national conferences. They will submit proposals to the American Association of Museum's national conference, the American Association of State and Local History's national conference, Society of American Archivists national conference, New England Museum Association's regional conference, New England Archivists regional conference and Connecticut League for Historic Organizations' programming department. In addition, Leone will contact the Conservation Center for Art and Historic Artifacts in Philadelphia, PA and the Northeast Document Conservation Center in Andover, MA to discuss partnering with either of these organizations for further programming opportunities.

LHS also anticipates approaching the Connecticut Trust for Historic Preservation to co-sponsor a one day symposium on how museums can improve or maintain ideal environmental conditions while conserving resources and efficiently operating HVAC systems. LHS will present this project as a case study at the symposium. The Connecticut Historical Society also recently reconfigured and replaced the HVAC system in their historic building and will be approached to provide a second case study. This symposium will be scheduled for some time in 2014.

The most direct and significant outcome of this project is that it will enable money normally budgeted for overhead costs such as oil and electric bills to be redistributed in the Society's annual budget. Guenther and ECS anticipate the LHS will save over 40% on oil costs (approximately \$8500) and thousands of dollars in savings on electric bills. This money could now be redirected into program and exhibition development, conservation treatment, and improved housing for collections that continue LHS' significant track record of making their nationally important collections available for research, interpretation and dissemination to audience of all ages.

With each publication, database, exhibition and program, LHS has seen the demand for access to their collections increase dramatically. For example, as a new collection records becomes available in Archon, researchers contact LHS for additional information. The public's continued interest in the Litchfield Law School, Litchfield Female Academy, Ralph Earl paintings collection and numerous other documents and artifacts owned by the LHS reiterates the necessity of meticulously preserving these items. The stabilization and continuation of acceptable environmental conditions in each of the museum buildings has a ripple effect that touches every aspect of the museum. As collections are stabilized and preserved, public access can be continued through exhibitions, research requests, publications and online collections databases. Savings on overhead costs can be redirected into staff support and program development. This project will allow the LHS to continue on its current trajectory of providing the public with outstanding programming and access to collections while implementing a long term environmental management and preservation strategy.