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ARTICLE
The Green Future and the Golden Past: Issues and Approaches Regarding the Sustainability of Historical Structures and Sites

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ABSTRACT

This Article illustrates the harmonies and conflict between historic preservation and environmental law in the context of urgently meeting climate change challenges. The Article presents an overarching analysis of the relationship between historic preservation and environmentalism, discerning unifying aspects and modern conflicts through statutory laws and case studies. It begins with detailing the parallel goals between the two causes, drawing on key similarities between the National Historic Preservation Act and the National Environmental Policy Act, the main tools for ensuring federal review for each field, and highlighting sustainable refurbishment as a prime example on achieving both ends with the same means. The Article then shifts towards their increasing conflict in the context of climate change action, looking at, for example, the friction between the rapid energy transition and historic preservation federal review. Because deceleration caused by federal review is not feasible in meeting current ambitious emission goals, the Article posits streamlined solutions that can be implemented to ensure each set of goals are met efficiently. This Article concludes with an analysis of these solutions within these unreconciled areas.

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INTRODUCTION

It is often said the "greenest" building is the one already standing.[1] This saying, attributed to the architect Carl Elefante, is an argument that advocates for the preservation of historical buildings over the demolition and construction of newer, more energy-efficient ones.[2] Not only does this argument appear intuitively true—it has been studied and quantified. The retrofitting, rehabilitation, refurbishment, and reuse of an existing building almost always results in lower negative environmental impact than new construction when looking at buildings of similar size and function.[3] For this reason, environmentalists and historic preservationists are often aligned when it comes to historic preservation. Their similarity is not just conceptual—it is represented in each movement's legislative tools: National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA). These legislative tools are used by both environmentalists and preservationists to serve their own respective purposes.

1. *Presidential Leadership Forum*, *Preservation & Sustainability*, NAT'L TR. FOR HIST. PRES., https://forum.savingplaces.org/learn/issues/sustainability [https://perma.cc/FM76-5P7Q].

2. *Id.*

3. PRES. GREEN LAB, NAT'L TR. FOR HIST. PRES. ET AL., THE GREENEST BUILDING: QUANTIFYING THE ENVIRONMENTAL VALUE OF BUILDING REUSE VI (2011), https://living-future.org/wp-content/uploads/2022/05/The_Greenest_Building.pdf [https://perma.cc/Q38H-LE4C] [hereinafter GREENEST BUILDING].

The urgency to address climate change and mitigate the predicted catastrophic effects has placed tension between the goals of these long-standing allies. As climate change effects begin to impact American coastal regions, historic properties are in danger of being destroyed.[4] Traditional administrative methods in addressing historical preservation are often too slow and too inflexible to effectively address historical properties prone to erratic and increasingly frequent flooding and catastrophic storm events. Historical review often ignores the issue altogether.[5] Environmentalists seek to establish emergency planning for such events and modify current structures to prevent destruction, but historic preservation laws as they currently exist prevent immediate action, as they require lengthy and costly historical impact review.[6] Climate change impact mitigating modifications on historic buildings could strip away their historic status and tax exemption benefits would subsequently evaporate, disincentivizing private investment into the rehabilitation of historic buildings.[7]

Relatedly, renewable energy infrastructure proponents seek to reduce some of the causes that contribute to climate change and reverse the current trajectory of its potential impact.[8] But the development of renewable energy infrastructure faces many obstacles, including obtaining the available use of large areas of land.[9] In obtaining the rights to land use, many of these federal projects require historical impact review for the

4. *See Presidential Leadership Forum, Preservation & Climate Change*, NAT'L TR. FOR HIST. PRES., https://forum.savingplaces.org/learn/issues/sustainability/climate-change [https://perma.cc/BJ4D-QZ78].

5. *See* Katie Spidalieri, *Climate Changing the Past In the Present: Historic Preservation Policy Recommendation to Facilitate The Biden Administration's Whole-of-Government Approach to Climate Change*, *in* Historic PRESERVATION LAW SEMINAR AT THE GEORGETOWN UNIVERSITY LAW CENTER 1, 16 (2021), https://repository.library.georgetown.edu/handle/10822/1062612 [https://perma.cc/ZCD3-WDVG].

6. *See generally Frequently Asked Questions About Section 106 Preservation Act*, NAT'L ENDOWMENT FOR THE HUMAN., https://www.neh.gov/grants/manage/frequently-asked-questions-about-section-106-the-national-historic-preservation-act [https://perma.cc/3WMW-QE3G].

7. *See generally Tax Incentives for Preserving Historic Properties*, NAT'L PARK SERV. (Oct. 24, 2022), https://www.nps.gov/subjects/taxincentives/about.htm [https://perma.cc/3XU3-6JY9] [hereinafter *Tax Incentives*].

8. *See* HENNING WUESTER & COSTANZA STRINATI, INT'L RENEWABLE ENERGY AGENCY, UNTAPPED POTENTIAL FOR CLIMATE ACTION: RENEWABLE ENERGY IN NATIONALLY DETERMINED CONTRIBUTIONS 7 (2017) (renewable energy is recognized as a key climate solution and is featured prominently in the first round of Nationally Determined Contributions arising out of the 2015 Paris Climate Agreement).

9. Dave Merrill, *The U.S. Will Need a Lot of Land for a Zero-Carbon Economy*, BLOOMBERG (Apr. 29, 2021), https://www.bloomberg.com/graphics/2021-energy-land-use-economy/ [https://perma.cc/7Y8Y-T85Q].

surrounding area.[10] Because renewable energy infrastructure can adversely impact historic sites, such as tribal areas holding cultural significance, transmission line construction and solar energy farms can be challenged under historic preservation laws, further delaying their development and adding significant additional costs.

Moreover, as scientific understanding of wildlife, habitats, and ecosystems evolve, environmental advocates continue to push for the removal or modification of structures that have been found to have adverse impacts on natural resources.[11] Dams are often historic structures that have detrimental impact on water quality, ecology, wildlife, and river morphology.[12] Moreover, dams pose a risk to public safety the older they get.[13] As environmental projects seek to modify or remove them, their historic significance is at risk, bringing preservationists forward to oppose any changes to the dam.

This Article presents an overarching analysis of the relationship between historic preservation and environmentalism, discerning unifying aspects and modern conflicts through statutory laws and case studies. Part I presents the parallel goals between environmental causes and historic preservation. First, comparing the NHPA and the NEPA, this Article draws on the key similarities between the two legislative tools and highlights the interchangeable use of each by preservationists and environmentalists and their interchangeable treatment by the courts. The Article then focuses on the intersection of sustainable refurbishment and spotlights architectural methodology used in achieving both historic and sustainable objectives in refurbishing buildings.

Part II identifies and examines current unreconciled areas between modern environmental policy and historic preservation laws. The first issue looks at renewable energy infrastructure, namely transmission structures and solar, geothermal, and wind structures, and the historic preservation challenges that present a significant obstacle to their development. This issue highlights case law and federal regulation to illustrate conflicting interests and contrasting outcomes. The second issue turns to dam structure removal and dam modification. This section outlines the environmental detriments of dam structures, and benefits of their removal

10. 54 U.S.C. §§ 306108, 306121(a).

11. *See generally* U.S. GEOLOGICAL SURV., USGS DAM REMOVAL SCIENCE DATABASE V4.0 (2021), https://www.sciencebase.gov/catalog/item/5ace95e3e4b0e2c2dd1a688f [https://perma.cc/XR7G-8R4E].

12. *See id.* (analysis of the USGS Dam Removal Science Database depicts correlation between the presence of dams and increased detrimental environmental impacts).

13. FED. EMERGENCY MGMT. AGENCY, RISK COMMUNICATION FOR DAMS IN RISK MAP 1 (2018).

and modification. This section then presents historic preservation concerns with dam removal and modification, providing examples of legislative and judicial resolutions. The last section analyzes the ever-evolving threat of climate change on historic places in coastal regions of the US. This section underscores inadequacies of present historical preservation laws in addressing the threat.

Part III offers approaches in reconciling the two objectives. This Part pieces together recommendations based on existing historical precedent, such as the Advisory Council on Historic Preservation's capacity in creating exemptions for entire categories from required historical impact review and standardizing treatment of certain projects. Moreover, dam partial preservation, preservation in service, and adaptive reuse is recommended wherever feasible. This solution is based on past success stories of dam modification. Part III concludes with general recommendations on improving mapping of historic areas, proactive consultation with historic preservation interest groups, stronger interagency cooperation, and promoting local and regional involvement, creating an opportunity to educate the public.

I. THE COMMON GOALS OF HISTORIC PRESERVATION AND SUSTAINABILITY

Historic preservation and environmental sustainability share similar goals: to maintain something valuable that can be lost. On a general level, both movements have coincided in the approach that centers its focus on the relationship between humans and their environment.[14] Each has some of their foundation based on the psychological effects that the natural and historical landscape may have on humans.[15] Where environmentalism looks at conservation of resources and the natural world, historic preservation focuses on preservation of historically significant places. Because of their similarity, they often share the same effort in achieving their goals. Additionally, they share similar legislative tools.

14. Carol M. Rose, *Preservation and Community: New Directions in the Law of Historic Preservation*, 33 STAN. L. REV. 473, 480 (1981).

15. *Id.* at 483 n.48; *see* Malcolm F. Baldwin, *Historic Preservation in the Context of Environmental Law: Mutual Interest in Amenity*, 36 L. & CONTEMP. PROBS. 432, 432-34 (1971) (discussing how development in the body of environmental law supports the historical preservationist value of "amenity").

A. Review-and-Comment: the NHPA and NEPA

Historic preservation legislation has used procedural innovations normally associated with environmental law.[16] Environmental legislation often includes historical aspects. But the converse is also true. The Department of Transportation Act of 1966 was the first of the preservation review proceedings program.[17] It required self-review by federal agencies when undertaking a proposed highway plan, looking at the potential damage to historical properties, and surveying unavoidable adverse effects while balancing options for minimizing harm.[18] Environmental concerns, such as concerns for wildlife and waterfowl refuge impact from a federal proposal, are also considered under the Act.[19] The NHPA passed that same year. The NHPA requires identification of any nationally registered properties that might be adversely affected by federally funded projects.[20] Identifying historic properties results in a mandatory submission of that project by the agency to review and comment by the NHPA's Advisory Council on Historic Preservation (ACHP).[21] The NHPA does not look at property exclusively: it looks at the preservation of the property and its environment.[22] Moreover, the "man-built environment" of historic structures is considered in the NHPA, which is a phrase that tends to encapsulate both environmental and preservation concerns.[23]

The National Environmental Policy Act of 1970 (NEPA) followed not long after. Driven mostly by environmental concerns, NEPA nonetheless included historical values in its scope of review and comment, looking to "preserve important historic, cultural, and natural aspects of . . . national heritage."[24] NEPA requires federal agencies to prepare an environmental impact statement, ("EIS"), regarding the potential impact of federal projects.[25] First, environmental impacts of the proposed action, which, according to §4331, includes historical aspects, any adverse effects which cannot be avoided in the implementation of the proposed federal action.

16. Rose, *supra* note 1414, at 524.

17. *Id.* at 525.

18. Department of Transportation Act § (4)(f), 80 Stat. 931, 934 (1966) (current version at 49 U.S.C. § 303).

19. *Id.*

20. 54 U.S.C. § 306107.

21. *Id.*

22. 54 U.S.C. § 307101(c).

23. *See* ADVISORY COUNCIL ON HIST. PRES., S. COMM. ON INTERIOR AFF., 94TH CONG., 2D SESS., THE NATIONAL HISTORIC PRESERVATION PROGRAM TODAY 2-3 (Comm. Print 1976).

24. National Environmental Policy Act § 101, 42 U.S.C. § 4331(b)(4).

25. 42 U.S.C. § 4332(C).

Second, potential alternatives to the proposed action. Third, the short and long-term utilization of the environment for humans. Fourth, any irreversible and irretrievable commitments of resources which would be involved in implementing the proposed action must be included in the EIS.[26] Since EIS preparation ensures the comments and review of other federal agencies with particular expertise on environmental impact, NEPA grants a consultation role to the ACHP.[27]

Often both preservationists and environmentalists use NHPA and NEPA interchangeably when one Act has failed to halt a federal project. Review-and-comment procedures have regularly been utilized against highway and urban renewal projects.[28] Where NHPA has failed in its more restrictive role, NEPA is utilized by preservationists.[29] Commonly, both Acts are simultaneously used against changes in housing development. For example, in *Tyler v. Cisneros*, the plaintiffs brought action against the City of San Francisco and the Secretary of the US Department of Housing and Development for a preliminary injunction under both 54 U.S.C. § 306108 of the NHPA and 42 U.S.C. § 4332 of NEPA.[30] The suit concerned the development of low-income housing in the Mission District of San Francisco which was allegedly affecting the historical qualities of the surrounding homes, one of which was eligible to be registered under the National Register of Historic Places.[31]

NHPA is often used for environmental concerns and the line is blurred as to what constitutes historic property. For example, in *Center for Biological Diversity v. Mattis*, the Center for Biological Diversity along with other Japanese environmental groups, brought action against the U.S. Department of Defense for the proposed construction of a military base in Okinawa which would adversely impact the endangered Okinawa dugong population.[32] The Center claimed that the dugong was "cultural property" of Japan, given its cultural significance to the nation and its heritage.[33] The

26. *Id.*

27. Rose, *supra* note 14, at 526.

28. *Id.* at 528.

29. *See* Hart v. Denver Urb. Renewal Auth., 551 F.2d 1178, 1179 (10th Cir. 1977); Wis. Heritages, Inc. v. Harris, 460 F. Supp. 1120, 1125–26 (E.D. Wis. 1978); Save the Courthouse Comm. v. Lynn, 408 F. Supp. 1323, 1327 (S.D.N.Y. 1975). *See also* Jones v. Lynn, 477 F.2d 885, 886 (1st Cir. 1973) (applying NEPA to enjoin building and construction in historic area until mandatory reporting was completed); Bos. Waterfront Residents Ass'n v. Romney, 343 F. Supp. 89 (D. Mass. 1972) (applying NEPA reporting requirements to enjoin further development in historic waterfront area).

30. Tyler v. Cisneros, 136 F.3d 603, 605 (9th Cir. 1998).

31. *Id.*

32. Ctr. for Biological Diversity v. Mattis, 868 F.3d 803, 808–09 (9th Cir. 2017).

33. *Id.* at 809.

Government had not performed its duties under NHPA section 402, which required agency officials to take into account effects the proposed Government taking could have on recognized cultural heritage sites or properties.[34] The Ninth Circuit found that the plaintiffs had standing, implying that a wildlife species could possibly be protected under historical preservation laws.[35] Upon remand, the district court distinguished between sections 106 and 402 of the NHPA. Whereas section 106 traditionally deems only archeological or geological features within fixed locations as cultural property, section 402 allows international jurisdictions to determine what cultural property is beyond a structure or location.[36] However, the Ninth Circuit's treatment of claiming a marine animal species as cultural property under NHPA still highlights the parallels between historic preservation and environmental statutes.[37] In fact, the Ninth Circuit did not question the district courts determination that the Okinawa dugong was property under NHPA's statutory framework, fulfilling each element of "object" under 36 C.F.S § 60.3(j), sufficient to deem it property.[38]

The natural world and the historic world share cultural and aesthetic significance for a community, a city, a state, or a nation. There is a shared concern for amenity within the two movements.[39] The goals of NEPA and NHPA both work to ensure these concerns are addressed when a federal project is undertaken that may adversely impact those things we value, whether it be a forest or a historic bank. Most often, courts will treat the federal actions under NEPA similarly to the federal undertakings under NHPA due to their "operational similarity."[40]

B. Sustainable Refurbishment

The push for energy-efficient buildings often coincides with the need to refurbish historical structures. Historic buildings undergoing rehabilitation have multiple considerations, such as building codes, seismic safety standards and ADA requirements. Having a sustainable design is just

34. *Id.* at 811–12.

35. *See id.* at 830.

36. *See* Okinawa Dugong (Dugong Dugon) v. Mattis, 330 F. Supp. 3d 1167, 1186 (N.D. Cal. 2018), *aff'd sub nom*. Ctr. for Biological Diversity v. Esper, 958 F.3d 895, 916–17 (9th Cir. 2020).

37. *See id.*

38. *Esper*, 958 F.3d at 901.

39. *See* Baldwin, *supra* note 1515, at 433–34.

40. Harrison v. U.S. Dep't of Army, No. 08CV-105, 2009 WL 3347109, at *6 (W.D. Ky. Oct. 14, 2009).

another aspect to consider in a building already undergoing restoration.[41] Preservationists often fight for preservation of buildings proposed for demolition by municipal governments. Environmentalists, perhaps sometimes unknowingly, have a stake in this fight.

Demolition of older buildings and the construction of newer, more energy efficient buildings is often perceived as having greater CO2 reduction benefits. But a study report by The Preservation Green Lab finds that it takes 10-80 years for a new building 30 percent more efficient than an average-performing existing structure to overcome the negative climate change impacts from the construction process.[42] Since preservation and reuse maximizes the use of existing materials, it reduces significant waste that would come from demolition and construction. While the savings of reuse range widely depending on the building type, the location, and the unique characteristics of a particular building, energy reductions from reuse are generally four to forty-six percent higher than newly constructed buildings with similar energy use.[43] This can be illustrated on a larger scale: if Portland were to retrofit and reuse all the buildings it is likely to demolish over the next ten years, the total reduction of CO2 would equal 231,000 metric tons, or about 15 percent of Multnomah County's CO2 reduction targets over the next decade.[44] Approximately one billion square feet of buildings are demolished and replaced with newly constructed structures in the US annually.[45] Applying the emissions savings figures for a general national policy for refurbishment and reuse would significantly reduce adverse climate change impacts from demolition and construction.

One advantage of refurbished historic buildings is their existing architectural features that utilize a particular design for a purpose without the use of any energy.[46] Quite often, older buildings that were designed

41. Deborah J. Cooper, *Reconciling Preservation and Sustainability*, ARCHITECT (Feb. 3, 2010), https://www.architectmagazine.com/technology/reconciling-preservation-and-sustainability_o [https://perma.cc/Q9A6-3CYX].

42. GREENEST BUILDING, *supra* note 3, at VIII; *see also id.* at 16 (discussing the term "embodied energy" which includes the emissions and waste from natural resource extraction, transportation of resources, installation, and the equipment production and use).

43. *Id.* at VI.

44. *Id*. at VIII; *see also* Manish K. Dixit, et al., *Embodied Energy of Construction Materials: Integrating Human and Capital Energy into an IO-Based Hybrid Model*, 49 ENV'T SCI. TECH. 1936, 1936 (2015) ("Buildings alone consume approximately 40% of the annual global energy…").

45. GREENEST BUILDING, *supra* note 3, at IX.

46. *See* Akubue Jideofor Anselm, *Building with Nature (Ecological Principals in Building Design)*, 6 J. APPLIED SCI. 958, 959, 963 (2006) (positing that older building methods and designs are usually environmentally superior and should be revived because traditional

before the advent of most modern technology, incorporated designs (some of which contribute to the significant historical quality of the building) that were devised to keep the building ventilated, cool, warm, dark, or bright.[47] In many ways these energy-free features represent the place and time of the building and preserving them serves both sustainable and historical purposes.

There are several considerations when sustainably refurbishing a structure: temperature control, water efficiency, renewable energy use, and types of material used. Throughout these considerations is a recurring ingenious strategy: the repurposing of the existing architecture for energy-efficient uses. Using the Leadership in Energy and Environmental Design ("LEED") rating system and any federal environmental requirements while consulting with the State Historic Preservation Office, ("SHPO"), the ACHP, and local historic preservation organizations would allow for a balancing between sustainability and preservation. Several guide resources for producing and refurbishing green buildings are available, such as the Living Future Institute's Living Building Challenge, Green Globes, the International Well Building Institute's WELL Standard, Passive House Institute US, and the Sustainable SITES Initiative.[48] LEED's O+M rating system serves as a comprehensive guide for existing buildings undergoing environmental upgrades with little to no construction.[49] That said, there is no LEED system that explicitly addresses historic preservation goals.[50] It does not distinguish between removal of materials that are historic versus non-historic, and does not give credit for maintaining windows or doors, despite the fact that their durability may be more "green" in the long run as compared to new, less durable windows.[51]

1. Temperature, Ventilation, and Windows

Many structures, by their design, are inherently equipped with temperature regulation features. This often encompasses the use of ventilation and windows but can sometimes be a matter of repurposing the

methods account for the local environmental issues, local materials, and avoid wasting resources).

47. *See* Cooper, *supra* note 41.

48. WBDG Historic Preservation Subcommittee, *Sustainable Historic Preservation*, WHOLE BLDG. DESIGN GUIDE (Aug. 26, 2019), https://www.wbdg.org/design-objectives/historic-preservation/sustainable-historic-preservation [https://perma.cc/5RSU-T9ZZ] [hereinafter WBDG].

49. *See generally* U.S. GREEN BLDG. COUNCIL, LEED V4 FOR INTERIOR DESIGN AND CONSTRUCTION (2019).

50. *See* Cooper, *supra* note 41.

51. *Id.*

use of existing architecture. For example, rehabilitation of Pasadena City Hall in California made use of the building's existing architecture to maintain its cooling feature: repurposing of the building's arcades as an exterior shaded corridor instead of constructing new interior ones, resulting in a LEED Gold rating.[52] If repurposing is not available, it is easy to find minor modifications to existing structure to improve its temperature regulations. For example, Pittsburg is a leading city in implementing green roofs on its larger buildings: placing vegetation on rooftops for energy efficiency, temperature regulation, and aesthetic purposes.[53] By simply modifying a roof to allow for vegetation to grow, the green roof insulates a building from ultraviolet rays that raise the temperature within the building and outside the building, cutting cooling costs, and reducing the "urban heat island" effect.[54] The Heinz 57 Center is the refurbished historical Gimbels Building which has utilized a green roof without impacting any of its historic character.[55] Heating, ventilation, and air conditioning systems (HVAC) are usually not an issue that adversely impact a building's historic quality because they are often discreetly placed.

Windows are a feature of historic buildings that support the argument that certain features of old architecture are naturally "green" and should be maintained with little to no modification. Normally, historic windows are not replaced because older windows are more durable since they are made from old growth wood which can function indefinitely, and where light and temperature performance can be improved if caulk and weather-stripping is applied.[56] This is preferred to newer glass which uses a kind of glazing and material that is hard to repair, making them highly prone to disposal when damaged.[57] An example of maintaining historic windows is Fort Baker Retreat Group's restoration of 18 buildings in the Bay Area of California—they reasoned, given Bay Area's mild climate and the waste of fragile double glazed windows replacing durable windows, replacement would not result in significant energy savings.[58] Tall windows are also beneficial in terms of

52. *Id.*

53. Sally Kalson, *More City Buildings Cultivate Savings by Covering Roofs with Plants,* PITT. POST-GAZ. (May 19, 2009), https://www.post-gazette.com/news/environment/2009/05/19/More-city-buildings-cultivate-savings-by-covering-roofs-with-plants/stories/200905190219 [https://perma.cc/7FSW-YJWV].

54. *Id.*

55. *See Heinz 57 Center/Gimbels Building Restoration*, GREENROOFS.COM, https://www.greenroofs.com/projects/heinz-57-center-gimbels-building-restoration/ [https://perma.cc/EKL8-FUTE].

56. WBDG, *supra* note 48.

57. *Id.*

58. Cooper, *supra* note 41.

saving energy costs because they extend the amount of time natural light can be used in a home by allowing it reach further into the building.[59]

Emerging insulation technologies also bring forth the possibility of temperature control with little-to-no use of HVAC systems. Retrofitting a building's fabric, by replacing the current insulation material with thermal insulation can provide a sustainable step towards zero-carbon refurbishment.[60] Placement of the building's insulation is also important. Adding insulation to the unoccupied attic and roof spaces of a building allow for reduced heat transfer, which is where most heat bundles up and escapes from.[61] Moreover, by simply adding weatherstripping to doors and windows, and sealing cracks in a building, especially if the building has many cracks due to its age, can make a world of difference without destroying any of its historic qualities.[62]

Yet another strategy in maintaining the temperature of a historic building is using traditional awnings or installing new awnings that preserve the historic quality of the building. Generally, the use of awnings in addition to air conditioning can lower the cost of cooling by up to twenty-five percent.[63] This is because awnings can reduce heat gain by up to seventy-seven percent depending on their orientation and placement.[64] Strategies for efficient temperature regulation continue to develop.

2. Water Control

Water efficiency is another important issue alongside energy efficiency for both preservationists and environmentalists. The control of water and how it affects the surrounding landscape of a historic building is both a preservation and a natural resource issue. Many historic houses used water saving designs, such as cisterns, which can give essential character to the historic structure.[65] Preserving these water efficient structures seems to be an intuitively smart strategy for water control so long as it does not conflict

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59. *See* WBDG, *supra* note 48.

60. Navid Gohardani & Folke Björk, *Sustainable Refurbishment in Building Technology*, 1 SMART AND SUSTAINABLE BUILT ENV'T 241, 247 (2012) (finding that thermal insulation is a promising solution to energy consumption reduction in buildings).

61. JO ELLEN HENSLEY & ANTONIO AGUILAR, IMPROVING ENERGY EFFICIENCY IN HISTORIC BUILDINGS 5–7 (NAT'L PARK SERV. ed. 2011).

62. *See id.* at 7, 9.

63. CHAD RANDL, 44 PRESERVATION BRIEFS: THE USE OF AWNINGS ON HISTORIC BUILDINGS: REPAIR, REPLACEMENT AND NEW DESIGN, NAT'L PARK SERV. 15 (Apr. 2005), https://www.nps.gov/orgs/1739/upload/preservation-brief-44-awnings.pdf [https://perma.cc/W3T3-4ZPN].

64. *Id.*

65. WBDG, *supra* note 4848, at 5.

with any state or municipal laws. But sometimes the landscape surrounding the structure is part of the historic character of that place and happens to require an abundance of water. This can create a "bio-swale," or a depression into the landscape that directs rainwater away from storm drains which allows the filtration and collection of water, while remaining discreet and not significantly altering the historic aspect of the landscape.[66]

Additionally, the innovation of green roofs not only help control temperature, but can also result in absorption of rainwater, thus reducing the amount of storm water runoff going into sewage systems that eventually pollute streams and rivers.[67] Because they are only visible from a bird's eye view, they are discreet, but there is an argument to be made that, even if they were clearly visible, they augment a historic building's aesthetic value.

Similarly, walkway and street modifications using permeable pavement can allow for control of stormwater flow and capture pollutants before they enter the waterway, thus reducing flooding.[68] For example, Cape Girardeau in Missouri used permeable pavement resembling the historic wooden boardwalk to reflect the city's history while simultaneously reducing water waste.[69]

Other discreet methods, such as underground drip irrigation systems in a desert climate can improve a property's water control and conservation.[70] Similar to HVAC systems, low flow water fixtures are another example of a common, discreet way to reduce water waste.[71]

3. Renewable Energy

While temperature and water control issues are easily addressed in a manner which aligns with the goals of both preservationists and environmentalists, renewable energy modifications and improvements to historic structures may not seem to be so obviously reconcilable. This is because renewable energy structures are rarely able to blend into a historic building without tarnishing the overall character, they are more difficult to implement into the refurbishment goals. But often it simply takes careful

66. *Id.* at 6.

67. Kalson, *supra* note 5353.

68. EPA, OLD NORTH ST. LOUIS: SUSTAINABLY DEVELOPING A HISTORIC DISTRICT 24 (2016), https://www.epa.gov/sites/default/files/2016-03/documents/old-north-st-louis-report-032416.pdf [https://perma.cc/2CHT-UN6A] [hereinafter OLD NORTH ST. LOUIS].

69. *Id.* at fig.25.

70. *See, e.g.,* NAT'L PARK SERV., U.S DEP'T OF THE INTERIOR, SUSTAINABILITY AND HISTORIC PRESERVATION LESSONS LEARNED 13 (2007).

71. *Id.* at 10–15.

consideration of placement to overcome this issue. For example, although solar panels can often tarnish the aesthetics of a building's historical roof, placement in low-visibility areas where the roof is flat and unimportant to the buildings visual appeal would be strategic.[72] This must be balanced with the effective placement of the solar panels to achieve maximum direct sunlight impact.[73] Additionally, "thin film" solar photovoltaic shingles can essentially camouflage into the existing shingles aesthetic, and are much thinner than traditional panels, rendering them more discreet.[74] This would be ideal for buildings whose historic character does not rely on the design and color of its roof.

Perhaps the most impressive renewable energy resource implemented to the design of historic buildings is that of geothermal wells which can contribute energy to multiple structures that sit atop without disrupting any historical aspects.[75] Trinity Church in Boston serves as a prime example of geothermal system success, which sits atop six wells that made it possible to renovate the church while reducing fossil fuel consumption and CO2 emissions.[76]

If an area is historically windy, and has had a history of windmill structures, then renewable wind structures may be restored and offer significant savings for energy.[77] Unfortunately structures like wind turbines are often unsuitable for most historic areas. Nonetheless, the possibility to buy remote energy from wind turbines offsite allows for renewable wind energy to have a role in sustainable historic preservation.[78]

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72. WBDG, *supra* note 48.

73. *See* ALICEN KANDT ET. AL., NAT'L. RENEWABLE ENERGY LAB'Y., IMPLEMENTING SOLAR PV PROJECTS ON HISTORIC BUILDINGS AND IN HISTORIC DISTRICTS 13–15 (2011).

74. *See id.* at 10–11.

75. *See Historic Home Restoration Incorporates Modern Renewable Energy Via Geothermal System*, CONTRACTOR (Oct. 10, 2014), https://www.contractormag.com/green/geothermal/article/20879969/historic-home-restoration-incorporates-modern-renewable-energy-via-geothermal-system [https://perma.cc/GL8F-48UE] (describing a 100 year old North Carolina home in a historic district that was restored and had 435 foot boreholes drilled in to harness geothermal energy, saving 50 percent more in energy savings than the surrounding homes); John Horst et. al., *Historic Preservation By Creating a Geothermal District,* GEO-HEAT CENTER 3 (May 2011), https://oregontechsfstatic.azureedge.net/sitefinity-production/docs/default-source/geoheat-center-documents/quarterly-bulletin/vol-30/art1da76ee4362a663989f6fff0000ea57bb.pdf?sfvrsn=47d08d60_4 [https://perma.cc/6LFS-EUBT] (detailing the savings from geothermal energy implemented in historic districts which can be seen as soon as within 10 years, in ideal circumstances).

76. WBDG, *supra* note 48.

77. WBDG, *supra* note 48, at 248.

78. *Id.* at 10.

The EPA has studied the re-development of historic neighborhoods that have been largely abandoned and has proposed a hybrid goal of redeveloping the neighborhood by restoring its historic character and introducing renewable energy into its culture and community.[79] Geothermal wells could be shared by existing and new buildings, while wind farms can become designated landmarks, representing the city's cultural identity tied into its sustainability.[80]

Strategies for sustainable refurbishment continue to be developed. Because every historic site is unique, how restoration implements sustainability objectives will be on a case-by-case basis. Expertise from both sides of the aisle is needed in developing the most effective plan for a historic building's sustainable refurbishment.

II. UNRECONCILED AREAS BETWEEN PRESREVATION AND SUSTAINABILITY

Despite the parallels in stewardship, similar operational legislative procedures, and the general harmonious history between the two fields, historic preservation laws have increasingly conflicted with environmental objectives in recent years. Though more issues have and will crop up as environmental technology advances and climate change effects worsen, three significant types of conflict have arisen in recent years: (1) historical preservation laws in the wake of renewable energy development and new transmission structures; (2) historical preservation and dam removal for conservation efforts; and perhaps most importantly, (3) historical preservation in the face of climate change impact on coastal cities.

A. Renewable Energy Infrastructure and Transmission Lines

Renewable energy has increasingly become a priority in addressing climate change, and its viability has been studied and well documented.[81] But renewable energy infrastructure faces multiple barriers to further development, which includes land use restrictions, required permits, upfront capital costs, and the disadvantage of competing with an already highly subsidized fossil fuel industry.[82] Transmission lines are a necessary

79. OLD NORTH ST. LOUIS, *supra* note 6868, at 22, fig.22.

80. *Id.*

81. *See generally* Gregory J. Rigano, *The Solution to the United States' Energy Troubles is Blowing in the Wind*, 39 HOFSTRA L. REV. 201, 204–17 (2010) (identifying environmental rationales for developing renewable energy sources).

82. *See* David A. Lewis, *Identifying and Avoiding Conflicts Between Historic Preservation and the Development of Renewable Energy*, 22 N.Y.U. ENV'T L.J. 274, 293–95 (2015).

component of renewable energy infrastructure because large-scale renewable energy infrastructure is often built in remote areas, far from where the energy actually needs to be delivered.[83]

Consequentially, transmission lines also deal with their own unique set of issues, such as: existing transmission lines are not usually located in more remote areas and new transmission line construction can be expensive,[84] especially if it is to reach out to these afflicted areas, like the Mojave Desert.[85] Transmission congestion, or rather, the imbalance of supply (transmission structures capabilities) and demand (energy needs) is an issue that currently afflicts urban areas.[86] Because of the lack of available land in urban areas, zoning issues, and upfront costs, building transmission lines to connect to far away renewable sources may be the only option to relieve congestion, but it remains a complicated issue given economic and jurisdictional factors.[87] Nonetheless, transmission construction and development is necessary to resolve energy issues in urban areas and the Biden administration's $2 trillion infrastructure proposal involves laying thousands of miles of transmission lines, with an $8.25 billion loan meant for innovations and development of transmission projects.[88]

1. Federal Review Challenges to Transmission Lines

Historic preservation has created another issue for renewable energy development and Section 106 of the NHPA stands at the forefront. Interstate and intrastate transmission lines involving federal funding constitute a federal undertaking, and as such, must undergo the NHPA's standard information-gathering process, expert consultation, and public comment period.[89] NHPA's Section 106 might not apply in two scenarios: (1) if a transmission project requires federal approval but not federal funding, or (2) if it is a private project that uses federal loans but has full

83. *Id.* at 294–97.

84. *Id.*

85. Robert Glennon & Andrew M. Reeves, *Solar Energy's Cloudy Future*, 1 Ariz. J. Env't L. & Pol'y 94, 121 n.211 (highlighting the long distance between solar panel structures and urban areas).

86. Lewis, *supra* note 82, at 295–96.

87. *Id.* at 297.

88. Ysabelle Kempe, *Gridlocked: These Policies Might Put Biden's Transmission Infrastructure Plans on Hold*, GRIST (May 4, 2021), https://grist.org/energy/gridlocked-these-policies-might-put-bidens-transmission-infrastructure-plans-on-hold/ [https://perma.cc/LZ8J-7A9M]; *see also* EDISON ELEC. INST., TRANSMISSION PROJECTS AT A GLANCE viii–ix (2013) (predicting there will be 10,000 miles of planned interstate transmission line development over the next 10 years).

89. *See* 54 U.S.C. § 306107.

private discretion.[90] However, it is likely to apply unless the federal funding is through a block grant where agency discretion is not involved.[91]

An example of an early preservationist challenge to transmission development, which also involved environmental groups invoking NEPA, is *California Wilderness Coalition v. Department of Energy*.[92] In order to expedite the transmission project process under the Environmental Policy Act of 2005, the Department of Energy ("DOE") designated two National Interest Electric Transmission Corridors ("NIETCs") to resolve the transmission congestion issues occurring in the Mid-Atlantic and Southwest areas of the United States.[93] The petitioners brought three challenges against DOE, including the agency's failure to consult with affected states in conducting the Congestion Study, and failure to undertake environmental and historic reviews under NEPA and the NHPA.[94]

The court held that DOE failed to consult with states regarding the study and did not properly undertake an environmental review under NEPA, and ordered a remand of the designations back to DOE.[95] The Ninth Circuit decided not to consider the challenges under the Endangered Species Act ("ESA") and NHPA, but explained that if the DOE redesignates the NIETCs on remand, the petitioners can "seek judicial review" on whether the designation violates the ESA and NHPA.[96]

Although the transmission project brought forth environmental groups in opposition, the type of energy transmission lines can transmit might reveal a divide between different types of environmentalists. Would environmentalists primarily concerned with clean energy be as motivated as environmentalists primarily concerned with wildlife conservation in challenging transmission lines meant to transfer renewable energy resources? Likely not. An environmentalist primarily concerned with climate change may argue that clean energy infrastructure's negative environmental impact is offput by the enormous benefits in mitigating climate change, which indirectly benefits wildlife and ecosystems. Environmental law is a dynamic field—different environmental concerns may not always intersect harmoniously. Clean energy advocates may be at

90. Lewis, *supra* note 82, at 310–11.

91. *Id.*

92. *See generally* Cal. Wilderness Coal. v. U.S. Dep't of Energy, 631 F.3d 1072 (9th Cir. 2011).

93. *See id.* at 1081–83.

94. *Id.* at 1079.

95. *Id.* at 1106.

96. *Id.*

odds with preservationists and other types of environmentalists under new premises for transmission lines.

Take for example, *Harrison v. U.S. Dept. of the Army*, a quintessential case reflecting the adversarial relationship between historic preservation and transmission development.[97] *Harrison* illustrates a challenge to federal agencies' strategy of "segmenting" transmission projects into smaller discrete portions in order to escape, or simplify, federal review of potentially significant historic or environmental impacts.[98] The plaintiffs in this case brought action against the U.S. Department of the Army for improperly limiting their NHPA Section 106 review to 10.9 miles of the utility company's 41.9-mile transmission project.[99] Although this limited undertaking (which the Army defined as only 10.9 miles) did not adversely impact any historic places in that area and was approved by the SHPO, another portion of the larger 41.9-mile project allegedly adversely impacted Bethlehem Academy, a historic place neighboring the plaintiff's property, by being within the "viewshed" of the property.[100] The central issue was whether the Army had defined the undertaking as too narrow and thus failed to carry out Section 106 properly.[101] The district court found that the Army's involvement with the 41.9-mile transmission project was too minimal to be a federal undertaking beyond the 10.9 miles in question and held that the Army's decision to define the area of potential effects within this 10.9 mile area was not arbitrary, capricious, or an abuse of discretion.[102]

In evaluating the transmission segmentation issue, the district court in *Harrison* considered arguments from the plaintiffs regarding a type of federal "control" and "involvement" test constructed by the Sixth Circuit.[103] These tests are applied to determine whether NEPA is triggered, but they are also applied to determine NHPA applicability, and courts have often treated the statutory trigger mechanisms of "federal undertaking" in NHPA and "federal action" in NEPA as interchangeable.[104] In *Southwest*

97. Harrison v. U.S. Dep't of the Army, No. 3:08CV-105-H, 2009 WL 3347109 (W.D. Ky. Oct. 14, 2009).

98. Lewis, *supra* note 82, at 318–19.

99. *Harrison*, 2009 WL 3347109, at *2.

100. *Id.* at *8–10.

101. *Id.* at *2–3.

102. *Id.* at *16–17.

103. *Id.* at *16, 18–20.

104. *See* Sac & Fox Nation v. Norton, 240 F.3d 1250, 1263 (10th Cir. 2001); *see also* Ringsred v. City of Duluth, 828 F.2d 1305, 1309 (8th Cir. 1987) ("The parties treat NHPA's 'undertaking' requirement as essentially coterminous with NEPA's 'major Federal actions' requirement."); San Carlos Apache Tribe v. United States, 417 F.3d 1091, 1097 (9th Cir. 2005) ("What § 106 of NHPA does for sites of historical import, NEPA does for our natural environment."); Karst Env't Edu. & Prot., Inc. v. E.P.A., 475 F.3d 1291, 1295–96 (D.C. Cir.

Williamson County Community Association v. Slater, the Sixth Circuit found that the state highway corridor did not constitute a federal action by virtue of involvement of multiple agencies because the extent of the aggregation of the agencies' control was insufficient.[105] In *Winnebago Tribe of Nebraska v. Ray*, the Eighth Circuit found that the Army Corps of Engineer's involvement in granting a permit for a transmission line over the Missouri River was limited to that aspect of the project rather than the entire 77-mile transmission project, an action insufficient to trigger the NEPA requirements.[106]

Later decisions in the Eighth Circuit used a stricter "independent justification" test in determining whether the segment of federal involvement in a project triggered NEPA or NHPA requirements.[107] The Fifth Circuit imposes an "artificial avoidance" test, where the segment in question must be considered a part of a larger undertaking if it has been intentionally "artificially" separated from the rest of the project to avoid federal review requirements.[108] Under a NHPA challenge, an evaluation of a federal undertaking can be subject to any and all of these tests, depending on the jurisdiction of where the historic preservation issue arises.

2. Federal Review Challenges to Renewable Energy Infrastructure

NHPA Section 106 challenges are directly utilized much more often with renewable energy infrastructure because such projects require large tracts of land, such as tribal lands and near historical sites are located.[109] Indeed, a federal agency's failure to adequately consult with the appropriate groups regarding the impact a project might have on historical resources, religious places, or cultural artifacts are often the source of NHPA

2007) ("Because of the 'operational similarity' between NEPA and NHPA, both of which impose procedural obligations on federal agencies after a certain threshold of federal involvement, courts treat 'major federal actions' under NEPA similarly to 'federal undertakings' under NHPA.").

105. Sw. Williamson Cnty. Cmty. Ass'n v. Slater, 243 F.3d 270, 285–86 (6th Cir. 2001).

106. Winnebago Tribe of Neb. v. Ray, 621 F.2d 269, 271–73 (8th Cir. 1980).

107. *See, e.g.*, One Thousand Friends of Iowa v. Mineta, 364 F.3d 890, 894 (8th Cir. 2004) (finding that the highway segment in question did not have independent justification for its construction when isolated from larger highway project and was therefore subject to NEPA requirements).

108. *See* Nat'l Tr. for Historic Pres. v. U.S. Dep't of Veterans Affs., No. 09-5460, 2010 WL 1416729, at *10 (E.D. La. Mar. 31, 2010) (internal citation omitted).

109. *See* Lewis, *supra* note 8282, at 340–41.

challenges. Under 36 CFR section 800.2(c), American Indian tribes[110] are entitled to special consideration during an agency's obligation to fulfill its Section 106 consultation requirements. Some of these entitlements include: (1) consultation early in the planning process for the purposes of identifying issues of preservation and confidentiality of a tribe's cultural practices; (2) consultation that respects a tribe's sovereignty; and (3) the recognition that historic properties of cultural and religious significance are often located on ancestral lands of tribes and should be considered when fulfilling obligations.[111]

In *Quechan Tribe of Fort Yuma Indian Reservation v. U.S. Department of Interior*, the Quechan tribe sought preliminary injunction of a federally approved solar energy project that would take place on 6,500 acres of federal land, which the tribe claimed would destroy hundreds of ancient cultural sites, including religious sites, buried artifacts, and burial grounds.[112] The court agreed with the tribe that the agency had not fulfilled its obligation in properly consulting with the tribe under NHPA Section 106 because it had not completed consultation before the initial stages of the project.[113]

Quechan II involved similar challenges and circumstances, except the issue involved a wind farm project rather than solar.[114] In this case, the Bureau of Land Management ("BLM") had attempted to consult with the tribe several times before the project began and hired an archeological consultant to conduct a survey that lasted about two years.[115] The archeological team went out with tribe consultants daily, and the BLM consulted with other agencies extensively.[116] The court held that the BLM's decision to approve the project was reasonable considering it had fulfilled its federal review duties,[117] thus allowing the project to proceed.

The contrasting outcomes of *Quechan I* and *Quechan II* have been paralleled in other decisions by Circuit courts and in projects carrying out

110. The term "American Indian" is normally used to describe tribes in the legal context, but some tribes and individuals may prefer different terms.

111. 36 C.F.R. § 800.2(c)(2)(ii)(A)–(D).

112. Quechan Tribe of Ft. Yuma Indian Rsrv. v. U.S. Dep't of Interior, 755 F. Supp. 2d 1104, 1106–07 (S.D. Cal. 2010).

113. *See id.* at 1119.

114. Quechan Tribe of Fort Yuma Indian Rsrv. v. U.S. Dep't of Interior, 927 F. Supp. 2d 921, 925 (S.D. Cal. 2013).

115. *Id.*

116. *Id.*

117. *Id.* at 926.

proper Section 106 procedures.[118] These examples illustrate the NHPA's role in renewable energy projects. It can often, and is intended, to serve as a mediating instrument for required cooperation between preservationists and clean energy advocates. At the same time, like NEPA, it lacks the "teeth" to fully ensure the prevention of competent energy developers adversely impacting historic places through large scale projects.[119] There is no requirement that the agency in question must forgo a project, even if the consultation period reveals adverse impact.[120] This leaves NHPA as an ultimately inadequate protection for historic preservationists but nonetheless remains a significant challenge to federal undertakings that may adversely affect historic sites within the area of potential impact.

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118. *See, e.g.*, Pit River Tribe v. U.S. Forest Serv., 469 F.3d 768 at 772, 788 (9th Cir. 2006) (blocking the lease extension and construction of a large-scale geothermal project near the Medicine Lake Highlands because the federal agency failed to consult with the Pit River Tribe in the 30 years from planning to approval. This was a significant outcome because the land itself was not tribal, but it nonetheless held historical importance to the tribe and thus qualified for protections); *see also* ADVISORY COUNCIL ON HIST. PRES., COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION ON THE PROPOSED AUTHORIZATION BY THE MINERALS MANAGEMENT SERVICE FOR CAPE WIND ASSOCIATES, LLC TO CONSTRUCT THE CAPE WIND ENERGY PROJECT ON HORSESHOE SHOAL IN NANTUCKET SOUND, MASSACHUSETTS (2010) (describing an offshore wind project in Cape Cod, Massachusetts which was challenged under NHPA and NEPA, and the lead agency initiated a Section 106 consultation. Despite ACHP's recommendations for the agency not to grant approval, the Secretary of the Interior approved the project); Press Release, U.S. Dep't of Interior, Secretary Salazar Announces Approval of Cape Wind Energy Project on Outer Continental Shelf off Massachusetts (Apr. 28, 2010), https://www.doi.gov/news/pressreleases/Secretary-Salazar-Announces-Approval-of-Cape-Wind-Energy-Project-on-Outer-Continental-Shelf-off-Massachusetts [https://perma.cc/J9VR-2T4U].

119. *See* United States v. 162.20 Acres of Land, 639 F.2d 299, at 302, 304 (5th Cir. 1981) (holding NHPA does not forbid destruction of historic sites; assertion of NHPA non-compliance as a defense in a condemnation action may seem to "promote the purposes of the NHPA by creating a means of enforcement to give it 'teeth,' it is manifestly apparent that only Congress can make such a judgment."); *see also* Morris Cnty. Tr. for Hist. Pres. v. Pierce, 714 F.2d 271, 278–79 (3d Cir. 1983) ("NHPA, like NEPA, is primarily a procedural statute, designed to ensure that Federal agencies take into account the effect of Federal or Federally-assisted programs on historic places as part of the planning process for those properties."); Walter E. Stern & Lynn H. Slade, *Effects of Historic and Cultural Resources and Indian Religious Freedom on Public Lands Development: A Practical Primer*, 35 NAT. RES. J. 133, 139 (1995) (noting that "the uniform view is that NHPA imposes only procedural requirement on federal agencies.").

120. *See, e.g.*, Benton Franklin Riverfront Trailway & Bridge Cmty. v. Lewis, 529 F. Supp. 101, 103–04 (E.D. Wash. 1981) (upholding the Secretary of Transportation's decision to tear down a historic bridge, given there was no prudent alternatives to demolition and despite historic significant likely to cause adverse impact).

B. Dam Removal and Environmental Impact Mitigation

Dam removal and impact mitigation, often undertaken to improve water quality, sedimentary flow, and protection of wildlife, face opposition by preservationists due to their historic, cultural, and architectural significance.[121] The National Research Council has estimated more than 2.5 million dams existed in the United States in 1992, ranging from berms for small streams, to large concrete structures across major rivers meant for hydropower and flood control among other purposes.[122]

Likely, this number tends to fluctuate depending on the research institution's criteria of what a dam is, but the National Inventory of Dams of the US Army Corps of Engineers has more than 90,000 dams listed nation-wide, signifying both a reduction in dams since 1992 and a stricter definition for what can be federally classified as a dam.[123] Dam construction, operation, maintenance, and siting has a number of effects on hydrology, water quality, wildlife habitats, and river morphology.[124] For example, sediment build up may occur in the presence of a dam.[125] This build up can lead to aquatic plant growth, exacerbating already high evaporation rates for artificial lakes or reservoirs that receive more sunlight exposure than other bodies of water.[126] In turn, accumulation of sediment from dams results in reduction of nutrient rich sediment for downstream habitats that are dependent on the sediment and water flowing downstream from a dam because of its higher salinity and lower oxygen levels.[127] Dams may also contain other pollutants that gather in the reservoir such as waste, pesticides, and petroleum products.[128] Wildlife is often significantly impacted by dam presence and results in the depletion of fish populations

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121. *See generally* NUMBER OF HIGH-HAZARD POTENTIAL DAMS, ENVIROATLAS (Mar. 2017), https://enviroatlas.epa.gov/enviroatlas/DataFactSheets/pdf/ESN/Numberofhighhazardpotentialdams.pdf [https://perma.cc/RV3N-A3KL] [hereinafter ENVIROATLAS].

122. EPA, NATIONAL MANAGEMENT MEASURES TO CONTROL NONPOINT SOURCE POLLUTION FROM HYDROMODIFICATION, CH. 4: DAMS 1 (July 2007), https://www.epa.gov/sites/default/files/2015-09/documents/chapter_4_dams_web.pdf [https://perma.cc/YHF7-P6MP] [hereinafter EPA Dams].

123. *See National Inventory of Dams*, US ARMY CORPS OF ENG'RS, https://nid.usace.army.mil/# [https://perma.cc/25LA-VNBG] [hereinafter NID].

124. *See How Dams Damage Rivers*, AM. RIVERS, https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/how-dams-damage-rivers/ [https://perma.cc/5SSU-MR7T].

125. *See id.*

126. Samantha Stahl, *Dams + Climate Change = Bad News*, EARTH L. CTR. (Dec. 12, 2017), https://www.earthlawcenter.org/blog-entries/2017/12/dams-climate-change-bad-news [https://perma.cc/AQH7-CNPH].

127. *Id.*

128. EPA Dams, *supra* note 122, at 4-10.

such as salmon, due to a lack of nutrients coming downstream from the dam, thus creating an obstacle for fish populations migrating upstream and creating toxic algae blooms.[129]

It goes without saying that dams are important for many reasons—including being occasionally and incidentally beneficial to the environment. Dams were generally built to provide water for mechanical power generation, industrial cooling, producing hydroelectric power, agricultural irrigation, flood control, maintaining depth levels for barge transport, and are an important source of municipal water supply.[130] Incidental environmental benefits may also result from dam presence. For example, "[s]ometimes . . . dams limit passage of undesirable invasive species."[131] When operated manually, properly sited dams may also help in delivering sediment and nutrient water when floodwaters are restricted.[132]

In balancing the benefits and the detriments of dams, the federal government has moved towards several goals: ensuring proper dam operation and management to mitigate the harmful effects of dams, establishing best practices for the improvement of oxygen and salinity levels, surface water quality, the protection of instream habitats, and the control of chemical, pollutant, and sedimentary levels.[133] Yet, despite these federal efforts, dams continue to have significant adverse effects on the environment and contribute to climate change issues. Recent studies found reservoirs can account for around four percent of anthropogenic climate change.[134]

Many dams pose a high risk to public safety as well—for example, there are a large number of dams in the high-hazard-potential classification category.[135] Under FEMA's classification system for dams, approximately 15,498 are high-hazard-potential impact dams as of 2017.[136] The number has slightly increased to approximately 15,600 as of 2019.[137] Of those dams,

129. *See, e.g.*, Alexander Matthews, *The Largest Dam-Removal in US History*, BBC: FUTURE PLANET (Nov. 10, 2020) https://www.bbc.com/future/article/20201110-the-largest-dam-removal-project-in-american-history [https://perma.cc/FQL5-BVGP].

130. EPA Dams, *supra* note 122, at 4-1.

131. *Id.* at 4-3.

132. *See id.*

133. *See generally* EPA Dams, *supra* note 122122.

134. *See* Stahl, *supra* note 126.

135. *See* AM. SOC'Y OF CIV. ENG'RS, 2021 REPORT CARD FOR AMERICA'S INFRASTRUCTURE: DAMS 27 (2021) https://infrastructurereportcard.org/wp-content/uploads/2020/12/Dams-2021.pdf [https://perma.cc/UH78-8SZP] [hereinafter REPORT CARD].

136. ENVIROATLAS, *supra* note 121, at 1.

137. REPORT CARD, *supra* note 135, at 27.

approximately 81 percent have an emergency action plan.[138] The need for preparedness for potential dam failure became clear after the sobering experience of California's Oroville dam, the tallest dam in the U.S., which failed, leading to the necessary evacuation of 188,000 people over the course of several days.[139]

The benefits of dam removal on wildlife, habitats, and water quality are well established.[140] Moreover, many dams at high or significant risk are too expensive to repair, making their removal a common public safety solution.[141] Over 1,700 dams have been removed in the U.S. between 1912 and 2020, with 69 of them removed in 2020 alone.[142] Federal funding continues to be targeted towards dam restoration, retrofitting, and removal, with $798 million going towards dam infrastructure in the Senate's recent 2021 bipartisan infrastructure bill.[143]

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138. *Id.* at 30.

139. *Id.* at 27–28; Samantha Schmidt et al., *188,000 Evacuated as California's Massive Oroville Dam Threatens Catastrophic Floods*, WASH. POST (Feb. 13, 2017, 4:13 PM), https://www.washingtonpost.com/news/morning-mix/wp/2017/02/13/not-a-drill-thousands-evacuated-in-calif-as-oroville-dam-threatens-to-flood/ [https://perma.cc/6GXA-MCSX].

140. *See, e.g.*, EPA DAMS, *supra* note 122, at 4-3; Matthews, *supra* note 129 (stating that over 1,700 dam removals have resulted in significant population rebounds in several species of fish); SERENA MCCLAIN ET AL., AM. RIVERS, DAM REMOVAL AND HISTORIC PRESERVATION: RECONCILING DUAL OBJECTIVES 6–7, https://www.americanrivers.org/wp-content/uploads/2016/06/Dam_Removal_and_Historic_Preservationa3eb.pdf [https://perma.cc/GPR9-X5R5] (acknowledging that dam removal has become a legitimate tool for restoring rivers and ecosystems within and around those rivers); EPA REGION 3 WATER PROT. DIV., STORIES OF PROGRESS IN ACHIEVING HEALTHY WATERS: DAM REMOVAL PROVIDES FISH PASSAGE, WATER QUALITY BENEFITS (2015) https://www.epa.gov/sites/default/files/2016-09/documents/md_progress_-_dam_removal_provides_fish_passage_water_quality_benefits_-_20150625.pdf [https://perma.cc/X4GZ-8X7L] (explaining how one dam removal opening up seven miles of upstream habitat saw significant migration from fish for spawning and promoted vegetation that reduced nitrogen, phosphorus, and sediment levels in the water).

141. *See* REPORT CARD, *supra* note 135, at 28 (stating most dam owners cite lack of funding as the reason for deferring repairs and maintenance); F. J. Magilligan et al., *The Social, Historical, and Institutional Contingencies of Dam Removal*, 59 ENV'T MGMT. 982, 983 (2017) (recognizing that the New England region dam owners, private and public, are unwilling to pay for repairs due to the exorbitant cost).

142. *69 Dams Removed in 2020, Reconnecting 624 Miles of Rivers Nationwide*, AM. RIVERS (2021), https://www.americanrivers.org/wp-content/uploads/2021/02/DamsRemoved_1999-2020.pdf [https://perma.cc/SS4G-ZB9T].

143. *One Year into Implementation of Bipartisan Infrastructure Law, Biden-Harris Administration Celebrates Major Progress in Building a Better America*, THE WHITE HOUSE, https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/15/fact-sheet-one-year-into-implementation-of-bipartisan-infrastructure-law-biden-%E2%81%A0harris-administration-celebrates-major-progress-in-building-a-better-america/ [https://perma.cc/76JC-M5B6].

Historic preservation laws devised to protect cultural or architectural structures apply to dams. Most dams were constructed before NHPA, making around eighty-five percent of them potentially eligible for registration as a historic structure.[144] Even in cases where dams are not eligible to be registered as individual properties, they may be eligible as a significant contributing resource if located within a Registered historic district.[145] For this reason, environmentalists have run into some friction when it comes to dam removal, on top of the existing issues of funding and expertise needed to undertake such a task. Likewise, proposals of dam environmental impact mitigation in place of a dam removal also result in conflict, given the fact that making modifications may adversely affect the historic properties of the dam.[146]

Because dam removal is more common in the east where water resources and hydroelectric power are less of frequent than they are in the west,[147] there are several case studies of dam removal and environmental impact mitigation projects that collide with preservation movements in the east coast. In *U.S. Dept. of the Interior v. FERC*, the DOI challenged the decision of the Federal Energy Regulatory Commission (FERC) to replace Pawtucket Dam's historic wooden flashboard system with a modern pneumatic crest gate system.[148] Before the suit, wooden flashboards on the Dam were replaced approximately five times per year but would react unpredictably under water pressure, having an effect on upstream flooding.[149] Upon recommending a pneumatic system, DOI, and opponents to the change, challenged FERC's order to replace the current flashboards to a modern system so that it may alleviate back water effects during high flow, improve worker safety, improve fish passage, and generate higher amounts of clean energy.[150] DOI contended that FERC's finding was arbitrary and capricious because there was insufficient evidence that the

144. *See* MCCLAIN ET AL., *supra* note 140, at 6; *see generally* NAT'L PARKS SERV., NATIONAL REGISTER OF HISTORIC PLACES, HOW TO APPLY THE NATIONAL REGISTER CRITERIA FOR EVALUATION 1, 25 (1995) (explaining the 50-year rule is commonly known as the baseline for eligibility to be registered under the National Register of Historic Places, among meeting other criteria).

145. MCCLAIN ET AL., *supra* note 140, at 12.

146. *See generally* MCCLAIN ET AL., *supra* note 140, at 19–21.

147. *See* Lisa W. Foderaro, *It's Fish vs. Dams, and the Dams Are Winning*, N.Y. TIMES (Jan. 20, 2020), https://www.nytimes.com/2020/01/20/nyregion/its-fish-vs-dams-and-the-dams-are-winning.html [https://perma.cc/NQ3S-TQSK] (stating many dams in the East were originally built for, now somewhat obsolete, mechanical power, rather than for hydroelectric purposes as in the West).

148. U.S. Dep't of the Interior v. FERC, 876 F.3d 360, 361 (1st Cir. 2015).

149. *Id.* at 362.

150. *Id.* at 363.

new flashboards would be able to alleviate those issues[151] and disagreed on FERC's finding of no adverse impact on the historic quality of the Dam.[152]

FERC responded that it had considered the historic importance of the landmark status and had consulted for more than two years on how to avoid or minimize any adverse effects the change would have on the Dam, requiring measures that would resolve those adverse effects.[153] Moreover, FERC argued that since the wooden flashboards were replaced every five years, it was not an original aspect of the original Dam design.[154] The First Circuit agreed with FERC, finding that the agency made a reasonable decision because it had ongoing discussions with crest gate opponents and that the Dam had undergone similar modifications in the past that did not seem to warrant a challenge of adverse impact on the historic quality of the structure.[155]

In another conflict, the Wiley & Russell Dam in Greenfield Massachusetts was approved for removal by the city mayor and planned for removal by the Connecticut River Watershed Council ("CRWC"), in part with the Corps's "Green River Restoration Project."[156] The removal was met with opposition from the Greenfield Historical Association, Museum of Our Industrial Heritage, and community members who contended that removing the dam would decrease property value and the ecological benefits proposed would not be realized while another dam upstream was required to remain in place.[157] Not long after the local controversy ensued, the new mayor reversed his predecessor's decision, stopping the removal in favor of repair, even though over $800,000had been invested and an agreement by seventeen partner groups was in place to study and facilitate the removal of the dam.[158]

A similar situation occurred with the Oyster River Dam on the Mill Pond in Durham, New Hampshire, where a dam removal plan for ecological

151. A court will normally give deference to the expert agency, which was FERC in this case. *See* Northeast Utils. Serv. Co. v. FERC, 993 F.2d 937, 944 (1st Cir. 1993) ("[W]e defer to the agency's expertise . . . so long as its decision is supported by 'substantial evidence' in the record and reached by 'reasoned decisionmaking' [. . . .]").

152. *Dep't of the Interior v. FERC*, 876 F.3d at 363.

153. *Id.* at 364.

154. *Id.* at 361, 363–64.

155. *Id.* at 368 (also noting that FERC orders were to be reviewed by the First Circuit under the Administrative Procedure Act, 5 U.S.C. § 551). *See also* Knott v. FERC, 386 F.3d 368, 372 (1st Cir. 2004) (explaining that a court "must reverse an agency action that is 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.").

156. Magilligan et al., *supra* note 141, at 989.

157. *Id.* at 989–90.

158. *Id.* at 990.

purposes was being considered.[159] Part of the Dam's removal would restore tidal shifts and fish runs,[160] but the city residents and the New Hampshire SHPO opposed the measure, asserting the Dam's historical significance and symbolism for the town.[161] The Dam was added to the NH Register of Historic Places in early 2014,[162] and there has not yet been a plan to remove the dam since.[163]

As described above, dam removal and modification conflicts can be resolved judicially or legislatively. In small eastern towns, constituents can organize and work with the SHPO and local historic preservation organizations to convince local legislators to halt removal of the dam, despite any environmental benefits. On the other hand, if a federal undertaking is taken to court, so long as the agency responsible fulfills their NHPA and NEPA obligations and presents a reasonable finding of no impact or no reasonable alternatives, the court will grant that agency deference and the project may proceed forward without any further procedural obstacles. Of course, a court may find that federal obligations were not fulfilled and enjoin the agency from proceeding until the agency has fulfilled the Section 106 review procedures completely.[164]

C. Coastal Climate Change Effects and Preventative Measures

Climate change presents the most immediate and widespread threat to historic areas on the coastal United States. Some of the most imminent threats to historic sites are rising sea levels, storm surges, extreme high tides, rainfall runoffs, and shoreline erosion.[165] A higher frequency of stronger storms and their resulting floods have revealed the sobering realization of how vulnerable many historic sites situated along the coasts

159. *Id.*

160. *See Mill Pond Dam in Durham, NH*, INDIGENOUS N.H. COLLABORATIVE COLLECTIVE https://indigenousnh.com/2021/04/02/mill-pond-dam-in-durham-nh/ [https://perma.cc/BD5E-XJAV].

161. Magilligan et al., *supra* note 141, at 990.

162. Casey Conley, *Dam for All Time: 101-Year-Old Mill Pond Dam Granted Historic Status*, FOSTER'S DAILY DEMOCRAT, (Jan. 30, 2014), https://www.fosters.com/story/news/2014/01/30/dam-for-all-time-101/39820175007/ [https://perma.cc/S58H-TA9U].

163. Magilligan, *supra* note 141, at 990.

164. *See* 36 C.F.R. § 800.6(b)(iv); REBECCA NEUBAUER & HEATHER PAYNE, HISTORICAL PRESERVATION LAWS AND LONG-TERM CLIMATE ADAPTION: CHALLENGES AND OPPORTUNITIES 13 n.77 (2019).

165. John Englander, *Climate Change and Rising Sea Level: Implications for Historic Preservation,* 29 F.J. 3, 4–5 (2015).

are.[166] Liberty Island, for example, closed for repairs for eight months after Hurricane Sandy, where flooding became more likely during the storm surge due to sea levels rising by more than a foot and a half since the 1850s.[167] Both the Michoud Assembly Facility in Louisiana and the John C. Stennis Space Center in Mississippi are culturally significant facilities that contribute to and support space travel. They collectively experienced $760 million in damages from Hurricane Katrina, despite a thirty-seven-person "ride-out" crew maintaining factory operation throughout the storm.[168] Even historic sites and areas further inland on coastal cities, such as Faneuil Hall and Blackstone Block in Boston, are vulnerable, because they still lay in the city's tidal flood zone.[169]

When it comes to climate change and rising sea level, preservationists and environmentalists are not at odds. Both want to protect vulnerable areas subject to the effects of climate change. Instead, the conflict here is about the slow, detailed administrative procedures required when looking at impacts on historic sites and the urgency to modify them. Indeed, preservationists have already conceded that many historic buildings will need to be elevated or even relocated.[170] Flexibility in how preservation is done is necessary and preserving a building in its original historic location may not be a viable option in many areas.[171]

Historic structures, which are covered by the National Flood Insurance Plan ("NFIP"), are most at risk of impacts resulting from climate change.[172] The NFIP covers homes in communities with flood plain management plans certified by FEMA.[173] But historic structures may be exempt from all floodplain management requirements under the NFIP,[174] which prioritizes historic preservation policy. In this case, a historic building would have to undergo "substantial improvements" in order to qualify for NFIP, but

166. *See* Anthony Veerkamp, *Preservation in a Changing Climate: Time to Pick Up the Tab,* 29 F.J. 3, 13 (2015).

167. DEBRA HOLTZ ET. AL., NATIONAL LANDMARKS AT RISK: HOW RISING SEAS, FLOODS, AND WILDFIRES ARE THREATENING THE UNITED STATES' MOST CHERISHED HISTORIC SITES 8 (2014).

168. *Id.* at 24.

169. HOLTZ, *supra* note 167, at 4.

170. *See* Englander, *supra* note 165, at 8.

171. *See* NEUBAUER & PAYNE, *supra* note 157, at 4–5; *see also* Robert Z. Melnick, *Climate Change and Cultural Landscapes: Observations and Options,* 29 F.J. 3, 27–28 (2015) (advocating for flexibility in understanding character-defining features and general preservationist approaches).

172. NEUBAUER & PAYNE, *supra* note 164, at 9.

173. 44 C.F.R. § 60.3 (explaining the minimum NFIP flood plain management requirements).

174. *Historic Structure*, FEMA, https://www.fema.gov/glossary/historic-structure [https://perma.cc/5C4Z-KA28].

alterations to historic properties are not considered "substantial improvements."[175] A dilemma then results: alter a structure such that it is no longer eligible for listing status under the National Register or follow the Secretary of Interior's standards and risk losing the property to flooding.[176] It is precisely this type of inflexible federal regulation of historic properties that places said properties at risk in the face of climate change.

Another federal regulation that should adapt to new circumstances presented by climate change is the Historic Preservation Tax Incentive which was intended to incentivize private investment into the rehabilitation of historic properties.[177] The program has been successful in the development of moderate- to low-income housing in historic structures, simultaneously restoring historic buildings and creating affordable housing.[178] Structural projects that comply with the Secretary of Interior's standards are eligible for the tax credit.[179] The same dilemma arises: to comply with the Secretary's standards leaves historical properties in danger of flooding,[180] and refurbishment designs of historic structures meant to mitigate damage from flooding and rising sea levels could risk loss of historic designation status, and thus the tax credit, disincentivizing investment.[181]

Another prominent issue that arises is the slow administrative processes of Section 106. In unprecedented times of increasingly frequent storms and flooding, Section 106 processes can take years and may delay the implementation of modifications necessary to save historic properties from potential destruction.[182] If the ACHP issues a finding that the agency has not fulfilled its federal requirements under Section 106, the courts may enjoin the federal agency from proceeding forward.[183] Since fulfilling a Section 106 review can take a significant amount of resources, expertise, and time, this leaves historic structures in risk of being damaged or destroyed before modifications meant to save it are completed.

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175. 44 C.F.R. § 59.1. ("'Substantial improvements' means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the 'start of construction' of the improvement.").

176. NEUBAUER & PAYNE, *supra* note 164, at 10.

177. 26 U.S.C. § 47(a)(1); *see also* Tax Incentives, *supra* note 7 (explaining that the Historic Preservation Tax Incentives program is for rehabilitating historic buildings).

178. NEUBAUER & PAYNE, *supra* note 164, at 7–8.

179. *See generally Tax Incentives*, *supra* note 7.

180. *See The Secretary of the Interior's Standards for the Treatment of Historic Properties*, NATIONAL PARK SERVICE, https://www.nps.gov/orgs/1739/secretary-standards-treatment-historic-properties.htm [https://perma.cc/J7P5-LDCP].

181. NEUBAUER & PAYNE, *supra* note 164, at 8.

182. *See id.*, at 11–14.

183. *Id.* at 13; *see* 36 C.F.R. § 800.7.

As climate change continues to become an ever-pressing issue, historic preservations laws as they currently exist start to become self-defeating, leaving the properties vulnerable to rising sea levels and flooding. If they are to remain the same, it is only a matter of time until the historic places they are meant to preserve are swept away from the effects of a changing climate.

III. POTENTIAL RECONCILING APPROACHES

Historic preservation and environmental concerns have long been symbiotic. The underlying philosophy of the two fields strive for similar outcomes and are largely intersectional. Because the future of the nation's environmental conditions encompasses cities and towns that include historic places, historic preservation is always aligned with overarching environmental concerns. Given these mutual interests, there are many plausible avenues for reconciliation between the two fields regarding the issues described in Part II.

One potential solution involves ACHP's authority to exempt entire categories of projects from Section 106 review.[184] Exemptions have been granted for interstate highway systems and for undertakings of historical gas pipelines.[185] The issue with this type of solution is that an exemption of this kind could adversely impact historic places when implemented on a grand scale, so granting exemptions should be done with great consideration. Of the issues mentioned in Part II, the exemption solution should be applied to climate change resiliency strategies, given the imminence of climate change impact on historical properties. It has been suggested that a potential exemption could be allowing the U.S. Army Corps of Engineers to develop and administer necessary flood mitigation modifications in flood zone areas that would be designated by FEMA.[186] The ACHP could additionally allow dry flood-proofing measures to be categorized as "no adverse impact" when they are temporary or do not

184. *See* 36 C.F.R. § 800.14(c)(1) ("[ACHP] may propose a program or category of undertakings that may be exempted from review under the provisions of subpart B of this part, if the program or category meets the following criteria: (i) The actions within the program or category would otherwise qualify as 'undertakings' as defined in § 800.16; (ii) The potential effects of the undertakings within the program or category upon historic properties are foreseeable and likely to be minimal or not adverse; and (iii) Exemption of the program or category is consistent with the purposes of the act.").

185. *See* Section 106 Exemption Regarding Effects to the Interstate Highway System, 70 Fed. Reg. 11928, 11931 (Mar. 10, 2005); *see also* Section 106 Exemption Regarding Effects to Historic Natural Gas Pipelines, 67 Fed. Reg. 16364, 11364 (Apr. 5, 2002).

186. NEUBAUER & PAYNE, *supra* note 164, at 14.

affect the exterior aesthetic quality of the structure, expediting Section 106 review.[187]

Exemptions could also be applied to renewable energy infrastructure,[188] but because the urgency of developing renewable energy is not perceived as urgent as developing climate change resiliency strategies, the argument is less persuasive. Nonetheless, it is important to understand the interdependent relationship between the two aims: investing in renewable energy infrastructure works towards mitigating the length and severity of climate change effects. Whereas climate change impact mitigation projects are reactive to the effects of anthropogenic climate change threatening historic properties, renewable energy projects are proactive in preventing longer and more severe effects of anthropogenic climate change threatening historic properties. If one is to accept the reasoning for exemptions for climate change impact mitigation projects, a renewable energy infrastructure project exemption lies within the same justification.

Alternatively, ACHP could draft a standard treatment for renewable energy infrastructure.[189] The ACHP has used this strategy for the rehabilitation of the masonry exterior on Department of Defense properties, allowing for predefined standard construction specifications to automatically fall under the "no adverse effect" category.[190] If an equally standardized draft strategy could be applied to renewable energy infrastructure on multiple levels of its undertaking, such a provision would expedite the historic preservation review process.[191]

Dam modification and removal can benefit from each interest group meeting one another halfway. Several alternatives to dam removal exist which still fulfill many of the desired environmental purposes. The partial preservation of a dam is an option that would keep historically important parts of a dam intact, while removing or modifying other parts to mitigate the dam's adverse impact on the stream or river.[192] Preservation-in-service can be used to mitigate the effects of a dam on river ecology. Methods like a bypass channel or a fish ladder allow fish species to get past the dam

187. *Id.*

188. *See* Lewis, *supra* note 82, at 328.

189. *See id.*

190. Background on the Proposed Standard Treatments on Historic Exterior Masonry, 73 Fed. Reg. 33387, 33388 (Jun. 12, 2008).

191. *See* Lewis, *supra* note 82, at 331.

192. *See* MCCLAIN ET AL., *supra* note 140, at 30–31 (showing the Kent Dam which was partially preserved, removing enough of the structure to allow the river to flow freely and open up a passage for fish to cross).

without significantly modifying the dam's historical properties.[193] Adaptive reuse of a dam may also be considered when both dam removal and dam repair would be too expensive, but the structure itself still holds historical significance to the local community.[194]

Borrowing from more effective legislation can also be helpful in resolving these conflicts. For example, Section 106 can benefit from mimicking Section 4(f) of the Department of Transportation Act of 1966. Under Section 4(f), a federal transportation project adversely affects a historical area only if "there is no prudent and feasible alternative to using that land[,] and the program or project includes all possible planning to minimize harm . . . resulting from the use."[195] Section 106, on the other hand, does not include either a preclusion or a mitigation rule.[196] Yet Section 4(f)'s narrow application of "adverse effect" is limited to instances where a project must unavoidably "use" a historic site.[197] Section 106 adopting a similar regulatory structure would allow for stringent substantive review of infrastructure projects with significant and perpetual effects, without applying a loose "adverse effect" standard in instances of remote possibility of impact.[198]

Lastly, in adopting any reconciliatory approach, it is important to strengthen interagency cooperation mechanisms,[199] produce accurate mapping of potential historic areas, and promote local government and public involvement and education. Moreover, proactive consultation with historic preservation interest groups and tribes is necessary to avoid potential challenges and ensuing litigation that could significantly stunt the progress of any federal project, draining time and funding. In many of the court cases provided in Part II, had there existed stronger interagency cooperation, more accurate historical property identification methods, and

193. *See id.* at 35 (indicating Heishman's Mill Dam which remained in place—the project partners and the owner found common ground in building a bypass channel, restoring the river-like habitat which allowed fish to cross).

194. *See id.* at 33 (explaining that Portland General Electric agreed to adopt a series of steps to mitigate the dams' adverse effects and developed a marketing proposal for potential adaptive reuse).

195. 49 U.S.C. § 303(c).

196. Lewis, *supra* note 82, at 327.

197. Lewis, *supra* note 82, at 328–29.

198. *Id.* at 327.

199. *See id.* at 331, 333–37 (Davis Lewis provides detailed solutions to transmission and energy infrastructure conflicts with historic preservation laws, advocating for interagency cooperation. He goes further to posit a mixture of NHPA alternative regulations, categorical exemptions, standardizing the "independent justification test" as a court test for segmentation challenges, and applying substantive review of the effects of transmission lines in cases of continuing segmentation).

more proactive consultation with relevant interest groups, tribes, and stakeholders, it is possible the litigation would never have even occurred.[200]

CONCLUSION

This Article compared the objectives of historic preservation and current environmental policy and highlights the harmonies and conflicts between the two. A historic and case law analysis of two significant legislative tools reveals that preservationists and environmentalists often share similar or identical legal battles, using historic preservation challenges for environmental purposes, and vice versa. Moreover, the sustainable refurbishment of a building often involves preserving the historic qualities of the building. This Article briefly exhibited architectural methodologies used in simultaneously meeting sustainable and historic purposes when restoring a building.

This Article also identified three areas of conflict with historic preservation: renewable energy infrastructure, dam modification and removal, and climate change preparation and mitigation policy. A dissection of renewable energy projects and the use of case law illustrates the dynamic challenges posed by historic preservation groups. The Article provided an overview of a dam's detrimental effect on river ecology, water quality, and public safety, and presented case studies of successful and unsuccessful dam removals and modifications. Thirdly, the Article underscored the urgency and necessity of climate change action plans for historic places, evaluating current statutes and explicating the dilemmas that result from them.

This Article concluded with closing thoughts on potential reconciliatory approaches for the three areas of conflict. This Article advocates for a nuanced mixture of Section 106 categorical exemptions, drafts of standardized treatment for projects, amending current historic preservation legislation, and strengthening existing principles and methods in federal undertakings. Using historical precedence and learning lessons from examples and caselaw presented will allow us to better find common ground between historic preservation and environmental sustainability in seemingly irreconcilable situations.

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200. *Compare* Quechan Tribe of Ft. Yuma Indian Rsrv. v. U.S. Dep't. of Interior 755 F. Supp. 2d 1104, 1119–20 (S. D. Cal. 2010) (agreeing with the Quechan Tribe that the federal agency had not fulfilled its consultation duties) *with* Quechan Tribe of Ft. Yuma Indian Rsrv. v. U.S. Dep't. of the Interior, 927 F. Supp. 2d 921, 925–26 (S. D. Cal. 2013) (siding with BLM because the agency had consistently consulted or attempted to consult with the Tribe).