Harnessing the Power of Information to Protect Our Public Natural Resource Legacy

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Harnessing the Power of Information to Protect Our Public Natural Resource Legacy

Alyson C. Flournoy,* Heather Halter** & Christina Storz***

I. Introduction

Over the past century, Congress has enacted numerous laws that recognize the value of the vast store of natural resources under federal control. These laws govern the management and use of water and lands, as well as the ecosystems, biodiversity, and minerals found in and on these waters and lands. A remarkable number of these statutes explicitly embrace the goal of preserving public natural resources and the services and values they provide for future generations. Some also articulate a goal or mandate.
of sustainable use of public natural resources. All of these statutes reflect an awareness that those of us alive today will leave a legacy of public natural resources to the succeeding generation. They also implicitly embrace the idea that we should pay attention to what that legacy will look like—the quantity and quality of the public natural resources we leave the next generation.

including environmental natural beauty, and are of immediate and potential value . . . .”), Wild and Scenic Rivers Act § 1, 16 U.S.C. § 1271 (2000) (“It is hereby declared to be the policy of the United States that certain selected rivers . . . possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values . . . and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”); 16 U.S.C. § 1451(a) (“[T]he coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation.”); 16 U.S.C. § 1609(a) (“Congress declares that the National Forest System consists of units of federally owned forest, range, and related lands throughout the United States and its territories, united into a nationally significant system . . . .”);


National Environmental Policy Act of 1969 (NEPA) § 101, 42 U.S.C. §4331(a) (2000) (“The Congress . . . declares that it is the continuing policy of the Federal government . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”); Energy Reorganization Act of 1974 § 2, 42 U.S.C. § 5801(a) (2000) (“The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy sources to meet the needs of present and future generations . . . .”).


4. The concept of a generation is somewhat imprecise; it is a construct, not a physical reality. The word is used here and elsewhere to refer both to a group of individuals of roughly the same age and to the period of time between the birth of succeeding generations. See, e.g., MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 521 (11th ed. 2006) (defining generation as both “a body of living beings constituting a single step in the line of descent from an ancestor” and “the average span of time between the birth of parents and of their offspring”).

5. In addition to these federal laws, at least thirty-two states include references to the interests of future generations—or references to sustainability or sustainable development—in statutes related to the use of natural resources. A complete list of these states and state statutes is on file with the author. Some are more protective of the resource legacy—making it an explicit priority among competing demands—and others merely invoke it in a list of competing priorities to be
However, in practice, our laws have proven unequal to the lofty objectives of preserving a legacy of public natural resources for our children or achieving sustainable use of these resources. There are many factors that contribute to this shortfall, but inherent inadequacies in the design of these statutes cannot be overlooked as an important determinant. Despite the statutes’ broadly stated aspirations toward sustainability and protection of the interests of future generations, only a handful of these statutes include strong and enforceable mandates for sustainable resource use. Many of these statutes accord natural resource-management agencies broad discretion to balance and permit a long list of competing uses of a given resource, including degrading and depleting uses. They lack any clear mandate that the agency protect any particular quantity or quality of a given resource for today, much less for future generations.

Thus our laws often promise far more than they can deliver. It should therefore come as no surprise that in practice, many of our public natural resources are declining in quantity and quality. Without an effective legal


7. See, e.g., 16 U.S.C. § 529 (“In the administration of the national forests due consideration shall be given to the relative values of the various resources in particular areas.”); Clean Water Act § 404, 33 U.S.C. § 1344 (2000) (providing for the issuance of permits for “the discharge of dredged or fill material into the navigable waters”); see also Norton v. S. Utah Wilderness Alliance, 542 U.S. 55, 58 (2004) (discussing “multiple use management” as “a deceptively simple term that describes the enormously complicated task of striking a balance among the many competing uses to which land can be put”).

8. See, e.g., MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: BIODIVERSITY SYNTHESIS 2–5 (2005), available at http://www.millenniumassessment.org/documents/document.354.aspx.pdf (describing the rapid conversion of ecosystems—including increasing rates of extinction, declining genetic diversity, and more homogeneous distribution of species—and predicting similar changes in the future); MILLENNIUM ECOSYSTEM ASSESSMENT,
mechanism to check the decline, this pattern of incremental resource depletion and degradation will likely continue. This Article therefore considers the possibility that we need, and should consider enacting, a law that provides an effective check on the degradation and depletion of public natural resources across the board. Effective preservation of a public natural resource legacy requires a statute that can achieve two core objectives: to define the public natural resource legacy we wish to leave to our children and grandchildren, and to prohibit actions that impair that legacy.

Many commentators have suggested that the National Environmental Policy Act (NEPA) was enacted to accomplish these objectives. It can be argued that the failure to achieve sustainable use is not a shortcoming, but the intended and desired outcome achieved by laws that incorporate a combination of weak mandates and unattainable ones. See John P. Dwyer, The Pathology of Symbolic Legislation, 17 Ecology L.Q. 233, 233–35 (1990) (arguing that legislators reap the "benefits of 'voting for health and the environment' by passing environmental statutes that ignore obstacles to implementation and set unattainable standards"). However, given the complexity of the stated goals, the opaque decision-making processes, and the limited information on resource use and the impacts of individual decisions, it seems at least possible that neither lawmakers nor the public are fully aware of the effects of the design of current law. Thus, it may be fairer to attribute the incoherence in our statutes to a failure to seriously engage the question of what legacy we wish to leave, how to preserve this legacy, the costs involved, and the importance of doing so. Until we seriously debate the question of the resource legacy we wish to leave to future generations and how to balance the needs of the present and future generations, we are unlikely to leave any consciously chosen legacy.

10. 42 U.S.C. §§ 4321–4347 (2000). NEPA requires federal agencies to collect and evaluate information on environmental impacts and alternative actions before they undertake, fund, or permit any major action that would significantly affect the environment. Id. § 4332.

11. See, e.g., Lynton Keith Caldwell, The National Environmental Policy Act: An Agenda for the Future, at xvi–xvii, 2–9, 33–38 (1998) (noting that one of NEPA's goals was to set a national environmental policy that would both (1) instruct agencies how to balance competing interests and (2) encourage agencies to articulate values without legislating them); Matthew J. Lindstrom, Procedures Without Purpose: The Withering Away of the National Environmental Policy Act's Substantive Law, 20 J. Land Resources & Envtl. L. 245, 245–46 (2000) ("[NEPA] provides a substantive environmental policy vision and institutional infrastructure in addition to procedural mechanisms designed to enhance the salience of environmental values in federal agency decision-making."); Paul S. Weiland, Amending the National Environmental Policy Act: Federal Environmental Protection in the Twenty-First Century, 12 J. Land Use & Envtl. L. 275, 281–82 (1997) (stating that NEPA was designed to establish the nation's priorities in environmental policy and to ensure those policies and goals are carried out by the federal government); Nicholas Yost, NEPA's Promise—Partially Fulfilled, 20 Envtl. L. 533, 533–34 (1990) (quoting one NEPA author
one avenue to explore for protecting our public natural resource legacy is NEPA’s untapped potential. It is clear that NEPA currently lacks an adequate substantive standard to ensure protection of a natural resource legacy. Many commentators have lamented NEPA’s lack of a substantive standard over the years, and some have called for amending NEPA to include a substantive standard of environmental protection. This Article considers whether NEPA, reinforced with a substantive standard of protection, would be the best tool for defining and protecting a public natural resource legacy.

A review of the critiques of NEPA, and specifically those focused on how NEPA employs information, suggests that even with a substantive standard, NEPA would not necessarily provide the best vehicle for defining and protecting our resource legacy. After considering NEPA’s merit and potential as a tool for preserving our natural resource legacy, Part II of this Article surveys the principal critiques of NEPA’s approach to information collection, analysis, and dissemination. Many of the shortcomings identified in this survey would also impair an amended NEPA’s power to define and preserve our resource legacy.

In light of these critiques, in Part III, we propose an alternative model for a statute better tailored to defining and protecting our public natural resource legacy. Subpart III(A) briefly describes the contours of a statute that could be called a National Environmental Legacy Act (NELA, or Legacy Act). Subpart III(B) elaborates on how such a statute could harness the power of information effectively to define and protect our public natural resource legacy.

II. The National Environmental Policy Act: Information and the Protection of Our Resource Legacy

If our goal is to define and protect a legacy of public natural resources for the next generation, NEPA warrants serious consideration as the appropriate vehicle for achieving that goal because of its broad scope and explicit ambitions to preserve natural resources and environmental quality for future generations. NEPA is premised on the recognition of “the profound impact of man’s activity on the interrelations of all components of the natural

as saying that NEPA “gives expression to our national goals and aspirations” and “provides a statutory foundation to which administrators may refer”).

12. Early in the implementation of NEPA, the Supreme Court ruled that NEPA lacks a substantive standard of environmental protection. That is, it requires agencies to collect and consider information, but it does not require that they choose an environmentally preferable action or achieve any defined level of resource protection. See infra notes 19–21 and accompanying text.

13. See Lindstrom, supra note 11, at 264–66 (discussing proposed reforms to fix NEPA’s inadequate substantive standard, including “amending NEPA to create a more explicit link between its substantive policies and procedural mechanism”); Weiland, supra note 11, at 290–93 (advocating an amendment to NEPA that clarifies environmental protection as a substantive goal in federal decision making). But see Lynton K. Caldwell, NEPA Revisited. A Call for a Constitutional Amendment, ENVTL. F., Nov.–Dec. 1989, at 18, 22 (calling for a constitutional amendment rather than legislative reform of NEPA).
environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances."¹⁴ In its statement of policy, NEPA recognizes "the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man."¹⁵ It aspires to create and maintain conditions under which "man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."¹⁶ In seeking to carry out this ambition, NEPA adds to the federal government's obligations a duty to use its resources "to the end that the Nation may...fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."¹⁷ While NEPA also imposes the duty that agencies seek to "attain the widest range of beneficial uses of the environment," this is to be "without degradation, risk to health or safety, or other undesirable and unintended consequences."¹⁸

Thus, NEPA can be fairly said to have at its core a legacy ambition—a conscious recognition of a duty we owe as a nation to future generations. It sets forth a policy that all federal agencies take steps to fulfill the role of steward of our natural resources. Because of this congruence of NEPA's stated goals and the goal of preserving a public natural resource legacy, it makes sense to explore whether NEPA would be the most effective vehicle for defining and protecting a natural resource legacy.

Any discussion of NEPA's potential must begin with the statute's most frequently identified shortcoming: its lack of substantive force. The Supreme Court's ruling in the Strycker's Bay¹⁹ case that NEPA imposes no substantive environmental duties on agencies crystallized NEPA's status as a purely procedural statute.²⁰ Critics have repeatedly pointed to this interpretation as a primary impediment to achieving many of the broad policies and duties articulated in §101 of the Act.²¹ Further, commentators disagree on whether

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¹⁵. Id.
¹⁶. Id.
¹⁷. Id. § 4331(b).
¹⁸. Id. § 4331(b)(3).
²⁰. See id. at 227–28 (holding that NEPA does not require agencies to select environmentally preferable outcomes; it requires only that they comply with the statute's procedural requirements).
the *Strycker’s Bay* decision is even a proper interpretation of NEPA.\(^{22}\)

Regardless, under the Supreme Court’s interpretation, § 102 of NEPA primarily requires federal agencies to: (1) consider environmental impacts of and alternatives to major proposed actions using a systematic, interdisciplinary approach,\(^{23}\) and (2) prepare detailed statements on these impacts.\(^{24}\)

Even so interpreted, most agree that NEPA has had substantial beneficial effects.\(^{25}\) Thus, some might argue that the preferred route to protecting a natural resource legacy would be to amend NEPA to incorporate a long-needed substantive standard.

The lack of a substantive standard has also given rise to the critique that NEPA is flawed because of the inherent tension between the rationalist comprehensive model of decision making on which environmental-impact-assessment practice is premised and the lack of clear goals and priorities in the NEPA process.\(^{26}\) Requiring agencies to compile all the information

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23. 42 U.S.C. § 4332(2)(A), (B), (E).

24. *Id.* § 4332(2)(C). These duties are further elaborated in the Council on Environmental Quality (CEQ) regulations. 40 C.F.R. §§ 1500–1508.28 (2008).


26. *Culhane, supra* note 25, at 695–96, 702. Culhane notes, “NEPA does not explicitly provide EIS writers with standards for weighing environmental costs against asserted project benefits, much less with a technical preference function.” *Id.* at 695. Thus, agencies seek to compile information appropriate to a rationalist decision, but the information is used for a different and less decisive purpose. See *id.* at 693–95 (“The NEPA process has adopted the form, not the substance, of the rational-comprehensive-optimizing model of decision making.”). Culhane applies garbage-can
needed to support a rationalist decision is overkill if agencies need only compile and "consider" this information as they exercise their discretion on which values to prioritize and which to sacrifice. A substantive environmental standard could address this critique by focusing NEPA's open-ended information demands.

However, the absence of a substantive standard for environmental protection is not the only criticism of NEPA's design. There are a number of other significant critiques of NEPA that should be considered in assessing its capacity to define and protect a public natural resource legacy. In particular, commentators have focused attention on various shortcomings in how information is deployed under NEPA. A frequent criticism centers on NEPA's central focus on the preparation of a document—an environmental impact statement (EIS) or an environmental assessment (EA)—and the resulting emphasis on the quantity of information collected. Many critics concur that "[t]he means have become ends in themselves." The statute enshrines adequate documentation as the primary enforceable obligation of the agency and therefore, the agency focuses primarily on assembling enough documentation. Challenges to agency compliance with NEPA also typically focus on adequacy of the relevant documents, and judicial decisions in successful challenges to agency NEPA compliance frequently turn on gaps in these documents—information not included, analysis not provided, alternatives not developed. As several commentators have observed, the decision theory to describe the highly politicized decision-making context in which NEPA compliance occurs. Id. at 682–89, 695–96. This may explain why the CEQ observed in its report NEPA AT TWENTY-FIVE, supra note 25, at 28, that environmental impact statements (EISs) often have more data than needed, but not enough analysis of the data focused on "the decision" and expressed in clear, concise language. The CEQ then states that "NEPA is about making choices not endlessly collecting raw data." One might say that Culhane's point is that because NEPA lacks any substantive focus or goal for the agency, NEPA is about endlessly collecting raw data—it does not provide any guidance on how to make decisions.

27. The foundation of the EIS requirement is the statute's mandate that agencies prepare a detailed statement. See 42 U.S.C. § 4332(2)(C) (detailing the required information to be included in a report or recommendation). CEQ regulations have elaborated to mandate preparation of various documents depending on the nature of the impacts of the proposed action or the phase of the agency's decision-making process. These include EAs, findings of no significant impact (FONSI), supplemental EISs, programmatic EISs, and records of decision. See 40 C.F.R. §§ 1501.4, 1502.2, 1502.20, 1508.28 (providing instructions for the preparation of EAs, FONSI, and EIS).

28. Culhane, supra note 25, at 700; see also NEPA AT TWENTY-FIVE, supra note 25, at iii (remarking that some agencies may "act as if the detailed statement called for in the statute is an end in itself, rather than a tool to enhance and improve decision-making").

29. See, e.g., Ecology Ctr., Inc. v. Austin, 430 F.3d 1057, 1065–68 (9th Cir. 2005) (holding that a U.S. Forest Service EIS for salvage harvesting of old-growth forest habitat violated NEPA because it failed to adequately explain the basis for the Service's conclusion that eliminating a portion of habitat would not adversely affect the viability of Black-backed Woodpeckers in the area); Washington County, N.C. v. U.S. Dep't of Navy, 357 F. Supp. 2d 861, 861 (E.D. N.C. 2005) (finding that a final environmental impact statement (FEIS) prepared by the Department of Navy failed to adequately consider scientific literature in analyzing the impacts on lakes and waterfowl, as required under NEPA); Sierra Club v. Bosworth, 199 F. Supp. 2d 971, 971 (N.D. Cal. 2002)
result is to encourage agencies to gold-plate their EISs by including every conceivably relevant piece of information to avoid reversal.\(^3\) The result is overly lengthy documents that are less valuable than more concise, focused documents would be.

Another consequence of the emphasis on comprehensiveness is that it delays completion of EISs, therefore delaying the agency’s consideration of the information in the document as part of its underlying decision-making process. It is widely agreed that consideration of impacts and alternatives must occur early in the decision-making process to be effective.\(^3\) Delays increase the risk that a particular project alternative and design may become entrenched in decision makers’ and proponents’ minds before the EIS or EA is complete, and thus before the complete range of alternatives and impacts are fully developed. This undermines a central goal of NEPA compliance—to inform agency decision making.

Overly lengthy documents also create barriers to public participation for those who seek to review an EIS and participate in the comment process. Wading through unnecessarily lengthy documents demands additional time by the interested public and may increase the cost of obtaining needed technical expertise. Excessive length can also work against transparency. Key information is harder to find when it is buried within five volumes, each several hundred pages in length.

A second frequently voiced criticism of NEPA’s use of information is the uneven quality of the information contained in NEPA documents.\(^3\) In some measure, this relates to the information-quantity problem discussed above. In their efforts to create EISs and EAs that are unassailable, agencies may include marginally relevant or poor quality information. Not only does this produce the problems described above, the inclusion of poor quality information can also lead to worse decisions.

(looking at summary judgment where an EIS prepared by the U.S. Forest Service did not adequately disclose and analyze the environmental impacts of post-fire logging and fuel-break maintenance).

30. See \textit{NEPA AT TWENTY-FIVE, supra} note 25, at iii (observing that a result of NEPA is “endless documentation”); Culhane, \textit{supra} note 25, at 693–94 (giving an example of the massive documentation produced due to the requirements, yet reporting that the quality of these documents is deficient); Karkkainen, \textit{supra} note 25, at 917–19 (stressing that agencies produce overly detailed records to “bullet-proof” their decisions even though the NEPA requirements do not necessarily result in improving the quality of these records).

31. See 40 C.F.R. § 1501.2 (2000) (“Agencies shall integrate the NEPA process with other planning at the earliest possible time to ensure [sic] that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts.”); \textit{NEPA AT TWENTY-FIVE, supra} note 25, at 11 (positing that the earlier agencies incorporate NEPA’s framework into their planning process, the more successful the outcome of the agencies’ proposals); Bear, \textit{supra} note 25, at 941 (suggesting that “much of the time, information matters a lot” in the decision-making process); Karkkainen, \textit{supra} note 25, at 924–25 (proposing that starting the NEPA analyses earlier is more beneficial to the decision-making process).

32. See Culhane, \textit{supra} note 25, at 694 (discussing multiple studies that show widespread inaccuracies in EISs); Karkkainen, \textit{supra} note 25, at 921–23 (suggesting that the quantity of information contained in NEPA documents dilutes its quality).
A third major criticism of NEPA’s use of information is the unnecessarily narrow focus of the information collected and the limited use to which the information is put. NEPA documents are prepared for the decision on whether to permit, fund, or undertake a single proposed action; they are rarely considered thereafter, except in litigation regarding NEPA compliance. Commentators have noted many shortcomings that attend this one-shot use of EISs. First, there is a huge investment of resources to collect and analyze information in the course of preparing an EIS, yet the statute creates no incentive to tailor the information collection or presentation so that it may have use in other contexts. The obsessive focus on the EIS precludes realizing the full value of the information by putting it into a more widely usable format.

Another undesirable consequence of the narrow focus on the decision point is the lack of any incentive or framework for postdecision monitoring of environmental conditions. Such monitoring would serve a number of beneficial purposes. First, agencies could learn from this check on the accuracy of their ex ante predictions about environmental impacts. Collecting this information would enhance the database available to the agencies making future decisions, and enable agencies to engage in continuous learning to improve their assessment and decision-making capacity. In contrast, the general wisdom is that information and data gathered in EISs collect dust on shelves. Beyond the opportunity for learning, postdecision monitoring also would open the door to permit adaptive management in implementing the relevant decision. If monitoring revealed unanticipated environmental impacts, the agency might choose to undertake additional mitigation measures or alter its course of action.

A related criticism of the lack of postdecision monitoring arises from agencies’ frequent reliance on mitigation as an essential aspect of NEPA compliance. Under CEQ regulations, agencies may avoid preparation of an EIS for a proposed major federal action that would significantly affect the human environment if, by virtue of mitigation measures, the impacts can be

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33. E.g., Bear, supra note 25, at 944–45 (listing the consequences of the one-time use of the EISs); Karkkainen, supra note 25, at 925–32 (explaining the problems associated with NEPA’s one-time predictive approach); see also NEPA AT TWENTY-FIVE, supra note 25, at 31–34 (pointing out the benefits of continuous adaptive management based on initial NEPA reports); Connaughton, supra note 25, at 9–10 (proposing a requirement of adaptive management and continual monitoring).

34. See Karkkainen, supra note 25, at 923 (observing that the project-specific nature of NEPA reports prevents the use of these reports in other contexts).

35. Id. at 907–08.

36. See id. at 927 (stating that NEPA does not generally require any “post-project assessment”).

reduced below the level of "significance."\textsuperscript{38} This practice has generated considerable controversy,\textsuperscript{39} largely because there is no mandatory monitoring or enforcement to determine if the promised mitigation measures are undertaken.\textsuperscript{40} Postdecision monitoring is widely viewed as a critical missing component in NEPA practice.\textsuperscript{41}

Finally, many critics have noted that despite a mandate to account for cumulative impacts,\textsuperscript{42} NEPA has not been very successful in generating information needed to permit the assessment of cumulative impacts.\textsuperscript{43} Thus, while NEPA may improve agency decision making by permitting assessment of the incremental impacts of individual actions, it seems less well suited to assessing cumulative effect—a critical component of any effort to preserve a public natural resource legacy.

Calls for NEPA reform on the points described above have not gone unheeded over the past decade, and various initiatives have been launched by both supporters and critics of NEPA. Among efforts to assess NEPA's effectiveness, identify problems, and propose solutions, the Clinton Administration undertook a review of NEPA on the twenty-fifth anniversary of its enactment, resulting in a 1997 report.\textsuperscript{44} Under the George W. Bush Administration, the CEQ convened a NEPA Task Force that produced a 2003

\textsuperscript{38} See 40 C.F.R. § 1501.4(e) (2008) (allowing the agency to prepare a FONSI in lieu of an EIS).

\textsuperscript{39} See Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 340 (1989) (citing to an EIS's assertion that numerous mitigation measures discussed in the study would greatly reduce the impacts of the proposed project); Blumm, supra note 21, at 476–77 (relating criticisms of using empty mitigation promises to avoid submitting an EIS, and offering critics' suggestions on how to enforce these promises); Whitney Deacon, The Bush Administration's Attack on the Environment; Target: NEPA's Environmental Impact Statement, 10 Mo. ENVTL. L. & POL'Y REV. 147, 151 (2003) (concluding that mitigation efforts can result in ineffective programs that are immune to any accountability). But cf. Karkkainen, supra note 25, at 908, 934–36 (advocating use of mitigated FONSIs with postdecision monitoring and enforcement of mitigation commitments).

\textsuperscript{40} See NEPA AT TWENTY-FIVE, supra note 25, at 31 (reporting that agencies usually do not gather data on their mitigation efforts); NEPA TASK FORCE REPORT, supra note 37, at 45 (finding that regulations do not require monitoring of the traditional "predict-mitigate-implement" model); Blumm, supra note 21, at 460 (presenting a critic's proposal on enforcing mitigation measures by amending the regulations); Deacon, supra note 39, at 151 ("[B]ecause there is no post-project review of the accuracy of the predictions made in the EIS or the EA, there is no liability for the inaccuracy, which effectively means there is no accountability."); Karkkainen, supra note 25, at 936 (acknowledging that NEPA does not require implementation of mitigation measures).


\textsuperscript{42} The CEQ's regulations call for the consideration of cumulative impacts of related actions in determining whether an action is significant and an EIS is required. 40 C.F.R. § 1508.27(b)(7).

\textsuperscript{43} See Terence L. Thatcher, Understanding Interdependence in the Natural Environment: Some Thoughts on Cumulative Impact Assessment Under the National Environmental Policy Act, 20 ENVTL. L. 611, 617–28 (1990) (surveying the confusing standards that courts have developed in trying to interpret the requirement).

\textsuperscript{44} NEPA AT TWENTY-FIVE, supra note 25.
Following this report, the Task Force held regional hearings and produced several follow-up reports. In 2005, led by Representative Richard Pombo, the U.S. House of Representatives Committee on Resources commissioned its own task force focused on reforming NEPA. Yet the statute remains unchanged.

Of course, the limited success achieved by the frequent calls to reform NEPA to enhance its conservation potential can be ascribed in part to the lack of political will. And without the political will, no reform in any shape will occur. However, even assuming the political will to protect a legacy, efforts to amend a statute such as NEPA can easily be derailed by shifting focus to NEPA's shortcomings. For example, any proposal to strengthen NEPA is easily (if inaccurately) critiqued as destined to produce only more paperwork and delay. Moreover, any effort to reform existing environmental laws can generate as much opposition as enthusiasm—even from conservation groups—because they justifiably fear that opening the statutes to legislative reform will end up weakening them. Thus, timid, easily attacked reforms and tepid support make meaningful success in NEPA reform unlikely.

Taken together, all of NEPA's shortcomings and the stalemate in NEPA reform efforts indicate that an approach that complements NEPA, rather than seeking to amend it, may better achieve the goal of protecting a public natural resource legacy. Part III therefore elaborates a vision of a distinct Legacy Act that makes the definition and protection of a public natural resource legacy its central objective. It then explains how a Legacy Act could effectively harness the power of information and avoid the shortcomings of NEPA.

45. NEPA TASK FORCE REPORT, supra note 37.


III. Harnessing the Power of Information to Protect our Public Natural Resource Legacy

A. The Contours of a National Environmental Legacy Act

The concept of a National Environmental Legacy Act (NELA) is to give effect to the goal of defining and protecting a legacy of public natural resources for future generations, something no statute has done successfully to date. Building on the goals already expressed in numerous laws, a Legacy Act would require management of public resources that accounts for the impact of our decisions on the resources available to future generations. Thus, NELA might be characterized as a successor to NEPA’s legacy ambition, but with teeth and long-range vision. Embracing the Legacy Act concept would impel us to identify our long-term goals and then help chart and maintain a course to achieve our shared goals. It would also improve our decisions over the long term by generating the information base needed to support adaptive learning.

At a minimum, the idea of a Legacy Act denotes a statute that defines our public natural resource legacy and prohibits all actions that will degrade or deplete the defined legacy. These two core objectives of the statute are guideposts that suggest the general contours of the statute. We provide here the outline of a statute that could achieve these two objectives by using information effectively.

1. Section 1: Goals and Policy.—The statute should set out the goal of defining and preserving a legacy of public natural resources for present and future generations of Americans. In its statement of goals and policy, the statute should describe in general terms the legacy we wish to leave, defined in relation to our existing stock of resources. That legacy might be an identical stock of resources, a stock of resources that is not substantially diminished in quality or quantity, or some other description of the quantity and quality of resources we desire to preserve for future generations.

48. This Article proposes a federal statute, but the concept and design of the Legacy Act could easily be adapted for adoption as a state statute as well. As with NEPA, state analogues could serve distinct purposes. A state Legacy Act would presumably focus on protecting a legacy of state-owned and public-trust natural resources rather than federal resources.

49. For purposes of discussion, we propose a very broad definition of public natural resources that includes all water and land, as well as the ecosystems, biodiversity, and minerals found on or in them that are under federal ownership or are protected by the federal public-trust doctrine.

50. Designing the statute will require both considerable technical work and further elaboration of value choices. Although we have included section numbers for ease of reference, the sketch that follows is a starting point for discussion, not a detailed statutory proposal.
2. **Section 2: Designation of a Legacy Period.**—The statute should designate a fixed period of years that constitutes the legacy period, over which public natural resources must be conserved.51

3. **Section 3: Prohibited Degradation or Depletion of Legacy Resources.**—The statute should set forth in clear and enforceable terms the maximum level of degradation or depletion of resources that will be permitted over the course of the legacy period, if any. This is the critical, enforceable substantive standard of the statute. The statute should in clear and broad terms prohibit actions by any person,52 whether public or private, that may cause impermissible degradation or depletion of a legacy resource—that is, degradation or depletion that exceeds the substantive standard over the legacy period.53

4. **Section 4: Designation of Legacy Resource Stewardship Agencies.**—The statute should designate an existing federal agency to serve as the resource stewardship agency (“stewardship agency”) for each public natural resource.54

5. **Section 5: Development of Metrics and Collection of Baseline Data on Resource Quantity and Quality.**—Each stewardship agency should be charged with developing and implementing regulations that designate the appropriate metrics of quantity and quality for the resources for which they are stewards. The statute should both mandate and authorize adequate funding for collection of baseline data on the quantity and quality of all public natural resources employing these metrics.

6. **Section 6: Promulgation of Rules Defining Maximum Permitted Levels of Degradation and Depletion Over the Legacy Period.**—Each stewardship agency should be required to promulgate rules that implement §3 of the statute by elaborating the quantity and quality of degradation or depletion of the relevant resource that would constitute impermissible

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51. At the conclusion of each legacy period, a new legacy period would commence.
52. The term should be very broadly defined to include all public and private actors, including the designated stewardship agency. See, e.g., Endangered Species Act of 1973 § 3, 16 U.S.C. § 1532(13) (2000) (defining the term “person” expansively to include both public and private entities, as well as “any other entity subject to the jurisdiction of the United States”).
53. For purposes of discussion, we propose that this standard proscribe all actions that will lead to significant degradation or depletion of covered resources over the legacy period, unless the proponent of action can demonstrate that substitute resources are likely to be available. NELA represents a break with most current law by shifting the burden to show the availability of substitute resources to the proponent of action.
54. Where an agency has stewardship responsibilities for a particular resource under existing law, it would seem most efficient to designate that agency for this role, unless past experience suggests this would be inconsistent with achieving the purposes of the Act.
degradation or depletion under the statute over the course of the legacy period, using the metrics developed under § 5.

7. Section 7: Stewardship Agency Mandate to Ensure No Impermissible Degradation Will Occur (Prohibition and Planning).—The statute should limit stewardship agencies’ discretion under existing law by requiring each stewardship agency to ensure that no degradation or depletion in excess of permissible limits will occur during the legacy period. The statute should also specifically require that each stewardship agency develop a “legacy plan” to demonstrate how it will ensure that the mandated resource legacy is conserved over the legacy period and to conform its actions to that plan.55

8. Section 8: Enforcement.—To ensure enforcement, both stewardship agencies and citizens should be granted enforcement authority. A citizen-suit provision with fee-shifting56 would be a critical component of the statute. It should authorize any person to bring an action to enjoin and seek penalties for actions that impermissibly degrade or deplete public natural resources. The statute should also permit citizen suits against the stewardship agency to enforce other agency duties under the statute, including the duties to collect information, to develop or update a legacy plan, and to conform agency actions to the terms of the legacy plan.

9. Section 9: Monitoring and Adaptive Learning.—The statute should require and authorize funding for stewardship agencies to undertake ongoing monitoring of legacy resources and should require agencies to update legacy plans according to a fixed schedule.

10. Section 10: Exceptions.—The statute should allow for a narrow exception to its prohibition on degradation or depletion in two circumstances: if it can be shown by clear and convincing evidence that (1) foreseeable technological advances or the availability of substitute resources will obviate the need for or value of the resource in question, or (2) the action is clearly in the public interest, no acceptable alternative that will not cause impermissible degradation or depletion exists that will adequately serve the public interest,

55. For those agencies that already undertake planning regarding the relevant resource, this duty should be coordinated with the agencies’ planning duties under existing enabling acts to achieve maximum efficiency in implementation. The statute should make clear that the general prohibition on actions that impermissibly degrade or deplete legacy resources applies both to private actors and to stewardship-agency decisions affecting the relevant resource—including management, permitting, leasing, and all other decisions.

56. Fee-shifting permits a judge to award costs of litigation to a prevailing party in a suit—such as a citizen suit under the Clean Air or Clean Water Acts. See, e.g., Clean Air Act § 304, 42 U.S.C. § 7604(d) (2000) (providing that a judge “may award costs of litigation” to a prevailing party in a Clean Air Act citizen’s suit).
and the impacts on the services and values to be impaired can and will be mitigated.\footnote{57}

B. Harnessing the Power of Information Under a Legacy Act

This subpart elaborates on how a Legacy Act would harness the power of information, taking account of both our experiences under NEPA, described above, and the broader literature on information problems in environmental regulation. It highlights how a Legacy Act could avoid the shortcomings associated with NEPA and meet other pervasive challenges, including promoting transparency, addressing uncertainty, and overcoming information asymmetries.

1. Avoiding Excessive Open-Ended Information Demands.—The Legacy Act responds to our experiences under NEPA by ensuring that the information collected is well matched to the uses to which it is put. Information is generated by the agency for a particular decisional purpose: to define the legacy and protect it from impermissible degradation and depletion. The agency is directly required to collect baseline information for this purpose and to use this information in its planning processes. This responds to Paul Culhane’s observations about the incongruity of attempting to impose a rationalist comprehensive model of information collection and analysis in a process with no goals other than assembly of complete information.\footnote{58}

NELA also responds to the primary critique of the collection and use of information under NEPA—that the EIS becomes an end in itself.\footnote{59} The focus of compliance under NELA would not be the adequacy of the documentation produced, but (1) whether any planned action would cause degradation or depletion that exceeds the statutory threshold, and (2) whether agency plans would ensure compliance with the statutory standard. Review of agency and other parties’ actions under the Legacy Act would therefore focus less on adequacy of particular documentation, and more on substantive compliance with NELA’s central mandate—the prohibition of impermissible degradation or depletion of the legacy.

\footnote{57. The standard governing exceptions could apply to two different contexts under the statute. First, it could apply in the context of an agency developing its rules under § 6 of the statute. In this context, if the agency could demonstrate by clear and convincing evidence that either prong of the exception is met with respect to a particular resource or value, the statutory mandate for preserving the resource would not apply to the extent the evidence warrants, and rules that deviated from the statutory mandate could be upheld as valid to the extent an exception was warranted. The second context would be as a defense to an enforcement action. A party subject to enforcement for impermissible degradation or depletion could defend against enforcement if the party could demonstrate by clear and convincing evidence that either prong of the exception is met regarding the action giving rise to the enforcement.}

\footnote{58. See supra note 26 and accompanying text.}

\footnote{59. See supra note 28 and accompanying text.}
Under NEPA, the time-consuming nature of EIS preparation has led to a strong focus on how to avoid the need for an EIS. NELA responds to this by departing from the impact-assessment model altogether, and imposing strict liability for impermissible degradation, coupled with agency collection of baseline data and planning. NELA does not create additional lengthy information-collection and review processes that must precede action. This should eliminate the incentive to avoid procedural compliance that has plagued NEPA.

The criticism often leveled at NEPA—that it demands too much information—could also be leveled at the requirement under the Legacy Act that relevant agencies collect and analyze baseline data and engage in ongoing monitoring. One might criticize this as creating an infinite demand for information. However, as envisioned, NELA should not create such unrealistic or unbounded information demands. To avoid this problem and better define the information to be generated, we adapt an idea proposed by Sidney Shapiro and Rena Steinzor in this Symposium: the use of positive metrics that serve as shorthands for assessing the quantity and quality of resources. Shapiro and Steinzor define metrics as short and concise measures, selected by an independent body of experts, addressing the most important relevant issues and focusing on outcome rather than output. The metrics under NELA would be selected to assess the status of resource quantity and quality, in place of comprehensive information requirements. Notwithstanding the challenge that developing such metrics presents, there is a wealth of expertise that agencies have developed in implementing NEPA.

60. See, e.g., Blumm, supra note 21, at 459 (reporting on a study of cases where promised mitigations, which were used to conclude that EISs were unnecessary, were later ignored); Deacon, supra note 39, at 153–54 (noting various agencies’ broad use of categorical exemptions); Sarah McQuillen Tran, Rebuilding Our Power Without Procedural Safeguards: A Federal Response to the 2005 Hurricanes That Outlasted the “Emergency”, 32 HARV. ENVTL. L. REV. 217, 244–50 (2008) (criticizing FERC’s broad use of categorical exemptions under NEPA following Hurricane Katrina).

61. Moreover, information on the quantity of certain resources may already be compiled and may be relatively well defined and simple to assemble. For example, we may have reasonably accurate estimates of the acres of forest or grasslands or the amount of certain mineral resources located on public lands. Nonetheless, even the metrics selected for the quantity of resources may require more than just crude cumulative numbers. For example, distribution of the resource may also be important to consider in some cases. In setting the metrics to be used in assessing resource quantity for forests, it would be reasonable to consider not just the existence of acres of public forests, but their distribution across the landscape and the diversity in forest types. This could be considered as an aspect of quantity or viewed as a qualitative value.

62. Professors Shapiro and Steinzor propose positive metrics in a different context—to promote agency accountability. See generally Sidney A. Shapiro & Rena Steinzor, Capture, Accountability, and Regulatory Metrics, 86 TEXAS L. REV. 1741 (2008) (criticizing current efforts at agency accountability and proposing positive metrics as an alternative). It would make sense to develop metrics for use in multiple contexts. A single metric might be used to monitor both agency accountability and compliance with the Legacy Act.

63. Id at 1770–71.
and other resource-management and protection statutes, and much academic expertise that could be brought to bear on the task.\textsuperscript{64}

2. \textit{Ensuring the Quality of Information.}—NELA also seeks to address the third critique of NEPA—the uneven quality of information contained in EISs. First, the Legacy Act removes one incentive that tends to motivate collection of poor-quality or irrelevant data under NEPA—the emphasis on the \textit{quantity} of information generated. In addition, under the design of NELA, two specific types of information are collected: (1) baseline data on the quantity and quality of resources, and (2) ongoing data to monitor the quantity and quality of resources over time. As noted above, the use of metrics would focus the collection of both types of information. Not only could the metrics determine the volume of information required to be collected, they could also provide standards for quality and promote standardization. Thus the metrics would provide guidance on the quality of the data to be collected under the Act and on the methodologies to be employed in assessing resource quality. Developing metrics under NELA should be undertaken by an independent body with relevant expertise.\textsuperscript{65}

Enactment of this new statute would provide an opportunity to take stock of new and emerging methods for assessing the quality of natural resources and the effects of human activity on the quantity and quality of natural resources. NELA should incorporate the most accurate and sophisticated tools for assessing the quantity and quality of our public resources and for predicting how proposed actions will affect public natural resources. There are many emerging analytic methods that may hold promise for developing metrics of resource quantity and quality without replicating what Professor Brad Karkkainen has called NEPA's "seemingly insatiable demand for information."\textsuperscript{66} These methodologies include ecological economics, ecosystem-services valuation, emergy analysis, scenario building, environmental accounting, sustainability-impact assessment, ecological-footprint analysis, and a variety of sustainability indices. While none of these may yet be fully vetted or ready or appropriate for large-scale incorporation in a legal framework, even a brief survey of the literature reflects many fundamental insights and developments in our understanding that remain largely excluded from or at the margins of current impact-

\textsuperscript{64} Professors Shapiro and Steinzor emphasize the importance of independence in the context of developing metrics for agency accountability as well. \textit{Id.} at 1775–77. One possibility would be to provide in the statute for the creation of an interdisciplinary committee of experts to help develop the metrics, following the model of the Committee of Scientists that was created to develop regulations under the National Forest Management Act. A broader undertaking would model the Intergovernmental Panel on Climate Change or the Millennium Ecosystem Assessment. This would bring together scientists to assess the state of knowledge, determine whether consensus exists on the state of our information and analytic methods, and assess accordingly the impacts of decisions on resources.

\textsuperscript{65} \textit{Id.} at 1775–77.

\textsuperscript{66} Karkkainen, \textit{supra} note 25, at 920.
assessment practice. What we suggest is a focused effort to assess elements of these approaches that warrant incorporation into our analytic methods for assessing impacts on our resources.67

For example, critics of the heavy reliance on neoclassical economics under current law and policy have pointed to the undisputed inadequacies of microeconomics to assess the impacts of decisions on resources in a world in which there are real physical limits to available resources.68 Ecological economists introduce into decision making the norm of sustainable use of resources, alongside the neoclassical economic norm of efficiency.69 Ecological economics offers an analytic approach well suited to more fully assessing the impacts of human activity on our resource legacy, focused as the discipline is on the intersection of dynamic human and ecosystem processes.70

Ecosystem-services valuation offers another approach to identifying and evaluating both baselines of resource quality and the impacts of human activity on natural resources and the values and services they provide. First brought to widespread attention by Gretchen Daily,71 Geoffrey Heal,72 and Robert Costanza,73 the idea of ecosystem services and its potential application has been explored by several legal scholars in the period since, most notably, J.B. Ruhl and Jim Salzman.74 The idea that we need to better identify and assess the value of the services and values associated with natural systems fits well with the idea at the heart of the Legacy Act—that we need to better assess the impacts of our actions on public natural

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67. See supra note 64 and accompanying text.
70. Id. at 8.
71. See NATURE’S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen C. Daily ed., 1997).
73. See Robert Costanza et al., The Value of the World’s Ecosystem Services and Natural Capital, 387 NATURE 253 (1997).
resources, broadly defined. Ecosystem-services valuation could be used to develop metrics of quality for public natural resources.

The challenges that attend systematic assessment of ecosystem services are numerous. In their recent book, Ruhl, Kraft, and Lant carefully outline the challenges and complexity of the undertaking—the tremendous variation in ecosystem services, their geographic distribution, and how users avail themselves of the services. Moreover, they acknowledge that the desirability and ultimate value of the effort to translate the value of ecosystem services into dollars is contested. Nonetheless, Ruhl, Kraft, and Lant provide a thoughtful assessment of the components and qualities that characterize ecosystem services, a framework for conceptualizing them geographically, and an outline of the key decisions that should attend any effort to operationalize ecosystem-services valuation.

Emergy synthesis offers another example of an emerging method of accounting for the value of natural resource systems that could be applied as a metric of environmental quality under the Legacy Act. Unlike ecosystem-services valuation, emergy synthesis seeks to account for the dynamic value of natural systems by translating these into a measure of the energy embodied in the system, using the unit of emjoules. This method, developed by ecologist H.T. Odum, has been used by ecologists, as well as governmental and nongovernmental agencies, but it is only beginning to be explored as a tool for use in law.

Ecological-footprint analysis (EFA) is an index of natural resource consumption reported in the number of global hectares necessary to support one person. While this measure does not itself seek to assess the impacts of a particular proposed action, it is possible that the analytic approach and metrics used in EFA to assess how the sum of an individual’s myriad daily decisions translates into resource consumption could be employed by

75. RUHL, KRAFT & LANT, supra note 74, at 9, 13–35.
76. Id. at 31.
77. Id. at 23–33.
78. Id. at 39–56.
79. Id. at 249–92.
81. See id. at 964–66 (discussing the origin of the concept of emergy and the aim of the article to demonstrate emergy’s “potential to revolutionize environmental law”).
82. Danielle Marie Devincenzo-King, Emergy Accounting of the Resource Basis of Nations, Human Well-Being and International Debt 5 (2006) (unpublished master’s thesis, University of Florida) (on file with the Texas Law Review). See also Redefining Progress, Earth Day Footprint Quiz, http://www.myfootprint.org. For example, the ecological footprint of one of the authors of this Article is 14 acres, compared to the average footprint of 24 acres per person in the United States. There are 4.5 biologically productive acres per person worldwide. Thus, if everyone lived like the author—with a footprint of 14 acres each—we would need 3.1 Earths to support our current world population.
agencies as they project future resource demands in their legacy plans and assess whether such demands will violate the Act.

Various emerging sustainability and well-being indices seek to assess how well countries achieve sustainable use of resources while promoting human welfare. These may provide useful comparators, identifying other countries that may be employing alternative technology or substitute resources that can help maintain compliance with the Legacy Act.

Because NELA requires agencies to undertake planning to ensure compliance over a relatively long time horizon, it requires more rigorous consideration of anticipated cumulative impacts than is generally undertaken under NEPA and other statutes. NELA also requires a careful assessment of the capacity of renewable resources to replace themselves. Several other tools that could inform agency information collection and planning that may address these demands are complexity theory, geographic information systems (GIS), and scenario building. J.B. Ruhl outlines an approach to these problems grounded in complexity theory and describes the type of algorithms we might develop to help us analyze impacts. Similarly, he highlights the promise of GIS as a tool for improving our ability to analyze and understand complex information. He also points to the work of others who have shown the potential of scenario building as a tool for assessing impacts. Scenario building could assist agencies in developing plans that anticipate resource demands and better prepare them to face resource demands in light of the constraints imposed by the Act.

3. Promoting Adaptive Learning.—A major criticism of NEPA’s use of information is the narrow use of information at the decision point. This limits the value of the information collected and precludes adaptive learning.


84. Because the statute focuses on the resources available at the end of the legacy period, the level of degradation or depletion of renewable resources permitted under the statute would take into account the resources’ capacity to renew themselves over the legacy period.

85. See J.B. Ruhl, Sustainable Development: A Five-Dimensional Algorithm for Environmental Law, 18 STAN. ENVTL. L.J. 31, 56–58 (discussing application of “models of complex adaptive systems” to “fundamental aspects of sustainable development”).

86. Id. at 61–62.

87. Id. at 59–61.
To ensure that we can learn from the experience during the legacy period, the Legacy Act should require ongoing monitoring of resources covered under the Act and regular updating of legacy plans by stewardship agencies. This would in turn provide data to help agencies and the public make informed decisions in the future and assess the accuracy of past analyses. Without this information, we would lose the opportunity to improve decision making by observing the deviation between ex ante predictions and actual impacts.\(^8\) Postdecision monitoring would also permit adaptive responses in cases in which unanticipated impacts occur and thus adaptive learning.\(^9\)

4. **Creating Transparency.**—NELA’s information demands should be designed with an eye toward maximizing the transparency and usefulness of the information. Thus, drafters should seek to structure information demands and analysis so that state and local decision makers, as well as interested advocates for the public interest, could benefit from the information. This also would necessitate a design that maximizes transparency, making information easily and broadly accessible. For example, the statute should mandate that baseline information and updated monitoring data be made accessible on the stewardship agency’s Web site. Ensuring that the data generated under NELA are publicly available and in a form that is readily usable would promote transparency and could enhance the quality of decision making not just by federal agencies, but by state and local governments and private enterprise as well.\(^9\) A number of the emerging analytic approaches designed above have the potential to increase transparency and facilitate ongoing use of the data collected.

5. **Addressing Information Asymmetries.**—Professor Wendy Wagner has described the classic problem of asymmetrical access to relevant information in the regulatory process.\(^9\) When a private party proposes an action that may degrade or deplete a resource, that party is likely to have greater access to information about the action it has proposed than others.\(^9\)

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90. See Karkkainen, *supra* note 25, at 938 (discussing the benefits of process transparency to agencies, the public, and governmental branches).
92. In the case of public resources, private actions approved by agencies under traditional permitting or leasing arrangements are frequently the source of degradation or depletion. In this situation, the private actor typically has greater access to information about the details of the activity it has proposed and the likely adverse impacts, creating an information asymmetry. In a typical permitting or leasing procedure, even if there is a regulatory standard that prohibits or takes
Under a regulatory scheme that prohibits conduct if adverse effects are proven, the proponent of an action has little incentive to generate or produce information about adverse effects. Hampered by the asymmetry, the agency may not know what information is available or be able to frame requests that will generate needed information.

The proposed reliance on a strong prohibition may help to alleviate this problem. Drawing on an idea from contract theory, Professor Karkkainen has explored how reliance on a "penalty default" can help to solve the problem of information asymmetries. The Legacy Act follows this approach by employing a prohibition against degradation. Thus, the statute creates an incentive for the proponent of action to investigate adverse effects of the proposed action in order to avoid strict liability for violating the statute. Further, if this inquiry generates information suggesting that an action may violate the statute, the party has an incentive to generate information on less damaging alternatives.

6. Coping with Uncertainty.—The obstacles that uncertainty creates for protecting natural resources, health, and safety under existing statutes are well documented. Many environmental regulatory statutes require that an agency provide a certain measure of proof of harm before regulatory
constraints are imposed. Where the burden of proof falls on the agency seeking to regulate potentially harmful actions, the inevitability of incomplete and uncertain information can act as a significant impediment to regulation.96

Given the purposes of the Legacy Act and our experience under existing law, it seems essential that the Legacy Act’s prohibition be framed to adopt a precautionary approach.97 Thus, § 3 of the statute should be framed to prohibit any person98 from taking any action that may cause significant degradation or depletion of any legacy resource, or employ similar or even more precautionary language. The statute should also make explicit that any doubt created by inadequate or uncertain information should be resolved in favor of protecting the legacy, because uncertainty will frequently limit our ability to predict impacts. As Professor Holly Doremus has advocated, this precautionary approach should be coupled with adaptive learning, which can reduce uncertainty over time.99

In addition, the statute could include a transition provision that follows the penalty-default model, designed to align the interests of resource users and the public in support of funding the collection of baseline information and the development of agency rules. The transition provision would accomplish this by imposing a partial or complete moratorium on some class of activities affecting legacy resources, pending the collection of baseline data required under the statute and the development of implementing rules.100 This would ensure that lack of information does not unduly delay the statute’s implementation and effectiveness. Such a transition provision would also create an incentive for private parties to share with the agencies information relevant to the development of baseline resource data, as well as giving them reason to support prompt promulgation of agency rules.

96. See Applegate, supra note 95, at 319 (stating that because of the strict standards necessary to impose a test rule under the Toxic Substances Control Act, very few test rules have been promulgated under the statute); Latin, supra note 95, at 381–82 (showing that placing the burden of proof of harmful effects on an agency attempting to regulate can frustrate the purposes of environmental legislation).

97. See generally John S. Applegate, The Taming of the Precautionary Principle, 27 WM. & MARY ENVTL. L. & POL’Y REV. 13 (2002) (defining the precautionary principle as one that embodies the ideas that “anthropogenic harm to human health and the environment should be avoided or minimized through anticipatory, preventive regulatory controls; and, to accomplish this, activities and technologies whose environmental consequences are uncertain but potentially serious should be restricted until the uncertainty is largely resolved”).

98. The term “person” should be broadly defined. See supra note 52 and accompanying text.

99. See Doremus, supra note 89, at 548–50 (arguing that both the precautionary principle and scientific principles—sometimes thought to be in conflict with each other—should be used in an environmental decision-making process that emphasizes learning).

100. For example, any individual action that itself would be deemed significant under NEPA could be prohibited, pending the collection of the relevant information and the development of agency metrics. Defining the precise class of activities to be proscribed in this transition period would entail significant value choices.
implementing the statute, rather than favoring delay.\textsuperscript{101} As with the experience under California's Proposition 65 that Professor Karkkainen describes, this would create an incentive to generate information and support regulation that typical regulatory statutes lack.\textsuperscript{102}

IV. Conclusion

It is inevitable that we will leave a natural resource legacy to our children and grandchildren. This Article takes seriously the idea that Americans care about that legacy and deserve the opportunity to deliberate on the contents of their legacy. Under current law and policy, agencies are afforded broad discretion under both NEPA and substantive public natural resource-management statutes. The current legal regime fails to provide adequate tools to enable us to define and protect a natural resource legacy.

Among our current laws, NEPA is a statute both with broadly stated ambitions to protect a natural resource legacy and a commitment to harnessing the power of information to achieve that goal. In this Article, we draw on the lessons learned under NEPA to suggest how we could better harness the power of information in the service of protecting a natural resource legacy. This Article suggests that NEPA is inadequate to the task of protecting a resource legacy. Drawing on the lessons learned under NEPA, we suggest how a National Environmental Legacy Act could help us to use information effectively to define and protect a public natural resource legacy.

\textsuperscript{101} See Wagner, supra note 91, at 1741–42 (describing private parties' incentives to share information and to support prompt regulation under an approach similar to "penalty defaults").

\textsuperscript{102} See Karkkainen, supra note 93, at 1432–34 (describing how the inversion of the usual incentives for potentially regulated business leads to the disclosure of information).