



NATIONAL
ENDOWMENT
FOR THE
HUMANITIES

DIVISION OF PRESERVATION AND ACCESS

Narrative Section of a Successful Application

The attached document contains the grant narrative 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 NEH Division of Preservation and Access application guidelines at <http://www.neh.gov/divisions/preservation> 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, 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: The Autry Museum of the American West - Planning a Sustainable Preservation Environment

Institution: Autry Museum of the American West

Project Director: LaLena H. Lewark

Grant Program: Sustaining Cultural Heritage Collections

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Introduction

Project Overview: The Autry Museum of the American West respectfully requests a National Endowment for the Humanities Sustaining Cultural Heritage Collections planning grant of \$43,863 to convene an interdisciplinary team to explore sustainable preservation strategies that can address deteriorating environmental conditions in the museum. The Autry in its latest [Strategic Plan \(2018-2022\)](#) pledged to improve its infrastructure using environmentally sustainable solutions. These proposed solutions are a critical priority for the Autry, needed to preserve the many fragile and irreplaceable objects in the museum's vast, diverse and distinguished collection. The collection includes more than 600,000+ works of art, historical, archival and library material that represent the diverse peoples, perspectives, and ideas of the American West. To properly care for and protect items in the collection that will be displayed, studied, and/or stored in the museum, the Autry seeks funding to assemble a team of experienced professionals to study and recommend ways to alleviate increasingly wide and erratic swings in temperature and relative humidity (RH) in the building's collection spaces. The Autry's desire to resolve concerns about its internal environment is consistent with its preservation priorities, which include 1) maintaining exemplary and effective collections stewardship practices; and 2) preserving objects in its collection to facilitate humanities scholarship, research, education, history, multicultural awareness and lifelong learning. The project proposes to address sustainable preventive conservation strategies by examining passive (non-mechanical) measures already in use, evaluating the museum's building envelope for strengths and weaknesses, and conducting a thorough assessment of its mechanical systems. The objective is to identify sustainable modifications that will result in a long term comprehensive strategy for improved environmental conditions to prolong the life of objects in the Autry collection, and preserve irreplaceable artifacts of the American West.

Brief Profile of the Organization: Collections, Institutional History and Mission: The museum's original collection was compiled by its founders Jackie and Gene Autry and Joanne and Monte Hale. Known as "the Singing Cowboy," Autry was an American performer who gained fame in the early 1930s. He continued to be a significant presence in entertainment for more than three decades thereafter starring in films, on television, and performing music on the radio and in live performances. In 1988, he and Mrs. Autry built the museum to house a collection of nearly 21,000 paintings, sculptures, costumes, textiles, firearms, tools, toys, games, musical instruments, and other objects, including library collections. In 2003, the Autry merged with the Southwest Museum of the American Indian in Los Angeles. Considered stellar among Native American collections worldwide, the Southwest Museum's collection of 250,000 artifacts contains 14,000 Native baskets, 10,000 ceramic items, 1,100 pieces of beadwork and jewelry, and 6,300 textiles representative of Indigenous people from Alaska to South America. The Autry received over 200,000 additional books, maps, manuscripts, photographs, sound recordings, and archival material from the Braun Research Library, also originally housed at the Southwest Museum. Prior to the Autry's acquisition of the Southwest Museum, the Autry in 2002 had also merged with the Women of the West Museum in Boulder, Colorado. The merger gave the Autry stewardship of items in that collection, as well. Today the Autry is a non-profit organization governed by a Board of Trustees that includes numerous representatives of Native American tribes. The museum and its holdings reflect how the American West is a place of multiple cultures, perspectives, and experiences that make the region a significant and unique part of the world. The mission of the Autry is "to tell the stories of all peoples of the American West, connecting the past with the present to inspire our shared future."

Physical facilities, number of staff, operating budget, and number of users or visitors annually: The Autry's Griffith Park campus (235,000 sq. ft.) houses the Autry Museum (144,000 sq. ft.), which holds 12 exhibition galleries (46,000 sq. ft.), collections storage spaces (13,880 sq. ft.), workrooms and other areas where items from the collection are examined/displayed (15,345 sq. ft.), two permanent classrooms (1,320 sq. ft.), a 175-seat theater and an outdoor ethnobotanical "teaching" garden (6,768 sq. ft.) that features more than 60 native plants. The Autry has 186 employees with 64 directly involved in the humanities, who work in: collections (20), conservation (3), education (18), exhibit design (11), curatorial

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work (8), and executive/management (4). With an operating budget of \$20,943,890 (2020), the Autry receives 250,000+ visitors a year and has been voted “Best Museum” by the Los Angeles News Readers each year from 2014 to 2018.

Collection’s relevance to the Autry’s mission and the policies that guide the collection’s development: The Autry seeks to tell the stories of *all peoples* of the American West, a mission founded in the belief that knowledge of different cultures fosters greater intercultural understanding and respect. This purpose guides the collection’s development, since the Autry’s collection, due to its size and diversity, by its very nature contributes to increased intercultural understanding. The Autry’s collection development policies seek to engage audiences with the historical and contemporary American West, and with the diversity of indigenous cultures, by invoking such values as integrity (meaning collections are cared for as a public trust), scholarship (objects are researched so their importance is reported accurately), provenance and title (such that each object’s past ownership allows the Autry to obtain clear title), among others. Emphasis is on 1) evaluating the collection’s strengths and weaknesses; 2) setting interpretive priorities that integrate collections development with the museum’s [Strategic Plan](#); and 3) developing resources for expansion.

Significance of the Collection

Nature, Size, and Intellectual Content of the Collection: The Autry’s combined collection holds more than 600,000 significant cultural assets, including historical objects, artwork, rare books, manuscripts, saddles, maps, and Native American baskets, pottery and ceramics, jewelry, and textiles, as well as archival and archaeological material. The Autry’s own collection of Western Americana – not including those inherited from the Southwest Museum of the American Indian or The Women of the West Museum – comprises nearly 21,000 paintings, sculptures, costumes, textiles, firearms, tools, toys, games, musical instruments, and other historical objects. The items are displayed in thought-provoking exhibitions, humanities programs and public events throughout the year. The museum’s original collection highlights cowboy culture and ranch life, Western literature, music, television and film history, the business of the entertainment industry and popular Western imagery. The Autry Library holds 50,000 book and serial titles, 5,000 linear feet of non-book materials, including manuscripts, photographs, maps, music scores, ephemera, and 300 linear feet of institutional archives documenting the history of the American West.

The 450,000 items acquired by the Autry from the Southwest Museum constitutes the second largest collection of Native American objects in the United States. It is regarded as one of the finest collections in the world. Items in the collection range in age from pre-contact to the present, documenting Native history and cultures in the Americas. Some of the earliest pieces in the collection include archaeological materials from museum-sponsored excavations, including those led by notable archaeologist and curator Mark Raymond Harrington. Significant items in the collection include bone tools, shell beads, stone bowls, fossils of extinct North American land mammals, and ceramics from the southwestern United States, including Pueblo Pottery 400 years old. Also included are over 14,000 baskets (the second largest collection in the country and one of the largest in the world) with some originating in 900 A.D. from the Ancestral Pueblo/Anasazi tribes, along with textiles ranging from 1150 A.D. to the present. The Southwest Museum collection also includes the world-renowned Braun Research Library, which contains rare books, serials, maps, photographs, artwork, wax cylinder sound recordings, manuscript collections and more than 1,000 historic saddle and western catalogues documenting tools used and clothing worn now incorporated into the Autry Library and Archives. The Autry and Braun libraries have a combined history of close to 138 years of providing the research community with access to unique rare and significant primary and secondary sources. The West remains of scholarly interest, as perceptions of America, at home and abroad, continue to be greatly influenced by its history and mythology. Each year, the Autry awards research fellowships to support projects by scholars who utilize the Autry’s extraordinary library collection. In the year before the Autry acquired the Southwest

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Museum, the Autry merged with The Women of the West Museum - the first museum in the nation dedicated to the history of women of all cultures in the American West. The Women of the West Museum broke new ground with its innovative use of online exhibitions, community partnerships, women's history trails, and art-based humanities programs. Housed at the Autry, today the museum offers The Butcher Scholar Award, which supports original research to deepen understanding of diverse women in the historical and contemporary West.

Collection's Use in Support of the Humanities: Items from the Autry's collection are utilized in numerous exhibitions and programs, all of which relate directly to the humanities. For example, the Autry has at least six permanent (core) exhibitions currently on display at Griffith Park, which explore the history of the American West: *Imagination Gallery* (examines the history of the iconic cowboy and the Western genre within the context of social and cultural change in the 20th century); *Journeys* (explores the impact westward expansion had on Native peoples); *California Road Trip* (presents California landscapes such as Death Valley, Big Sur and the central coastline, Joshua Tree, the California Redwoods, and Mt. Whitney); *The Colt Revolver in the American West* (looks at the impact of the Colt Revolver and displays historically significant pieces such as the first produced Single Action Army Revolver, Theodore Roosevelt's Army Model Revolver, and the first modern revolver designed by Tiffany & Co); *Human Nature* (reveals how traditional ecological knowledge can help inhabitants understand and care for the environment); and *Cowboy* (details evolution of the cowboy, including the Southwestern vaquero, the Texas cowpuncher, and the Northern Plains cowboy). The Autry also features another permanent exhibition named *Art of the West* that is a cross-cultural examination of the genre, which showcases paintings by Bierstadt, Catlin, Moran and others, plus Spanish colonial arts collections along with Native arts collections historic and contemporary. Further, the Autry has four rotating exhibition galleries that house mission-related exhibitions. Most recently, the museum launched two novel exhibitions: *Investigating Griffith Park*, a newly-conceived community-led exhibition that celebrates the history of the region and cultural objects held by the Autry dear to ancestral and current members of the Tongva tribe, as well as other residents in and near the park; and *Gold at the Autry*, which features gold-related artwork and artifacts culled from the museum's collection. As illustrated above, the Autry seeks to present and explain the history and diversity of the American West in its humanities programming using materials selected from its mammoth collection.

Audiences Served, Examples of Educational Programs, Research Projects, and Publications Used to Examine Humanistic Themes: The Autry serves more than 250,000 visitors each year from Southern California, the United States, and around the world. Approximately 65% live in the metropolitan Los Angeles area, and roughly 20% have traveled from other states or countries. They include the general public, researchers, historians, scholars, playwrights, teachers, students, archaeologists, film professionals, tribal communities, artists and others well-versed in civic education and the humanities. The Autry Library receives more than 135 visiting researchers each year, representing a range of interests including fiction writers, Hollywood set and costume designers, historians of the West and popular culture (especially of women's roles in society), as well as high school and college students. Several hundred e-mail and phone inquiries are received and answered each year by Autry library staff. The Autry annually awards four research fellowships for studies of the American West. In addition to the annual research fellowships, the Autry sponsors awards for scholars: The Visiting Scholar Fellowship, the Autry Summer Fellowship, and the Los Angeles Western Fellowship funded by the Los Angeles Corral of Westerners. Applicants include national and international dissertation students, university and college faculty, and independent scholars. The Autry also sponsors The Maverick Prize for scholars, which recognizes the work of an individual/organization that challenges conventional wisdom and prompts novel thinking about the American West. For playwrights, in 1994 the museum founded "Native Voices at the Autry" the nation's only equity theatre company dedicated exclusively to producing works by Native American, Alaska Native and First Nations playwrights. It engages broader audiences through presentations in non-traditional theatre settings and tribal outreach. Teachers and

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students comprise a great share of the Autry's audience. Autry education programs on- and off-site serve a total of 50,000 students. On average, 81% come from moderate-to-low income families in the Los Angeles Unified School District (LAUSD). The Autry's ALL ABOARD! School Bus Program provides 10,000 K-12 students a year with perhaps their first opportunity to visit a museum that reflects their cultural heritage. Objects from the Autry's collection are front and center in nearly all of its education programs. In *Cowboys: Past and Present*, students grades K-2 investigate replica cowboy gear to learn "What Helps A Cowboy Do His Job?"; in *Animals of the West*, students that same age learn how indigenous people made tools and clothing from animals by examining samples from the collection; in *Eureka!*, students grades 3-6 pan for gold using replicas based on those held in the collection; and in *American Indians of the West*, students in similar grades compare tools from the Autry collection to understand how the environment contributed to the development of different cultures. While many students come to the museum, the Autry also administers high-impact educational *outreach programs away from the site* that offer sequential learning opportunities for more than 14,000 youths each year. Autry programs also provide professional development for teachers in under-resourced public schools. To illustrate, the *Autry-in-Residence* program (Grades 3-5) and the *Autry Classroom Curators* program (Grades 1-12) both enable teachers to work with Autry staff and utilize items from the museum's collection as part of their classroom curricula. They use both historical and contemporary items provided by the Autry. Students increase their historical knowledge by examining and asking about artifacts, artwork, costumes, saddles, hand-woven baskets, blankets, manuscripts, musical instruments and all manner of Western ephemera.

Examples of Specific Exhibitions Where Collections Are Used to Examine Humanistic Themes: In 2014, the Autry adopted a Master Interpretive Plan that sought to advance the humanities by explaining how, despite a long history of diverse traditions and cultures, no particular group or culture has existed in the American West in isolation. The Plan required transformation of 20,000 sq. ft. of indoor and outdoor space within the Autry that was redesigned to create *California Continued*, an exhibition that displays items including native pottery; fragile baskets hand-woven in the 1800s and earlier, from reeds, rushes, cattails and deer grass; steatite carvings; a redwood canoe (one of only three hand crafted by prominent artist Axel Lindgren, Jr. of the Yurok tribe); along with other selections from the Autry's collection to show the ongoing, interdependence between diverse peoples and the environment. Drawing on a wide range of Native objects (including many from the Southwest Museum), firsthand perspectives, and contemporary artwork, the project connects Native California history, traditional ecological knowledge (TEK), and cultural practices to today's environmental issues. *California Continued* includes:

- *Human Nature*, a core exhibition that showcases ongoing practices by different cultures to preserve the natural environment. Illustrated with rare Native American objects and traditional and contemporary artwork from the Autry collection, the exhibition investigates how culture and ecology co-exist utilizing items from more than 25 tribal nations, with photography, soundscape and multimedia featuring Native communities; and
- *The Human Nature Garden*, which is an outdoor space that explores Native stewardship of the land as well as contemporary uses of 60+ native plants in an ethnobotanical garden. The choice of plants reflects the content of the Human Nature exhibit itself, which teaches and provides context explaining Native peoples' use of plants for food, medicinal, practical and other purposes.

Relation of the Autry collection to similar holdings in other repositories: The National Cowboy & Western Heritage Museum (Oklahoma City), the Buffalo Bill Center of the West (Cody, Wyoming), the Eiteljorg Museum of American Indians and Western Art (Indianapolis), and the Gilcrease Museum (Tulsa, Oklahoma), are all outstanding museums that, like the Autry, focus on the West as a region and include some comparable items in their holdings. Similarly, all have collaborated with Native communities in innovative ways and have critically examined the stories that inform perceptions of the West. The Autry continually seeks to build on the work of these museums and

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others to interpret subjects in innovative ways given its unique collection and vantage point vis à vis Los Angeles, close to the U.S.-Mexico Borderlands/Frontera. The Autry's hemispheric collection also encompasses the Pacific Coast, the Southwest, the Great Basin, Mesoamerica, and the Arctic. Thus, the Autry's collection provides a broader and often more diverse perspective on what is the West. The Autry also holds the second largest collection of Native American artifacts in the nation – second only to that held by the Smithsonian's National Museum of the American Indian – and therefore reflects the very broad and rich cultural and geographic diversity of many Native peoples.

Current Conditions and Preservation Challenges

The Autry's HVAC system, excluding some partial updates and repairs, dates almost entirely to the original construction of the museum in 1988. As a central component of the museum's long-term preventative conservation strategy, the system was once state-of-the-art and met all requirements for the Autry's size and level of visitation. However, since at least 2006, the Autry has documented a steady decline in the ability of the aging system to hold temperature and humidity levels within acceptable ranges. See Appendix A regarding Temperature and Humidity Readings in Attachment 7.

Given the diversity of object types and materials represented in the Autry's collection, climate conditions in its exhibition galleries and collection spaces (including artifact, library, lab and storage areas) today are detrimental to the preservation of large portions of the collection. Non-mechanical efforts to reduce the exposure of collections artifacts to negative conditions have been ongoing, and a high level of administrative and intellectual control has been exerted to conserve items in the collection. For example, policies and practices to control microclimates around individual items or batches of items have been implemented as a stop-gap measure to protect them. At the same time, general museum field expectations of an HVAC system's performance amidst surrounding climate loads have been relaxed to allow for a wider range of acceptable settings. Nevertheless, the museum struggles to maintain appropriate climate conditions, because its in-house capacities are reaching their limits. Further, the Autry's inability to meet widely accepted museum standards of climate control absent use of secondary buffering measures impedes its ability to meet the standards of potential lenders. Climate incapacities have also put a halt to some previously sought loans, hindering the museum's ambitions and ability to mount certain exhibitions.

Local Climate Load: Day-to-day weather at the Autry Museum in Los Angeles' Griffith Park mirrors readings from Burbank or Glendale more than those in downtown Los Angeles. However, *general climatic trends* in Los Angeles are applicable when describing and assessing climate effects on the Autry in Griffith Park.¹ Although the climate in Southern California is known as being relatively mild, there remains the potential for extreme weather and this must be considered when assessing risks to collections preservation.

Los Angeles is categorized as a moderate Mediterranean climate, with pronounced seasonal changes in rainfall – meaning a normally dry Summer and a rainy Winter – with relatively modest transitions in temperature. Significant precipitation is rare between May and October. During the rest of the year, from November through April, Pacific storms and frontal systems account for most of the area's annual rainfall. The storms are migratory, with wet and dry periods alternating during the winter and early spring with considerable irregularity in timing and duration. While severe weather is uncommon, strong offshore winds, known as *Santa Anas*, can reach hurricane strength moving through passes and canyons. These hot, dry winds can cause sudden, extremely low humidity throughout the region for days at a time.

¹ General climate trends described in this assessment are largely quoted from or paraphrased from David Bruno, Gary Ryan, with assistance from interns Curt Kaplan and Jonathan Slemmer. *Climate of Los Angeles*. National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NWS WR-261. Western Region Subseries. U.S. Department of Commerce, January 2000.

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Building Envelope and HVAC System: The Autry Museum is a steel frame and reinforced concrete structure built to house museum exhibitions, collections storage, and offices. To protect the building's inner envelope, the museum has double sets of doors at its public entrance that create a buffer zone between the exterior of the building and the museum lobby. The museum's galleries and collections storage spaces are fully enclosed, with no windows and no direct exit to the outdoors. Doors to all exhibition galleries can be closed during non-public/non-work hours to minimize strain on the HVAC system. Originally the ductwork, pipes, vents, and environmental control units in the museum were not placed directly above exhibition casework or collections storage units in the museum. However, this is no longer the case as gallery renovations over the years have led to alterations in the original floorplans.

The Autry's HVAC system is a centralized, 24-hour temperature and humidity control system that continuously filters air and operates throughout the building in exhibition galleries and collection storage spaces, as well as other areas. The system conditions air for 46,000 sq. ft. of gallery space, 13,880 sq. ft. of collections storage spaces, 8,590 sq. ft. of library space, 4,415 sq. ft. of collections workroom space, and 2,340 sq. ft. of conservation labs. All of these areas hold items from the museum's collection.

History of the Project

As mentioned, the HVAC system was installed during construction of the building in 1988. The pneumatic controls are still adjusted manually, since many of the original thermostats are either unreliable or nonfunctioning; the original control software has been obsolete for many years. This obliges the staff to take daily readings and adjust the controls according to anticipated changes in weather, visitors and event schedules. Modifying control settings is an imprecise and slow process that requires minimal initial adjustments followed by a waiting period before being able to gauge results and make additional adjustments, if needed. Making temperature and humidity adjustments in one part of the building can have adverse effects on other parts of the building. For example, an increase in an *office's* temperature set point can result in humidity levels dropping precipitously in the *exhibition galleries*.

The HVAC system relies on numerous environmental control units (ECUs) to moderate temperature and humidity. The ECUs are original to the building's 1988 construction in all areas except in two recently renovated lower galleries. An understaffed Facilities Department and limited access to the older ECUs have sometimes led to deferred maintenance, suboptimal performance, repeated breakdowns, and recurring leaks. In addition to ECU leaks, the museum was constructed using Schedule 40 copper pipe (as opposed to Schedule 80) as part of its heating and cooling system. Schedule 40 is a thinner pipe that has developed pin-holes, splits, and eroded thread connections causing water leaks throughout the Autry's galleries and collection storage areas, despite the Autry's use of corrosion-inhibiting additives in its humidification system. See photos in Appendix B of Attachment 7.

Recent HVAC-related leaks have occurred throughout the building. For example, leaks occurred directly above artwork in the Sprague Gallery on 11/30/2015; and above casework in the Community Gallery on 7/10/17, causing the case to be removed for several weeks while the ECU above it was repaired. Other leaks were experienced above a musical instruments case in the Imagination Gallery 10/2011, and in the same gallery above the Bohlin case 5/2015, plus in the same gallery during 11/2015, when water dripped onto the floor. These were accompanied by leaks in the *Human Nature* exhibition 9/2016, and in the *Mabel McKay* exhibition near it, also in 9/2016, and again in 5/2017. These leaks resulted in the removal of a second case. The increased presence of water from chronic leaks has resulted in greater humidity in the museum, which the already overtaxed HVAC system works hard to remedy. Furthermore, environmental testing of drip pans and drains from some of the ECUs in 2017 found significant levels of bacteria and mold in the pipes and drains of some of the units located in the lower level of the museum. The Autry's Facilities Department estimates that at least 15% of its time is spent repairing the ECUs

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(over and above regular maintenance). Of utmost concern, adjustments to the units’ pneumatic controls often do not (or cannot) result in the changes needed to maintain appropriate environmental conditions in the museum. The Autry’s 2018 CAP report (discussed in more detail below) highlights how replacing aged environmental control units with new ones would 1) improve overall indoor climate conditions; 2) enable the new units to be placed in more accessible locations for ease of maintenance; and 3) allow for the installation of fewer but more efficient units to reduce the hours now devoted to maintenance.

Documented Indoor Climate Conditions: Informed by over a decade of past readings from 11 Hobo Electronic Data Loggers, the Autry has documented a steady decline in the ability of its aging HVAC system to hold temperature and humidity ranges to its own and other lending institutions’ standards. In 2007, the Autry purchased and installed two Trane centrifugal 220 ton chillers to upgrade the cooling system, along with two new AJAX hot water boilers used to heat the building. Nevertheless, today in its exhibition and collections storage spaces the Autry is experiencing the widest and most rapid temperature and humidity swings in the museum’s history – particularly in the fall and winter months. A more flexible but still acceptable range in temperature and relative humidity was adopted by the museum in February 2013: 59-77°F (previous range was 68-72°F) and relative humidity 45-55% (previous range was 45-50%). However, this target still cannot be met by the climate control system, particularly with respect to relative humidity (RH) in Fall/Winter.

2018/2019 Temperature and Humidity Readings	Exhibition Galleries		Collections Storage	
	Temperature	% RH	Temperature	% RH
In Spring/Summer	60-77	32-66	66-75	33-50
In Fall/Winter	59-82	22-61	66-76	27-59

In fact, the maximum usual *variation* percentage in a 24-hour period (taking into account climate changes and local conditions) has increased markedly in the fall and winter months:

2018/2019 Variations In Temperature and Humidity Readings	Exhibition Galleries		Collections Storage	
	Temperature	% RH	Temperature	% RH
In Spring/Summer	3%	2%	2%	2%
In Fall/Winter	4%	4%	2%	4.5%

The Montgomery Gallery is on the ground floor of the Autry, where the majority of the museum’s temporary exhibitions are held and items from the Autry’s collection, along with loaned artifacts, are displayed. That gallery experienced fluctuations as follows: in Jan-Dec 2018 temperatures ranged 65° F to 76° F, with 26% to 69% RH; and in Jan-Aug 2019 temperatures ranged 63° F to 79° F, with 24% to 71% RH. Collections storage space in the Autry basement experienced the following fluctuations: in Jan-Dec 2018 temperatures ranged 67° F to 72° F, with 33% to 64% RH; in Jan-Aug 2019 temperatures ranged 35° F to 75° F, with 38% to 64% RH. And even maximum *short-term* fluctuations have been substantial: during one week in April 2019, RH rose from 57% to 71%, then dropped to 32%, and rose again to 51%.

Documented Climate-Related Effects on Collections and Museum Functions: The museum’s increasingly erratic swings in temperature and humidity adversely affect items from the Autry’s collection held anywhere in the building. The Autry’s encyclopedic collection of rare and irreplaceable objects, artwork, and historical items of materials both organic (leather, bone, plant-based material, textiles, finished wood, paper) and inorganic (metal, ceramic, stone, plastic) are at significant risk while on display, or in the library, the lab, the workrooms, and/or in storage at the Autry Museum due to the advanced age and faulty performance of the HVAC system. Much of the collection is particularly sensitive to the type of

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mechanical damage and chemical degradation that can result from drastic fluctuations in relative humidity that occur regularly in the building. Many important artifacts in the Autry's collection, as well as in exhibition loans, run the gamut of low to very high sensitivity to fluctuations in relative humidity that affect *unproofed* objects as defined by ASHRAE.

Further, large portions of the collection composed of materials such as unstable metals and glasses, mold-sensitive organic materials, early plastics, and films are susceptible to degradation caused by hydrolysis, reactivated mold spores, or corrosion -- all exacerbated by high humidity levels. In addition, broad fluctuations in temperature and RH at the Autry (especially over 76° F and 57% RH) coincide with an increase in the number of insects observed in isolated areas of the Autry's public galleries and collections storage. In two instances, substantial treatments were required not only for the affected artifact, but also for others in its vicinity. In the first, an isolated beetle incident in our collection's art storage room required conservators and collections staff to: re-line and in-fill lost media (including in-painting a 19th century painting); freeze textiles stored in the art storage room as a preventive measure; apply plastic wrap to paintings and place them in quarantine; partially remove some flooring where infestation had continued; and fumigate the art storage room. In the second instance, the discovery of beetle activity in a hanging wood sculpture required the use of anoxia; removing artwork from public view for three months; and having to reschedule other activities to prevent detected infestations. The interruption in museum activities to address each of these instances required re-allocation of human and financial resources. The unpredictable nature of the Autry's unstable HVAC system provides a favorable environment for pests, and the impact could become increasingly costly.

Beyond hazards to the collection itself, museum functioning is affected. For example, temperature and RH fluctuations damaged walls and casework in a temporary gallery exhibit held June 29, 2012 - December 1, 2013, when plaster finish on walls put in place for the exhibition cracked and split. Wood veneer on the exterior of some of the exhibit cases expanded and contracted dramatically, causing cracks in those case's exteriors and the bowing of their Plexiglas. See Appendix C of Attachment 7.

Unfortunately, for the past six years the Autry has decided not to pursue and has even been denied some loans of artifacts from other museums that were integral to the Autry exhibitions for which they were requested. The Autry's interdisciplinary planning team must now consider how to maintain temperature and humidity ranges through passive and possibly other measures that meet the needs not only of its own collections, but also the requirements of its lenders. All of the above underscores the Autry's need to implement a sustainable preventive conservation strategy plan consistent with its 2018 [Strategic Plan](#). The situation is urgent in view of the fragile nature, age, intellectual importance and size of the Autry's collection. An informed plan to regain control of the Autry's preservation environment through consideration of both passive (non-mechanical) and other means will be critical to the Autry's future.

Current Preventive Conservation Practices and Policies for Climate Mitigation: The Autry employs a range of initiatives to better control the museum's climate. The initiatives seek to maintain appropriate temperature and humidity levels, secure storage areas, and provide protection from fire, theft, pests and disaster. As part of the museum's preventive conservation practices, climate in the Autry is monitored daily and monthly. Each morning, the Autry's Facilities Department performs a museum-wide check of environmental conditions, and (if needed), adjusts HVAC controls to desired ranges. Additional adjustments are performed as needed during each day in response to measured fluctuations and staff observations. Monthly, the Autry Conservation Department downloads data from 11 Hobo Electronic Data Loggers throughout dedicated collection spaces and reviews the readings. To combat growing concerns about humidity, the Autry's staff shifted their focus to controlling microclimates around items. Starting in 2014 gallery cases were prototyped, designed and built to accommodate environmental conditioning agents (silica gels, *etc.*) to reduce the effects of RH fluctuations on sensitive objects. This new type of case was first installed in 2015 in the Montgomery Gallery. While many cases throughout the

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museum are older and cannot store these agents, as older galleries are redesigned this new style of casework is being utilized. However, they do not protect artifacts displayed on open platforms.

Project's Relationship to Sustainability Initiatives and the Autry's [Strategic Plan](#): As mentioned, in 2018 the Autry issued a new [Strategic Plan](#) that defined the museum's goals and objectives through the year 2022. The Plan directed the museum to begin planning processes for museum enhancements "to make the best possible long-term decisions for campus upgrades." In particular, the five-year [Strategic Plan](#) requires the museum to "strengthen operations" to preserve the facility's collections for future generations and "maintain building systems with the greatest impact on collections care, such as building infrastructure, HVAC and security." The [Strategic Plan](#) describes how the museum must update its campus to "guarantee the longer-term preservation of its collections and objects on loan," because "ongoing infrastructure improvements are critical both to protect collections" and "to continue best practices applied to collections care." The rationale for this NEH proposal is to replace any reactive, piecemeal approach meant to address deficient climate conditions with a comprehensive long term strategy that will improve and provide proper preservation of the museum's collection.

The Autry's Collections Assessment for Preservation (CAP) report released in early 2018 reiterated how "stop-gap efforts" to keep the building operational (such as emergency repairs, secondary collections housing, or buffered casework) had reached a "practical limit." Per the report, the situation may require repair and replacement of the building's aging infrastructure. The report recommended gathering cost estimates for an HVAC upgrade and caulking cracks in museum walls to control the climate. In March 2019, the CAP report was updated to recommend cost estimates for *both* a new HVAC control system and an environmental control unit upgrade. The 2019 update also recommended replacing leaking copper pipes in the HVAC system. Interim measures taken to address climate problems in 2018 included lowering the HVAC set point five degrees in winter (to the mid-to-upper 60s) and raising the HVAC set point 5 degrees in the summer (to the low-to-mid 70s). See CAP report summaries in Attachment 7. Autry leadership and the consultants to this planning project support the CAP reports' recommendations.

As part of the museum's efforts to meet collections care strategic objectives, the Autry's Collections Assessment for Preservation (CAP) reports were reviewed by Senior Staff to ensure that Autry leadership was aware of the effects that museum-wide deferred maintenance, including on the HVAC system, has had on the museum's ability to protect its collection and hold temperature and humidity readings within acceptable ranges. The next step was the creation of a Trustee ad hoc task force (the Risk Assessment Task Force) comprised of Trustees and key museum personnel, including the President and CEO, and the Vice President for Collections and Conservation. The task force was formed to address the museum's ability to address events that could damage the collection. Topics explored included building infrastructure; collections management policies; security; and insurance. Task force members toured the museum with the Director of Facilities to better understand the HVAC system, its components, and non-mechanical measures available to constructively address adverse environmental conditions.

Methods and Standards

Methods and procedures recommended by the Autry planning project's interdisciplinary team will be based on timely, pertinent and relevant information regarding which sustainable preservation strategies can best address the museum's environmental challenges. The project will be informed by over 10 years of data that the museum has collected on changes in temperature and relative humidity, as well as five years of energy usage and costs. Preservation strategies ultimately recommended by the team will be based on sustainability standards and practices endorsed by acknowledged experts in the environmental preservation field. Currently, the Autry refers to the 2019 ASHRAE Handbook on HVAC Application's Chapter 24 on Museums, Galleries, Archives, and Libraries for guidance on best practices. The Autry is utilizing the handbook's newest standards and guidelines to tailor an approach applicable to the

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museum's specific collections, buildings, and environmental control systems. Research by the planning team of these and related standards and practices will provide the intellectual basis for this project.

Knowledge and Skills of the Interdisciplinary Team: The Autry has created an interdisciplinary team to review years of environmental data along with our CAP and other reports, and to recommend environmentally sustainable preservation strategies. Assembled and led by the Autry's Vice President of Collections and Conservation (*LaLeña Lewark*), the museum has brought together an experienced group of professionals who will work to address problematic environmental challenges in the museum. Along with Ms. Lewark, the team includes: the Autry's Chief Curator and Research Director (*Carolyn Brucken*), its Director of Facilities (*Michael Garcia*), its Objects Conservator (*Jennifer Kim*), an outside architect (*Rick Gooding of Chu + Gooding*), and an additional independent consultant who is a design and mechanical engineer (*Rami Awad of Serenergy Corp.*).

How Project's Framework and Methods Relates to Expected Outcomes: The team will undertake hands-on site visits and project-specific research to determine how the museum can address escalating variations in temperature and humidity. The team will examine climate trends and the Autry's energy usage by reviewing over 10 years of data collected from its electronic loggers and five years of energy bills. See Appendix A in Attachment 7. The team will examine how to mitigate the negative effects of temperature and humidity. Further, as part of this space/HVAC planning project, the Autry will also discuss with its consultants the increasing wildfire threat and the risks it brings to the building's structure and ventilation. See the Autry's Emergency Wildfire and Smoke Mitigation Response Plans in Attachment 7. Overall, the team will consider the local climate and the effects of global climate change; current and future risks to its collection; and the costs involved in solving the Autry's environmental problems as part of various sustainable preservation strategies.

Data Collection and Nature of Modeling and Testing: First, a baseline will be established using past and present data; this will permit the team to understand the performance of the museum and its building envelope over time in order to anticipate future trends. The analysis will take into account the building's structure and size, number of floors, geographic location, volume of visitors, HVAC system, utility measures, and typical operating scenarios. The team will then model the Autry using a range of different scenarios to test climate conditions in the museum based on different weather conditions at different times of the year using available passive or other methods to correct current climate problems. They will also test what occurs after adjusting and readjusting HVAC set points, raising and lowering chilled water temperatures, and initiating periodic controlled shutdowns to allow assessments of the climate conditions revealed by the project's experimentation. The Autry's collection will be professionally maintained and protected during the process. The team will seek an accurate understanding of 1) the performance characteristics of the building and the building envelope; 2) the capabilities of the current HVAC system; and 3) how the system could be modified, if at all, using passive non-mechanical and, if needed, new mechanical upgrades (including possible replacement of the existing HVAC system). The team will test energy reduction strategies to enable the museum to maintain acceptable ranges throughout the building. In the end, proposed solutions will be recommended by the team based on the results of tests completed; advice provided by Autry in-house experts and hired consultants; staff capabilities; and anticipated costs. The team will evaluate the effectiveness of possible recommendations based on the data obtained on climate conditions, energy use, costs, and the favorable impact of different proposed preservation strategies.

Standards: The Autry is accredited by the American Alliance of Museums (AAM) (2012) and abides by AAM standards applied to collections care and preservation. Because the Autry also houses collections that belong to federal agencies including the Bureau of Land Management, the U.S. Navy, the Bureau of Reclamation, and the National Park Service, it also follows the U.S. government's "Curation of Federally Owned and Administered Archaeological Collections" regulations codified at 36 C.F.R. §79.

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The regulations implement provisions enacted by the National Historical Preservation Act, the Reservoir Salvage Act, Archaeological and Historic Preservation Act, and the Archaeological Resources Protection Act. The museum is also actively complying with the Native American Graves Protection and Repatriation Act (NAGPRA).

Work Plan

Oct.-Dec. 2020: In October, the Project Director, Chief Curator, Conservator and Facilities Director will collect over 10 years of electronic logger data, five years of energy use and cost data, plus HVAC system maintenance and other facility reports. The information will then be distributed to all planning team members, who will be asked to review the documents prior to a site visit at the Autry. Team members will convene at their first day-long onsite team meeting to assess climate conditions, preservation challenges and evidence of decline in the museum. They will undertake a group tour and discuss conditions in the Autry. They will then together calculate next steps to further assess conditions and research possible solutions. If the team decides to hire consultants to conduct the research and draft a report, the team will agree to solicit bids or prepare documents to hire such consultants.

Jan.-Jun. 2021: The Project Director, Chief Curator, and the Conservator, working with the Facilities Director, the Architect and the Mechanical/Environmental Engineer, will hold a conference call either to select a consultant to complete an assessment of the museum's climate problems or, in the alternative, assign project-specific research to individual team members based on their particular areas of expertise. Over the next six months, the goal will be to retrieve the most recent, learned and best-informed information in their respective fields to help formulate an appropriate preservation plan.

Jul.-Dec. 2021: In July, the Project Director will hold an interim conference call to discuss with the planning team the findings obtained to date as a result of their respective six-month research assignments or, in the alternative, convene a call to discuss the status of any consultant(s)' report. Based on information provided, the team will assess and provide guidance on the types of environmental solutions most appropriate for the Autry in response to the information gleaned so far.

Jan.-Jun. 2022: By May, another interim conference call will be held to assess what should be a near-final report by the team or its consultants, the contents of which will have been circulated to all team members in April. At the end of June 2022, the second day-long meeting of all team members will be held at the Autry to review the final recommendations provided either by the team, or contained in the final report completed by consultants retained by the Autry.

Jul.-Sept. 2022: The Project Director, working with team members, will include data and information obtained during the project in a report that will explain the museum's recommended "next steps." The report will be included in a White Paper on "lessons learned" and be posted on the NEH website as required.

Project Team

Planning Project Director: LaLeña Lewark is Vice President of Collections and Conservation at the Autry, where she directs collections and library management/stewardship. She ensures development of, and adherence to, the museum's collections and library policies/procedures and oversees the application of NAGPRA along with the rights and reproduction of objects in the Autry collection. She led the successful implementation of an \$8 million preservation strategy used to preserve the Southwest Museum of the American Indian's collection upon its acquisition by the Autry. She earned a B.S. in Historic Preservation from Southeast Missouri State University and a Certificate of Graduate Study in Museum Management from the University of South Carolina.

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Chief Curator and Director of Research: Carolyn Brucken, Ph.D., has served as a curator at the Autry for more than 16 years with a particular focus on Western Women's History. She also serves as an adjunct professor of Museum Studies and History at Claremont Graduate University. She has a Ph.D. in American Civilization from George Washington University, an M.A. from the Winterthur Program in Early American Culture and Decorative Arts at the University of Delaware, and a B.Ph. in Interdisciplinary Studies from Miami University in Ohio.

Director of Facilities: Michael Garcia guides physical planning efforts and manages major building projects for the Autry, where he has been an engineer for over 21 years. He has been certified by the Association for Facilities Engineering to be a Professional Maintenance Manager with a degree in Liberal Arts and Maintenance Engineering from Glendale Community College, California State University LA.

Objects Conservator: Jennifer Kim, who has been a conservator at the Autry for more than six years, previously worked as an Archive Conservator at the Academy of Motion Picture Arts and Sciences for nearly five years, as well as at the Natural History Museum of Los Angeles County prior to that. She has an M.A. and Advanced Certificate in Art History and Conservation from New York University and a B.A. in Art History from the University of California, Berkeley.

Consultant Rick Gooding: A principal of CHU+GOODING Architects in Los Angeles, Mr. Gooding handles projects for arts-related and institutional clients. A licensed architect, he received an M.S. in Architecture & Building Design from Columbia University, and a Bachelor of Architecture from the Southern California Institute of Architecture (SCI-Arc). For more than 15 years, he has taught at various schools of architecture and, at present, is an adjunct faculty member at the USC School of Architecture.

Consultant Rami Awad: Mr. Awad is the President and CEO of his company, Serenergy. He is an HVAC design and mechanical engineer with expertise in the installation and management of heating and cooling systems in complicated building envelopes, most particularly those that require modification due to aging premises and/or anticipated changes in climate, visitor usage, design, building content and operations, or general need for enhancement. He earned a Bachelor of Science in Mechanical Engineering at Concordia University in 2003; today he is U.S. Green Building Council (USGBC) LEED-certified and accredited to be a Certified Energy Manager (CEM) by the Association of Energy Engineers (AEE).

Project Results and Dissemination

Results obtained from the research undertaken by the Autry's interdisciplinary team will educate the Autry on its "next steps." Information received as a result of the team's deliberations and study of alternative environmental preservation strategies will enable the team to disseminate information on anticipated climate conditions and the museum's predicted energy usage and costs under the recommended new plan. The plan will inform the cultural heritage community about effective sustainable prevention strategies and be described in a White Paper the Autry will provide NEH, as required. The Autry will disseminate its lessons learned through blogs, conference presentations and publications. Project outcomes reflected as "next steps" will include the implementation of any passive measures that can be taken to address temperature and humidity problems in the museum. If passive measures have already been exhausted or prove otherwise inappropriate, the Autry will explore active measures and decide whether it must invest in new equipment, technologies, or an entirely new HVAC system. The Autry's White Paper will include information about data collected on climate conditions, energy use and costs, and will seek to inform others about the effectiveness of the sustainable preservation strategies that will be recommended as part of the Autry's planning project funded by NEH.