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ECOSCAPES: THE FUTURE OF PLACE-BASED ECOLOGICAL RESTORATION LAWS

Anastasia Telesetsky*

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ABSTRACT

In the course of a single human lifetime, we are collectively experiencing ecological collapse as fish stocks plummet and deforestation remains rampant. Legal scholars have focused intensely on causation for these collapses, but little has been written in the legal academy about what States are doing after they have failed to prevent ecological damage.

This paper examines the current practices of state-mandated environmental restoration, which include primarily mitigation efforts and ecosystem service revival. Remedial mitigation and an emphasis on ecosystem services, however, are not sufficient to restore ecosystem functions that are essential for the survival of landscapes.

This paper argues instead for a large landscape approach to environmental restoration. Focused on the inherent value of distinct landscapes to people, this paper introduces the concept of the “ecoscape” as an alternative to the current inadequate regime of piecemeal restoration. An “ecoscape” is a landscape or seascape that transcends political boundaries and, instead, creates boundaries based on sustaining ecological functions and on protecting human needs for living landscapes. Because they are place-based rather than politically bounded, ecoscapes offer new large-scale opportunities to restore the environment. Psychologically, humans are directly motivated to restore places that are important for the quality and nature of lives and tapping into this motivation can have benefits for all species.
This paper acknowledges the key role that private actors have played in promoting large-scale landscape/seascape (ecoscope) management and then calls for a more active role by state governments in investing in ecoscape-based restoration. If some degree of ecoscape thinking is not facilitated by our governance systems, further ecosystem collapse will come at our own peril.

"[I]t is even more apparent today than it was during the early part of the twentieth century that the environmental and social problems need to be addressed from an interdisciplinary and large-scale perspective.”
Eugene Odum

INTRODUCTION

In laboratories and environmental think tanks, there are bold genetic pioneers who believe it is technically possible to bring back extinct species, such as the passenger pigeon and the New Zealand moa. Yet, until we can reliably bring back extinct species and re-engineer fragmented habitats into functioning landscapes, it is fair to conclude that humans are not capable of relying on futuristic technologies to restore landscapes, waterscapes, and seascapes. Given the environmental pressures on the planet, we collectively have three stark options. We can completely cease and desist in our extractive and polluting activities, which would lead to a further downward spiral in the current economy. We can carry on pursuing the status quo, leading to bleak future scenarios of environmental collapse. Or, we can attempt to interrupt the status quo by reimagining our troubled relationships with the places where we reside and systematically restore ecologically degraded places so that they can sustain their ecological

While this last option is not easy to implement, restoration is the only viable long-term option to address the magnitude of human impacts on the environment.

This paper makes a modest contribution to a lively debate about how to re-imagine our relationship with the places that shape us as individuals, communities, and nations by focusing on how to bridge the gap between social governance and ecological landscape restoration. Law plays a critical role in the implementation of restoration science because it is through the mechanisms of law that we individually and collectively decide how our landscapes should function and which species, ecological processes, and geographical features will survive from generation-to-generation.

Yet, in spite of the importance of this topic, there are only a handful of articles and books that address the legal challenges inherent in addressing landscape/waterscape/seascape restoration (hereinafter referred to as “landscape” restoration) in order to adapt to the Anthropocene Era. This is a paper operating on two scales. With a focus on landscape restoration, this is a big picture paper that focuses on how we can restore threatened ecological connections and functions across landscapes by shifting the focus of our political decision-making about the environment to the appropriate large ecological scale. Simultaneously, the paper is a small picture paper because it focuses attention on how the social mechanism of law might operate to protect our experiences as place-bound species that derive shared meaning from living in particular types of places.

This paper is based on two assumptions. The first assumption is that humans are not, by nature, anarchic. We strive for order and seek at least momentary stability and predictability. Many of us fear rapid change and prefer a more graduated approach. In other words, we are genetically prone and culturally motivated to appreciate the values of group governance. As a result, we attempt to govern our collective environment through shared social mechanisms such as laws. The second assumption is, that in spite of the positive potential and inherent tragedies of globalization, humans are largely place-based and develop attachments to specific places. Regardless of our cultural upbringing, we identify with physical landscapes and

---

6. Ecological function refers to physical conditions and ecological processes that are essential for an ecosystem to function including for example water flows and nutrient cycling.


8. This paper makes no assumptions about whether culture drives genetic changes or genes create culture but leave those interesting debates to sociobiologists and cultural evolutionists.
understand who we are as individuals and communities in relationship to specific landscapes.

Combining these assumptions with the emerging debate over how to mainstream restoration into long-term sustainability law and policy, this paper introduces the concept of an ecoscape as an approach to protect social and environmental values within and across large landscapes. Much has been written about the importance of landscapes. Recently, there is an increasing amount of interest in bioregions, ecoregions and landscape conservation cooperatives. While each of these ideas contributes to the progress of ecological restoration as a viable scientific concept, an ecoscape is the next step in reimagining our relationship with places because it focuses not just on conceptualizing the scientific and ecological criteria associated with landscapes but also on furthering trans-political boundary governance.

Part I of this paper addresses the ecological impacts that motivate the current impulse for restoration activities. Part II of this paper defines ecological restoration and explores three different ways it has been incorporated into national law and policy. Part II also explains how each of

9. Current discussions of restoration in the context of environmental policy tend to be largely prescriptive without providing guidance about what might constitute a successful restoration effort. Parties know that they should restore habitat and species but there is no direction about how to achieve these prescriptive goals. United Nations Conference on Sustainable Development, G.A. Res. 66/288, U.N. Doc. A/RES/66/288 (Sept. 11, 2012), available at http://www.unccd2012.org/thefuturewevant.html (Paragraph 40 reaffirms Principle 7 from the Rio Declaration: “We call for holistic and integrated approaches to sustainable development that will guide humanity to live in harmony with nature and lead to efforts to restore the health and integrity of the Earth’s ecosystem”; paragraph 135 calls for “restoration of safe and green urban spaces”; paragraph 154 in the context of employment for the “green economy” calls for public investments in “restoring natural resources and ecosystems”; paragraph 158 calls for States to “restore the health, productivity and resilience of oceans and marine ecosystems”; paragraph 168 calls for restoration of fish stocks (emphasis added)).


14. The term “ecoscape” will be defined in Part III. “Ecoscape” is a broader concept than simply a “cultural landscape” where human interests are foregrounded. The idea of ecoscapes also prioritizes human efforts but focuses specifically on how humans can use their governing influence over the landscape to protect socio-ecological systems through ecosystem restoration processes.

15. Governance in this paper refers to “activities backed by shared goals that may or may not derive from legal and formally prescribed responsibilities and that do not necessarily rely on police powers to . . . attain compliance. Governance . . . is a more encompassing phenomenon than government. It embraces governmental institutions, but it also subsumes informal, non-governmental mechanisms whereby those persons and organizations within its purview move ahead, satisfy their needs, and fulfill their wants.” James N. Rosenau, Governance, Order, and Change in World Politics, in GOVERNANCE WITHOUT GOVERNMENT: ORDER AND CHANGE IN WORLD POLITICS 1 (James N. Rosenau & Ernst-Otto Czempiel eds., 1993).
these approaches focuses on only one temporal quality of the restoration debate, largely to the exclusion of larger ecological concerns. Finally, in Part III, the “ecoscope” is offered as a place-based concept for bridging the governance gap between political action and declining ecological systems. This final Part also proposes a selection of government-initiated policy changes that would advance the idea of ecoscape thinking by restoring ecological connectivity across currently fragmented large landscapes.

I. ENTERING THE ANTHROPOCENE: THE CONTEXT FOR RESTORATION

While we have been reshaping landscapes for millennia, it is only recently that the human hand and footprint has become ubiquitous across all ecological categories from species to communities to ecosystems to landscapes. We may be on the brink of entering the Anthropocene, the first geological epoch to be marked by the sheer extent of human impact on earth systems, thus we must reimagine our relationship to the land because we are both part of the problem and solution to our environmental challenges. As tropical ecologist Daniel Janzen argued eloquently in an editorial in Science, “there is no footprint-free world” and “[t]he question is not whether we must manage nature, but rather how shall we manage it by accident, haphazardly, or with the calculated goal of its survival forever?”

In 2000, the United Nations Secretary-General Kofi Annan commissioned the Millennium Ecosystem Assessment enlisting almost 1,400 scientists and experts to determine how humans have been impacting the environment. After several years of intensive evaluation, scientists concluded that humans have disrupted ecosystems at an unprecedented rate in the past fifty years. While this overall conclusion was discouragingly predictable, the underlying studies remain startling if we take into consideration the quantitative magnitude of change.

16. The Anthropocene: A Man-Made World, THE ECONOMIST (May 26, 2011), http://www.economist.com/node/18741749?story_id=18741749 (“[E]mbracing the Anthropocene as an idea means . . . treating humans not as insignificant observers of the natural world but as central to its workings, elemental in their force.”); Paul J. Crutzen & Christian Schwägerl, Living in the Anthropocene: Toward a New Global Ethos, YALE ENV’T 360 (Jan. 24, 2011), available at http://e360.yale.edu/feature/living_in_the_anthropocene_toward_a_new_global_ethos/2363 (“To master this huge shift [to the Anthropocene], we must change the way we perceive ourselves and our role in the world . . . . [T]eaching students that we are living in the Anthropocene, the Age of Man, could be of great help. Rather than representing yet another sign of human hubris, this name change would stress the enormity of humanity’s responsibility as stewards of the Earth. It would highlight the immense power of our intellect and our creativity, and the opportunities they offer for shaping the future.”); Michael Soulé, NATIVE VS. EXOTIC, 4 YELLOWSTONE SCI. 9 (1996).


Beginning with the terrestrial ecosystems, forest systems continue to be damaged. While there has been an overall improvement from the 1990s when sixteen million hectares were converted annually from primary forest to agricultural uses or destroyed by natural causes, the Food and Agricultural Organization found thirteen million hectares were lost per year between 2000 and 2010.19 Humans have continued to leave their imprint on forests. In fact, the acreage of primary old-growth forests, which account for thirty-six percent of total forest area, has decreased by more than forty million hectares since 2000, due largely to logging and other human pursuits.20 National statistical data reflecting increases in forest cover may mask the effects of primary forest depletion replaced by expanded plantation forests.21

Arguably, wetland and coastal habitats have fared even worse than forests. William Mitsch and James Gosselink observe that over the course of the past few decades fifty-three percent of United States wetlands, sixty percent of Chinese wetlands, and ninety percent of New Zealand wetlands have disappeared.22 Globally, the world has lost fifty percent of its wetlands.23 Since 1980, thirty-five percent of the world’s mangroves have been lost.24 In some areas, up to eighty percent of the mangrove coverage has been lost due to human development and storm damage.25

At least thirteen percent of the coastal waters in the U.S. are impaired for fishing based on studies of fish tissue contaminants.26 Dead zones in the Gulf of Mexico have increased from approximately 10,000 square kilometers in 1985 to 22,100 square kilometers in 2007.27 Around 400 coastal areas worldwide are now periodically or constantly oxygen-depleted due to fertilizer run-off and sewage discharge.28 Further out towards the sea, ecosystems are silently vanishing. In the Caribbean regions, four-fifths of the coral reefs have disappeared in the past twenty-five years, and remaining reefs are heavily damaged by land-based pollution and over-

20. Id. at 50.
21. REID ET AL., supra note 18, at 33.
23. Id.
24. REID ET AL., supra note 18, at 2.
fishing. A similar story of loss threatens Southeast Asia’s reefs, with eighty percent of the reefs in the Philippines also under threat. Globally, twenty percent of coral reefs have been destroyed. Industrial fishing fleets are damaging deep-sea habitat by bottom trawling. Overexploitation, pollution, and rising temperatures threaten the world’s fishery stocks. According to the Food and Agriculture Organization, as of 2009, eighty-seven percent of the world’s fisheries are overexploited or fully exploited.

Degraded ecosystems have obvious impacts for both human health and welfare, since almost half the population is dependent on fisheries, forests, and agriculture for jobs. Scientists estimate that sixty percent of the world’s ecosystem services, based on twenty four groups of services identified by the Millennium Ecosystem Assessment, are in the process of being degraded or are being used in an unsustainable fashion. Most of this damage has occurred within the lifetime of this generation. In addition to the frequency of these types of reports, what is particularly alarming about this array of statistics is the cumulative nature of global environmental damage. As Janzen intuited in 1998, there is no “footprint-free world.”

In response to the speed and scale of destruction, scientists have been calling for changes to “business as usual.” Scientists recognize that, “[n]ature in the twenty-first century will be a nature that we make; the question is the degree to which this molding will be intentional or unintentional, desirable or undesirable.” As the next section will demonstrate, international policymakers are hearing scientists’ concerns. For many of these policymakers, restoration is an accepted strategy for long-term ecosystem management. But because there is no singular voice with which scientists speak, certain restoration policy approaches, such as “ecosystem service” markets, are more quickly adopted into established

30. Id.
32. NAT’L RESEARCH COUNCIL, EFFECTS OF TRAWLING & DREDGING ON SEAFLOOR HABITAT 7 (2002).
35. REID ET AL., supra note 18, at 39.
governance structures than other more holistic place-based approaches, such as the ecoscape system proposed in Part III.

Yet, we substitute quickly implementable policy fixes at our own peril. Restoration will require long-term financial, but also personal, investment. While restoration is touted in policymaking as a viable environmental strategy, few proponents dare to mention that effective restoration will require an experimental approach to restoration sites that may not deliver success without some trial-and-error in applying untested restoration practices. If States continue to pursue the piecemeal legal restoration strategies described in the following section, we may not have the patience to wait for an ecological system to return to a self-sustaining state, or to renew our efforts if first attempts at ecological restoration fail to deliver results by a scheduled deadline.

II. ECOLOGICAL RESTORATION AND CONTEMPORARY PRACTICE

Beginning with the 1972 United Nations Conference on the Human Environment\(^{38}\) and following through the Rio Conference in 1992,\(^{39}\) and the more recent Rio+20 Conference in 2012,\(^{40}\) restoration has had a certain hortatory appeal of advancing conservation by repairing the damage from human impacts. The concept of restoration, in its most general expression found within international law, gives humans a chance to collectively do something remarkable to reverse or at least slow seemingly inexorable trends of global decline, degradation, and extinction. In these times, when system-wide environmental statistics about the collapse of fisheries and the disappearance of mangroves suggest that we may be crossing ecological thresholds, restoration is an optimistic call to action to preserve something of the environment as we currently know it. But what is meant by this global call for restoration depends on how you define restoration. The following section reviews some of the definitions commonly circulated within the community of ecological restoration experts.

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40. See United Nations Conference on Sustainable Development, supra note 9 (reaffirming the Rio Principles and commitment to implement a sustainable plan).
A. What is Restoration?

There is no internationally agreed upon definition of restoration and few domestic legal definitions for restoration. Filling this gap are definitions built by scientific consensus. In 1990, the Society for Ecological Restoration defined restoration as “the process of intentionally altering a site to establish a defined, indigenous, historic ecosystem” with the goal being “to emulate the structure, function, diversity, and dynamics of the specified ecosystem.”

This definition fell out of fashion because it relied on a snapshot approach to restoration. As ecologists discovered that ecosystems are not static but subject to dynamic equilibrium and that leaving a site alone could also have restorative effects, there was a need for new definition.

In 1995, the Society for Ecological Restoration (the Society) defined restoration as “the process of renewing and maintaining ecosystem health.” While this definition provided more flexibility in terms of achieving restoration goals, it was largely aspirational since there was no specific definition of “ecosystem health.” Today, the Society of Ecological Restoration defines restoration as “[e]cological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed.” The Society provides a very detailed description of what constitutes recovery:

An ecosystem has recovered—and is restored—when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It will sustain itself structurally and functionally. It will demonstrate resilience to normal ranges of environmental stress and disturbance. It will interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions.

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42. Id.
44. Id. § 3.
The Society provides multiple attributes of restored ecosystems including that:

The restored ecosystem is self-sustaining to the same degree as its reference ecosystem, and has the potential to persist indefinitely under existing environmental conditions. Nevertheless, aspects of its biodiversity, structure and functioning may change as part of normal ecosystem development, and may fluctuate in response to normal periodic stress and occasional disturbance events of greater consequence. As in any intact ecosystem, the species composition and other attributes of a restored ecosystem may evolve as environmental conditions change.

While this 2004 definition inclusively emphasizes both biotic and abiotic resources, there is something missing from the definition in terms of connecting the ecologically defined world that is the subject of scientific investigation to the socially constructed world where governance resides—in other words, connecting the worlds of science and law. While it may seem on one level that ecologists should not be venturing into the practice of law by proposing definitions with socio-legal implications, it ignores the fact that restoration is inherently a human-centered practice. To the extent that ecologists propose definitions of restoration, the social component must be highlighted as a key operational component of the definition.

Even if we want to erase our hand from processes that are meant to be “natural,” a failure to acknowledge humans and their governance systems as social agents is counter-productive to furthering the self-sustaining goals of restoration. Few areas are free of human interventions; deep-sea bed mining is coming closer to an economic reality and the Sahara desert may someday sport solar arrays connected to global power-grids. When we acknowledge that humans will be making the decisions about what to restore and how to restore it, then we can begin to understand that technology alone will not ensure effective ecological restoration. While it might be technically possible to achieve certain restoration outcomes through science and engineering, these results could be as easily reversed through partisan politics and self-interested governance. Restoration requires both technical experimentation and social commitment.

What is important is that restoration as a term expresses a socio-ecological process. In its work, the SER already identifies two types of landscapes: a natural landscape “that is self-organizing and self-maintaining” and a cultural landscape “that has developed under the joint
influence of natural processes and human-imposed organization.” What is needed to complete the SER definition is a recognition that the long-term success of ecological restoration depends on both socially constructed ideas of large landscape and socially constructed tools of governance.

The need for ecological restoration must be embedded in a landscape that is at once both natural and cultural. We may think of certain nature reserves as natural landscapes, but in reality, they are simultaneously natural and cultural landscapes. Most “natural” spaces are part of larger political geographies criss-crossed by sometimes parallel and sometimes conflicting law and custom that continue to survive because of global, national, or community decision-making. While a project of returning a single meadow to a level of ecological function is important as a step in the process of environmental restoration, these projects will ultimately fail to address the larger landscape concerns of connectivity unless they are connected systematically and deliberately across artificial and political boundaries. Not requiring a larger degree of connectivity among restoration efforts means that an isolated restoration project is just a temporary success in a losing venture.

The current approach to restoration consists of too many small successes with no strategy for linking these successes into a larger self-reproducing governance approach. The following section explains why existing restoration approaches are too fragmented or too focused on commodification to succeed as strategies for meeting the challenges of the Anthropocene epoch. As Part III will argue, governments need to reassess our current governance schemes of large landscapes and seek extensive public investment immediately in sustaining ecological functions at landscape levels that are large enough to be ecologically meaningful.

B. Restoration and Domestic Law and Practice: The Three Spirits of Environmental Restoration

In Charles Dickens’ classic A Christmas Carol, the protagonist, Ebenezer Scrooge, is visited by the Ghost of Christmas Past, the Ghost of Christmas Present, and the silent Ghost of Christmas Yet to Come. While Dickens’ book was about the foibles of human nature and not about nature per se, his metaphor of temporal ghosts provides a useful lens for thinking about contemporary restoration practices. While this article’s primary

45. Id. § 4.
46. See infra 48–49 (stating that restoration projects are unsuccessful unless such projects comprehensively incorporate involvement from both private and government entities).
objective is to highlight the need for identifying socio-ecologically large places across the globe and facilitating governance for ecoscape-level restoration, this section focuses on the existing law and policy practices associated with restoration.

With a nod to Dickens’ famous spirits, the first sub-section describes the spirit of “restoration past” as one approach to restoration that is committed to bringing back extant species through revegetation, reintroduction of historical species, and other creative proposals to recreate historical ranges. The second sub-section examines the spirit of “restoration present” as the summation of practices of mainstreaming restoration as a practical component of environmental site planning and environmental damage compensation by providing either on-site or off-site remediation for harm to a site. The third sub-section describing the spirit of “restoration yet to come” explores a concept of restoration that has not yet been fully implemented but is frequently invoked in public discourse. It refers to the prioritization of restoration for “ecosystem services” including various largely human-centered provisioning, supporting, regulating, and cultural services. The challenge that will be discussed with this last vision of restoration is whether it is sufficient to adopt an ecosystem service approach to restoration when it focuses only on meeting human needs. Or in pursuing this approach, do we end up commoditizing restoration and losing ecological values that are not fungible?

1. Restoration Past: Restoration as Historical Reconstruction

One of the assumptions about restoration is that restorers of ecosystems must be able to locate in time characteristics of the place they intend to revive. After all, restoration is intended to be a reflexive process that brings us back to a “better” state than the one we are currently residing within. For some restorers, this means bringing the landscape back to a mythical point that no longer exists but must be imaginatively reconstructed. Restoration ecologist Eric Higgs recognized the futility of true historic restoration when he wrote “[t]here is no original condition for an ecosystem in any meaningful sense; one cannot fix a specific point in time.”

In spite of historical restoration being a practical exercise in imagining the way things might have been, there are government funded projects underway to revive certain lost historical aspects of ecosystems in order to support the contemporary cultural activities of indigenous groups. For example, in the United States, National Park Service managers in a burst of

reparative gardening\textsuperscript{49} are reviving indigenous landscapes with the rebuilding of Native Hawaiian fish ponds that had eroded and trimming of brush engulfing pinyon pines in Death Valley.\textsuperscript{50} These projects tend to be small and isolated.

The reintroduction of species that no longer occupy their larger historical range is far more controversial among communities than cultural landscape restoration. A number of species have been reintroduced into areas where they were once resident including condors in the United States, rhinoceroses in Nepal,\textsuperscript{51} and Arabian oryx in Oman and Jordan.\textsuperscript{52} In 1999, the World Conservation Union published guidelines on species reintroduction and observed that care must be taken where animals are introduced, and to the extent that the reintroduced animals are too dangerous “removal or destruction of the released individual should be considered.”\textsuperscript{53} The reintroduction of large predators has, in particular, generated a fury of public outcry. For example, reintroducing the grey wolf in Idaho\textsuperscript{54} has pitted national environmental groups against local communities, some of whom view the restoration efforts as threats to their ranching livelihoods. The visceral reactions elicited among these groups indicates a continuing disconnect between ecological needs of keystone species and social governance systems.\textsuperscript{55}

Even though attempting to resurrect environmental conditions from a bygone time remains an exercise in restoration fiction, there are a number of private programs that are pursuing radical rewilding by introducing species that have been extinct from a range for a long period of time in hopes of restoring historic ranges and possible historic landscapes. For example, the Rewilding Institute has been reintroducing Bolson tortoises onto private ranches in the American Southwest. Once found in New Mexico, this animal’s only native range today is in a small portion of the Chihuahuan desert. In addition to these more pragmatic ideas of extending species range, the Rewilding Institute has also entertained the idea of

\begin{thebibliography}{999}
\bibitem{Payments} Some of the socio-ecological disconnects implicit in the program were addressed by payments administered by environmental non-profits to impacted stock owners.
\end{thebibliography}
Pleistocene Megafauna Rewilding with the provocative proposal to introduce elephants, lions, and tigers on the North American continent in hopes of creating new ranges for threatened animals by attempting to fill historic niches within the Northern American landscape once occupied by mastodons and saber-tooth tigers.56

In the Netherlands, conservation groups are experimenting with a large historical landscape restoration project. The Oostvaardersplassen is a 6,000 hectare Dutch nature reserve where scientists have reintroduced ungulates to maintain open grasslands in order to create conditions for animals and plants that have largely disappeared under the impact of farming.57 Conceived of as a “large, natural functioning area . . . where natural processes get the chance to evolve,”58 the Oostvaardersplassen is controversial as a restoration project because it has allowed for natural processes such as malnutrition to claim large numbers of introduced species. The sustainability of the project is open to some question given that the project operates entirely within fenced in parameters.

Notably, these more ambitious historical restoration projects take humans out of the “rewilded” landscape. As these projects are being conceived, humans are not part of the ecological system that these projects attempt to revive, but instead merely ghosts in the machine. The Glen Affric National Nature Reserve in Scotland with its Caledonian pinewoods also demonstrates why this approach of writing humans out of the landscapes may be problematic in practice. Research by paleo-ecologists indicates that Scotland was originally a habitat for open deciduous woods like birch, alder, and willow interspersed with grasslands rather than the now iconic Scottish highlands mix of pinelands and heather.59 However, civil society groups today are not engaged in restoring mixed woods but rather in pursuing a 600 square mile woodland restoration area that will restore pinewoods as one of the baseline species in order to provide for a pinelands landscape.60 If the project is to be historically accurate, should the Scottish people be expected to remove the familiar heather and the pine stands in order to return to an earlier habitat, or is it sufficient to seek to conserve what a community believes represents a culturally relevant

58. Id. at 36.
60. See David Reid, The Agreement Between Forestry Enterprise and Trees for Life on Work in the Glen Affric Caledonian Forest Reserve, CALEDONIA CTR. FOR SOC. DEV., http://www.caledonia.org.uk/socialland/affric.htm (last visited Mar. 25, 2013) (observing that the NGO is also interested in reintroducing absent species such as the lynx, the bear and the wolf).
baseline? In other words, whose timeline matters? Even if one could technically achieve historical restoration objectives, are these projects desirable given that adjacent ecological communities of species may have changed sufficiently so that any historic restoration project would be a lone incompatible island in a sea of change? Maintaining the product of historic restoration projects might require constant inputs of labor and resources because times have changed and will keep on changing.\(^{61}\)

Given that these projects depend on human intervention and potentially on a relinquishment of human physical safety in the case of a true Pleistocene Megafauna Rewilding, this form of domestic restoration peddles a romantic vision of a pre-human universe. While there are few practitioners of truly “historical” restoration, this “resurrection” aspect of domestic restoration has some appeal with some scientists as a goal. For example, Ryan Phelan and Steward Brand, in their “Revive and Restore” project, are to use genomic editing to bring back extinct species such as the Passenger Pigeon.\(^{62}\) There is, however, little legal support for these projects. While there are requirements to conserve and preserve species that are on the brink of extinction, there are as yet no legal requirements to restore species that have gone extinct. The lack of broader social support for these sorts of projects might not necessarily come from the technological innovation inherent in some of these proposed projects, but might also be the product of a lack of interest. The species that we have already lost are not part of our lived experiences with the landscape.

Restoration as historical reconstruction will remain a marginal enterprise outside of most legal frameworks. While historical restoration may be accepted in limited situations to address cultural needs of certain groups or as a technical challenge for science, the practice is unlikely to gain broad public traction as a viable restoration strategy. It is both literally and figuratively “restoration past.”

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62. See Stewart Brand, The Dawn of De-Extinction: Are You Ready?, THE LONG NOW FOUND., http://longnow.org/revive (last visited Mar. 25, 2013); see also Brockman, supra note 2 (“If you could actually bring back anything, would you bring back the California grizzly bear? A species that could eat people? Well, we recently were at the California Academy of Sciences, up front and personal with “Monarch,” the last California grizzly, a beautiful specimen there, and we were joking, and not really joking, saying, ‘Well, what if you could genome edit the California grizzly so that it didn’t like the taste of people?’ That would be kind of interesting! Big megafauna, good for the land, but take the fear of it out for people. The truth is all of this could someday be possible.”).
2. Restoration Present: Restoration as Remediation, Restitution and Project Mitigation

Restoration is a relatively well-accepted idea for post-project mitigation that is required in response to either an environmental impact analysis or a court restoration order. Private entities that benefit from damaging the environment are expected to either replace environmental values on site or to offset damages through investment in offsite habitats. In addition to project-by-project mitigation to restore damaged ecological values, there are a number of both privately administered and state-led restoration efforts motivated by legal remediation requirements under remediation laws or court orders.

a. Remediation Laws

Remediation is not the same as restoration, but in community discourse, the idea of returning some ecological value to a site by cleaning or removing contaminated soil may have become synonymous with site restoration since the site may once again be “useable” particularly for human development (e.g. recovery of brownfields). Public entities are expected to oversee site specific mitigation through local or national regulatory agencies. Public entities must also undertake mitigation where it is difficult to ascertain what parties can be held liable for damage such as the “legacy pollutants” left over by the use of mercury to extract gold in California.63 Many of the national laws that reference restoration use the word “restoration” as a proxy for remediation. Unlike the use of the term “restoration” by ecologists to refer to a healing process for re-establishing an ecosystem that has been degraded, damaged, or destroyed, the term “remediation” is limited to removal of contamination and pollution.

In the United States, the government actively removes contamination from certain national priority list sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).64 The U.S. Environmental Protection Agency (EPA) is authorized to remediate sites on private lands and seek contribution from private owners. Sums recovered as contribution are retained by the government but can only be used to “restore, replace, or acquire the equivalent of such natural resources.”65 While in principle CERCLA furthers mitigation for

65. Id. § 9607.
environmental values, agencies may agree to resource replacements that are not equivalent in terms of system function.66

A similar example of government legislation directed at cleanups of contaminated and damaged sites is found in Europe. The European Union Environmental Liability Directive of April 21, 2004, provides for government engagement in restoration activities like its transatlantic counterpart, CERCLA.67 Where environmental damage has occurred, the competent authority in each Member State will undertake restorative measures and recover costs later if an operator that has caused the environmental damage fails to undertake adequate restorative measures.68 For example, in Italy the Code of Environmental Law provides that environmental regulators will carry out remediation work where the polluter cannot be found or refuses to cooperate and the costs of remediation will become an encumbrance on the land.69 The motivation behind implementing the Directive is to prevent ongoing damage to the environment and to remedy existing environmental damage in compliance with the European Union’s shared environment policy.70

The European Union’s emphasis on remedial actions reflects a shared understanding of the need for states to restore damaged ecosystems both independently and across borders.71 In terms of what is expected as a baseline from the various states, the Directive provides in Annex II “a common framework” to describe restoration efforts for water, protected species, natural habitats, and land and, expects states to deliver a combination of primary and complementary remediation for these natural resources.72 Primary remediation “returns the damaged natural resources

66. Id. art. 6.


68. Id. art. 6.


70. Consolidated Version of the Treaty on the European Union, art. 3 (3), Mar. 30, 2010, O.J. (C 83) 17 (“[T]he Union shall work for . . . a high level of protection and improvement of the quality of the environment.”).

71. Id. at 28 (Article 21(2)(f) provides that in the field of international relations the Union shall “help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources”); see also EU Liability Directive, supra note 67, at art. 15 (1) (“Where environmental damage affects or is likely to affect several Member States, those Members States shall cooperate . . . with a view to ensuring that preventive action and, where necessary, remedial action is taken in respect of any such environmental damage.”).

and/or impaired services to, or towards, baseline condition.” 73 Complementary remediation includes additional measures that are taken when primary remediation fails to restore a site. These complementary measures are expected “to provide a similar level of natural resources and/or services, including, as appropriate, at an alternative site, as would have been provided if the damaged site had been returned to its baseline condition.” 74 Exceptions to full remediation are made depending on whether the risk to human health, water, protected species, and habitat is no longer significant and costs associated with the restoration are disproportionate to the level of ecosystem benefit. 75 Regarding standards for remediation, states are expected “to ensure, as a minimum, that the relevant contaminants are removed, controlled, contained or diminished so that the contaminated land, taking account of its current use or approved future use at the time of the damage, no longer poses any significant risk of adversely affecting human health.” 76

What is similar in both the US and the European remediation laws is a focus on mitigation for a selection of ecosystem services by creating case-by-case cleanup plans based on liability or threats of liability. In execution, both systems are structured to reduce imminent threats particularly to human health but not necessarily for long-term recovery against threats to ecosystem functions. What is largely achieved in these types of remediation projects is a reduction of the toxicity of the landscape. Notably, neither law focuses on creating lasting or large-scale environmental conservation because both laws are liability laws focused primarily on reducing impacts to human health (with some consideration in the EU directive to protected species), and secondarily on identifying culpable parties. Any legal obligation to create ecologically self-sustaining lands is tangential to the object and purpose of the statutory schemes.

The potential world of “restoration present” based on remediation measures shares with the “restoration past” strategy some of the same gaps between social factors and environmental factors. In “restoration past,” environmental factors eclipsed social factors such that many of the futuristic visions based on flashbacks to the past have no credibility in the current governance system. Here, “restoration present” emphasizes immediate social factors at the potential expense of systemic environmental losses. While remediation is an essential tool for government agents to demand compensation from industries and individuals who have intentionally or accidentally damaged the environment, it is an isolated

73. Id. at Annex II (1)(a).
74. Id. at Annex II (1.1.2).
75. Id. at Annex II (1.3.3).
76. Id. at Annex II (2).
strategy that fails to acknowledge that ecological restoration efforts cannot be limited to remediation requirements. There are many uncontaminated regions where fragile ecosystem functions are threatened by ongoing processes that do not need permits, yet there is no legal requirement for mitigation of impacts of legal activities on private lands such as farming and clearcut timber removal that threaten landscape connectivity.

b. Remediation and Restoration Orders

In addition to the national and regional restoration laws that largely promote remediation or mitigation efforts in case of threatened damage, there are also court orders that require remediation and restoration efforts by parties that have already damaged the environment. For example, in Argentina, the Supreme Court in Mendoza v. State of Argentina\(^77\) ruled that the federal government, the city of Buenos Aires, and the province of Buenos Aires had violated a constitutional right to the enjoyment of a healthy environment by failing to maintain the health of the Riachuelo River in Buenos Aires, and had an obligation to restore the environment. The federal, provincial, and local governments were then assigned to clean up the river and create an emergency health plan.\(^78\)

As another illustration of mitigation, the United Kingdom Environment Agency has established an indirect adjudicatory model for requiring restoration activities by regulated entities. Under the Regulatory Enforcement and Sanctions Act 2008, the Environment Agency is empowered since January 4, 2011 to issue civil sanctions instead of pursuing criminal sanctions for violations of environmental law.\(^79\) Among the civil sanctions that are available to the agency in redressing environmental damage is the issuance of restoration notices where a recipient is requested within a set period of time to take steps to restore the harm they have caused. The Agency is also empowered to enter into “Enforcement Undertakings,” where a party that has caused environmental harm may make an offer to the Agency that will commit the environmental offender to restoring the environment to the condition that would have existed before the offense or ensuring an equivalent benefit elsewhere if restoration is not possible.

Restoration orders are a common legal remedy for courts faced with ecological damage. For example, in Chile, parties that cause environmental

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\(^78\) Id.

damage may be required, under Law No. 19,300,\textsuperscript{80} to restore the environment by undertaking a restoration action. A number of African States also provide for restoration orders. Likewise, in Uganda, the National Environmental Management Authority (NEMA) may issue an environmental restoration order to require a party “to restore the environment as near as it may be to the state in which it was before the taking of the action which is the subject of the order” and to recover costs of actions necessary to restore the environment. Parties have 21 days to respond.\textsuperscript{81} The Ugandan Constitutional Court recently found NEMA’s issuance of a restoration order requiring the removal of a private home from wetlands to be within the constitutional powers of the agency.\textsuperscript{82} In Kenya, the National Environment Management Authority has the power under the Environmental Management and Coordination Act to issue restoration orders.\textsuperscript{83} Such orders have been issued. For instance, in an oil spill that led to a fire, the Kenyan authority issued a restoration order to rehabilitate flora and fauna along the river as well as the contaminated soil.\textsuperscript{84}

c. Restoration Efforts as Project Mitigation

Just as remediation efforts can be problematic because they involve only a limited number of ecological restoration parameters, allowing for mitigation as a standard restoration strategy for projects that have yet to be constructed can be problematic. While mitigation ratios will vary depending on the project and the jurisdiction, a developer will be expected to replace at least one acre of development with one acre of mitigation or some larger proportion of mitigated lands (2:1 and 3:1 mitigation is common). Unfortunately, there is no possibility at the start of most projects to know whether the mitigation site will be adequate to address the loss of ecosystem structures and function from the project site. For example, with wetland mitigation, many of the replacement wetlands provided to meet the mitigation requirements fail to sustain basic wetland functions.\textsuperscript{85} Further, in

\begin{footnotesize}
\begin{itemize}
\item The National Environmental Statute, Part IX, §§ 68–70, Uganda (1995).
\item Amooti Godfrey Nyakana v. NEMA, Constitutional Petition No.03/05, High Court of Uganda (Nov. 29, 2009), available at http://www.elaw.org/system/files/Constitutional+Petition.pdf.
\item Martine Maron et al., Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies, 155 BIOLOGICAL CONSERVATION 141, 143 (2012) (observing that replacement of wetland acreage may not deliver ecosystem restoration benefits such as a replacement of wetland soils or ecosystem functions such as nutrient cycling because of the complexity of mitigating for whole-ecosystems).
\end{itemize}
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undertaking restoration work, many highly qualified ecologists find themselves facing surprises. For example, in a project in San Diego to reconstruct marshland, the restoration team found itself planting species that did not grow as expected, attracting large numbers of undesirable insects, and growing algal mats that ended up attracting large quantities of birds that ended up trampling the plantings of other seedlings. In retrospect the team realized that there were so many factors to be considered in the site-specific restoration, ranging from how isolated or connected the site was to the fluctuating salinity of the water to the controllability of invasive species from neighboring sites.

Restoration using a mitigation strategy faces the same problems of piecemealing as restoration using a remediation strategy. Both forms of “restoration present” are ex post responses to damage. Even in the case of environmental restoration projects that are conducted before a development project is begun, there is a quid pro quo attitude embedded in the restoration efforts. Unlike the proposal presented in Part III for ecoscapes, the “restoration present” approach is less concerned with protecting places at an appropriate socio-ecological scale than with delivering marketable products. Hence, in response to mitigation demands, we end up with the current phenomena of mitigation banks where either land of high ecological value is set aside in perpetuity or, in a few instances, low value land is restored to high ecological value. In principle this seems desirable, except that existing mitigation banks are geographically small, may not deliver adequate ecological values, and many have limited resources to maintain ecological values in perpetuity. There have been small successes but an overall failure to restore ecological systems in the face of the Anthropocene.

3. Restoration Yet to Come: Restoration as the Delivery of Ecosystem Services and Markets

In 1996, the Ecological Society of America observed that defining an ecosystem is challenging because it can scientifically refer to numerous locales, beyond what might be environmentally meaningful from a protection perspective. The authors noted that, “a dung pile or whale

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87. *Id.* at 11.
89. *Id.* at 13 (stating that the oversight required for wetland mitigation may only be five years even though wetlands may take decades to be established).
carcass are ecosystems as much as a watershed or lake.”90 Because this was true, policymakers understood that they needed to be more specific about what they wanted society to invest in regarding resource protection. Sometime in the late 1990s, they struck upon the idea of “ecosystem services.”

Paul and Anne Ehrlich made the point that ecosystem functions have inherent value for humans and, in 1981, coined the term “ecosystem services” to urge policymakers to protect whole ecosystems as units that are greater than the sum of the various non-integrated individual parts. Their idea, however, became commoditized when the spotlight shifted from “ecosystem services,” providing an ecological perspective on human needs, to the term providing a quantifiable economic perspective on ecological “goods and services.”91 What can be quantified can theoretically generate markets. Identifying restoration as a component of a market system of tradable goods and services has a potential to be profitable.

Restoration of ecosystem services involves intentional efforts to return an ecosystem through total restoration, rehabilitation, remediation, or reclamation to some condition where the ecosystem is capable of delivering ecosystem services that are equivalent to the services delivered before the ecosystem became degraded. Services that might be “restored” include ecosystem-based flood control, clean water, pollination, food production, refuge for diverse plant and animal species, and recreational services.92

The idea of ecosystem services has gained strong traction in the last decade with proponents arguing for restoration efforts as financially wise investments for society93 and legally sound bases for legal reform.94 The idea of ecosystem services has definitely motivated recent government actions and laws. For example, Southeast Asian governments have been investing in long-term coastal ecosystem restoration projects in response to ongoing sea level rise and disasters such as cyclones and tsunamis. In

92. Id. at 254.
93. See, e.g., NATURE’S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS (Gretchen C. Dailey ed., 1997); James Salzman et al., Protecting Ecosystem Services: Science, Economics, and Law, 20 STAN. ENVTL. L.J. 309, 309–10 (2001) (emphasizing that maintenance of natural ecosystems and the services they provide should be a top priority of the Environmental Protection Agency); Barton H. Thompson, Jr., Ecosystem Services & Natural Capital: Reconceiving Environmental Management, 17 N.Y.U. ENVTL. L.J. 460, 460–64 (2008) (insisting that ecosystem services are of extreme importance to environmental researchers and policy makers because of the valuable services they provide).
Bangladesh, the government has been sponsoring since 1961 an ongoing mangrove reforestation and afforestation program along the coastal plain to ensure a number of ecosystem services including protecting its population from natural catastrophes, conserving newly accreted lands, producing wood, and preserving estuary ecosystems. \(^{95}\) After the 2004 tsunami, the Indonesian government embarked on a program to reforest 600,000 hectares of depleted mangroves. \(^{96}\) Similar government financed programs are operational in Thailand. \(^{97}\)

Restoration as a conservation strategy is offered as an antidote to ongoing economic harms. In the U.S., laws like the Elwha River Ecosystem and Fisheries Act, \(^{98}\) Federal Aid in Wildlife Restoration Act, \(^{99}\) Klamath River Basin Fishery Resources Restoration Act, \(^{100}\) New England Fishery Resources Restoration Act, \(^{101}\) and the Trinity River Basin Fish and Wildlife Restoration Act \(^{102}\) all provide for restorative activity targeted at provisioning ecosystem services associated with human interests in fish and game.

The concept of “ecosystem services” has received international acceptance with the creation of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). \(^{103}\) Formulated on the same idea as the Intergovernmental Panel on Climate Change and drawing explicitly on the Economics of Ecosystems and Biodiversity work.

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chaired by primarily economists, the IPBES is designed to assist
government policymakers in understanding the latest biological and
etiological science to assist with ecosystem valuation. Governments and
intergovernmental organizations will have the opportunity to request
scientific analysis by IPBES on issues involving “biodiversity” and/or
“ecosystem services.” By including “ecosystem services” within its
research agenda, the IPBES efforts seem to be focused largely on human
needs and market mechanisms. It is curious that the research arm is not
simply focused more generically on “ecosystem” research, which would
encapsulate a greater number of ecosystem research perspectives. It is
possible that the organizers of the platform conceived of “biodiversity” as a
counterpoint to “ecosystem services” with biodiversity focused on non-
human species. In any case, “ecosystem services” has global policy
approbation.

Yet a world motivated by the development of “Green Infrastructure”
may be a future of unintended consequences. There are a number of
problems inherent in the concept of ecosystem services as motivating
markets. First, as Palmer and Filoso observe, restoration is still a
developing practice and as such there is a danger that the so-called restored
ecosystem services do not accurately reflect the losses of ecosystem
services already experienced within the system. Second, as Peterson and
others have pointed out, the neoliberal market logic of ecosystem services
cannot fully protect ecosystem functions because there are no existing
markets for certain key functions such as restoration of self-sustaining soil
fertility. Soil fertility today is sustained instead by annual mechanical
inputs of various mass-produced chemicals.

Third, there can be no single market goal for restoration because
ecosystems are continually in transition depending on numerous synergistic
or competitive ecological and social factors. In practice, certain ecosystem
values become prioritized when markets are set for certain ecosystem
services. For example, when we create a monoculture plantation for carbon
storage in response to a market for carbon sequestration, we end up with
losses of other ecosystem values such as resilience of habitat. If we

104. Report of the Second Session, supra note 103, at 16 ("Ecosystem services" for the purpose of
the Platform are defined as “the benefits that people obtain from ecosystems.”).
105. Margaret Palmer & Solange Filoso, Restoration of Ecosystem Services for Environmental
Markets, 325 SCIENCE 575 (July 31, 2009) ("[T]he flurry of interest in ecosystem markets... is
obscuring the fact that restoration projects, particularly those in aquatic ecosystems, are not providing all
the services of healthy ecosystems. Stream and river restoration projects are often based on reshaping a
channel and adding wood or rocks, yet there are few documented cases in which this has resulted in
improved water quality or biodiversity comparable to those in undisturbed streams.").
106. Markus J. Peterson et al., Obscuring Ecosystem Function with Application of the Ecosystem
Services Concept, 24 CONSERVATION BIOLOGY 113, 115 (2010), available at
introduce species to serve one ecological niche, we may end up inadvertently impacting other species.\textsuperscript{107} Ecosystem services as a concept is prone to over-simplification with vain attempts “to fit the complex nature of ecosystem functions into a mechanistic analytical framework used to handle the relatively simple nature of human-made commodities.”\textsuperscript{108}

Even assuming that one could have more complex nested groups of ecosystem services and that we can create markets that reflect the complexities of a variety of ecosystem services; we are still faced with a system that will require constant social inputs. In many communities, the current model of restoration for ecosystem services relies on payments for ecosystem services, which in theory is straightforward. Experts define a specific ecosystem service and identify a monetary value for the service. Buyers compensate communities and individuals for maintaining or restoring a service. In concept it seems like a healthy incentive for good stewardship; in practice, it ends up with programs that are plagued by high transaction costs such as the Everglades Restoration project.\textsuperscript{109}

There is ample political will for ecosystem services perhaps because they segue nicely into existing market frameworks as well as social discourses on sustainable development and the “green economy.”\textsuperscript{110} Restoration for ecosystem services has been heralded as a sensible policy approach for the Anthropocene and international research groups and multilateral agencies have put forward numerous successful examples.\textsuperscript{111} Perhaps ecosystem services are considered the future for restoration because it is a model that our neoliberal economies understand. Yet there are reasons to be discontent with a commodity approach. There is the possibility that if we identify global markets in ecosystem services, some countries in search of investment opportunities and particularly vulnerable communities in those countries, may find themselves captive to the market. If, theoretically, palm oil plantations were to reduce their operations, would these areas be restored to lands that were familiar to Indonesians or

\textsuperscript{107} Richard S. Fulford et al., \textit{Evaluating Ecosystem Response to Oyster Restoration and Nutrient Load Reduction with a Multispecies Bioenergetics Model}, 20 ECOLOGICAL APPLICATIONS 915 (2010) (describing the introduction of oysters to handle eutrophication problems having unintended consequences on other aquatic species).

\textsuperscript{108} Erik Gomez-Baggethun & Manuel Ruiz Perez, \textit{Economic Valuation and the Commodification of Ecosystem Services}, PROGRESS IN PHYSICAL GEOGRAPHY 9 (2011) (observing that “[t]he attempt to compartmentalize ecosystem services as discrete unit, however, neglects the fact that ecosystem functions are inextricably linked to each other”).

\textsuperscript{109} James M. Bullock et al., \textit{Restoration of Ecosystem Services and Biodiversity: Conflicts and Opportunities}, 26 TRENDS IN ECOLOGY AND EVOLUTION 541, 546 (2011).


\textsuperscript{111} Id. at 19.
Malaysians? Maybe. But, if there is a global market for carbon sequestration and participation in the market is a top priority for a state, then a plantation of invasive but high carbon absorption plants would seem to be as desirable as any other restored landscape if the state metric is based on the economic opportunity aspects of ecological restoration. A paradigm of restoration for the purpose of delivery of ecosystem services may be particularly destabilizing for conserving biodiversity.  

Markets for single ecosystem services are no more robust for the local community that hosts them than markets for ecotourism. It was hoped that ecotourism would bring relief to isolated communities around the world, yet it has not fulfilled its promise for development. Poor communities cannot build their developmental futures on the whims of powerful communities of interest. Relying on the free market system to protect ecosystem services may be naïve since an ecosystem service assigned a monetary value today may be altered by new monetary values in the future. Referring to an effort to protect pollinators in Costa Rica to deliver a provisioning ecosystem service, Douglas McCauley makes some important observations in a commentary in Nature when he observes that:

A recent study found that native bees from two forest fragments adjacent to Finca Santa Fe yielded approximately US $60,000 a year in pollination services to the coffee plants. . . . Shortly after the conclusion of the study, however, Finca Santa Fe, probably affected by one of the worst dips in coffee prices this century, cleared its coffee and planted pineapple instead. Pollinators are irrelevant to pineapple production. . . . [T]he monetary value of the pollinators in forest fragments around Finca Santa Fe dropped from $60,000 per year to zero. . . . if there is a ‘devaluation’ of nature, as in the case of Finca Santa Fe, what are we to tell local stewards who have invested in our ideology, and how can we protect nature from liquidation.  

For most people, not every act is motivated by a monetary incentive. Some restoration acts are done out of a degree of selflessness and a pursuit of “‘feeling I am doing the right things’” or “‘being a part of something

112. Dale D. Goble, What are Slugs Good For? Ecosystem Services and the Conservation of Biodiversity, 22 J. of Land Use 411, 439 (2007) (”Ecosystem services must be correlated to biodiversity so that marketing an ecosystem’s services [necessarily] conserves that ecosystem’s diversity. The evidence suggests two problems that make this correlation unlikely. The first is the differing spatial and temporal scales of services and biodiversity. The second is the utilitarianism embedded in the concept of services. The combination of the two make the necessary correlation between services and the full complement of diversity unlikely.”).

profound.”¹¹⁴ In fact, the continued development of Payments for Ecosystem Services (PES) based programs and markets may “‘crowd out’ future environmental conservation behavior” as researchers have observed that socially valuable behavior is often motivated by moral concerns or civic duty and not by monetary rewards.¹¹⁵ With the three current faces of restoration, we have become obsessively target-oriented rather than process-oriented. We have focused on “ecosystems” to the exclusion of larger place-based systems of interaction between people and their environment. By focusing on piecemeal mitigation and restoring individual marketable ecosystem services independent of other ecosystem processes, we forget that we also have “‘place specific’” attachments that might motivate us to protect and restore.¹¹⁶ Because of our attachment to place, there is a strong potential for individuals to become “a conservative force within the ecosystem” and for our laws to reflect new restorative relationships between people and their places.¹¹⁷ Honoring our connection to a place as the starting point for restoration is the subject of the final part.

III. ECOSCAPES: RESTORING SOCIO-ECOLOGICAL LANDSCAPES

The focus of this paper has been on restoration and how the practice of restoration has been incorporated into existing domestic legal practices. As will be argued below, we need a new approach to restoration which relies on identifying socio-ecological systems, understanding ourselves as part of these systems, and creating governance policies at the highest levels to restore functions and structures of these socio-ecological systems. To address this gap, the final portion of the paper introduces a new concept: the ecoscape. This idea is proposed both as an intellectual concept for better understanding socio-ecological relationships but also, and perhaps more importantly for setting conservation and restoration priorities in the Anthropocene.

The following subsections define the concept of an ecoscape, explore a number of promising precursors to ecoscapes, and then make a number of modest proposals about priorities for furthering ecoscape thinking. These sections also acknowledge that there are challenges to implementing a more holistic restoration framework in a timely fashion.

¹¹⁵ Nicolás Kosoy & Esteve Corbera, Payments for Ecosystem Services as Commodity Fetishism, 69 ECOLOGICAL ECON. 1228, 1233 (2010).
¹¹⁶ Kidner, supra note 114, at 266.
¹¹⁷ Id.

What is needed more than ever is an approach to restoration that focuses not on the surface aspects of restoration but on system functions. As Gene Likens and F. Herbert Bormann wrote forty years ago: “[I]n the face of man’s exploding population and dwindling resource base, his very survival may depend on an accurate knowledge of ecosystem function, i.e. maintaining the continuous flow of energy and nutrients vital to the existence of ecological systems and life itself.”\(^{118}\) Given the intended and unintended damage to so many ecological systems through erosion, development, and industrialization, the only possibility for maintaining “the continuous flow of ecological systems” in our current situation of fragmented ecosystems may be restoration. But restoration at the level of isolated mitigation or ecosystem service projects is not enough to return “flow” at a meaningful scale.

What is needed is a cognitive shift by both decision-makers and other individuals to an ecologically based restoration that begins with the land and water as places that we inhabit and presumably value as something more than fungible commodities. For restoration to be effective as a long-term ecological conservation strategy, we need to recover natural processes to a condition where they might be capable of natural resilience.\(^{119}\) This is a tall order that requires premeditated thought about the complex interaction of natural processes, what ecological conditions may be necessary to ensure a greater degree of resilience within a system, and how much land is necessary for those processes.

As ecosystem goods and services have declined and threatened basic environmental processes such as pollination, there has been no systematic response in terms of land and water management practices to restore these goods and services as part of a larger place-based system. There has instead been an institutional focus on recovering ecosystem services on a service-by-service basis. Projects define themselves in terms of the ecosystem service that they seek to restore. For example, in the Catskill/Delaware Watershed of New York, the emphasis is on natural buffers for watershed protection.\(^{120}\) In areas such as Australia, the emphasis has been placed on


\(^{119}\) RESILIENCE ALLIANCE, *ASSESSING RESILIENCE IN SOCIAL-ECOLOGICAL SYSTEMS: WORKBOOK FOR PRACTITIONERS* (2010), available at www.resilience.org (describing the process of increasing the ability of the ecosystems ability to adapt to change).

carbon sequestration through reforestation efforts. More than one service can of course be restored during a project but institutional metrics will be attuned understandably to those ecological goods and services that can be quantitatively measured and those goods and services that will bolster human economies and communities. Those goods and services that are less capable of monetization such as biodiversity may be jeopardized by legislative decisions regarding restoration priorities.

With ecosystem services as the emerging dominant approach towards restoration, we will collectively end up with a patchwork of commodity policies rather than a workable conservation policy that focuses on the whole system rather than selective parts of the system. Richard Norgaard, one of the founders of ecological economics, is troubled that ecosystem services has become in vogue among policymakers. He writes, “environmental governance can no more succeed around the metaphor of ecosystem services apart from the richness of ecological thinking than mortgage markets can succeed on the myth that housing prices will always rise . . . . Somehow, we need to make a significant transition toward richer ways of understanding and governing.” We need policy that accepts complexity rather than reducing it to simplistic functions. Ecologists have been advocating that an organic system is always more than a sum of its parts.

David Quammen uses a clever humanistic metaphor to comment on ecological integrity. He wisely suggests that one large carpet is a very different resource functionally than the same carpet cut into thirty-six smaller pieces.

While conservation groups are not trained in the magic of restoring eggs from eggshells, there are opportunities to create a discourse of restoration and law that maintains focus on the larger landscape. Humans and our institutions must be part of this endeavor. In his early conservation essays and the Sand County Almanac, Aldo Leopold underscored that environmental restrictions and regulations that leave out the human element may ultimately fail because humans are an intrinsic part of the environment. Leopold proposed a “land ethic” and emphasized that people must

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122. Peterson et al., supra note 106, at 114.
123. Id.
124. Richard Norgaard, Ecosystem Services: From Eye-Opening Metaphor to Complexity Blinder, ECOLOGICAL ECON., 2009, at 7 (observing that emphasizing “stock-flow models,” which are important for understanding ecosystem service markets, “will likely lead to dominant ways of thinking in ecology that could substantially reduce scientific and public understanding of the true complexities of ecosystems that will lead to narrow management and future crises”).
cooperate to repair damage as both an ecologically and philosophically ethical act. Leopold also understood in his writings that not only do humans need the land but the land also needs us. Sometimes what the land needs most from us is an end to interference with ecology and evolution and the opportunity for nature’s processes to repair degraded lands. This is a difficult paradigm shift in light of our extraction-oriented economic and social systems. As a species, we rarely offer life-sustaining inputs into ecosystems. Yet we are capable of doing so if we are mindful in our relations with the land and this consciousness becomes reflected in our laws and policies.

Environmental historian Donald Worster persuasively argues that Leopold’s idea of a “land ethic” must form the foundation of the field of restoration ecology. While Worster used the term restoration ecology largely to refer to the burgeoning field of science-based restoration practice, there is also an urgent need for the land ethic to become the basis of how we are legalizing ecological restoration. If the “land ethic” is about valuing specific places to which we have intrinsic ties, restoration efforts must also be imagined as place-based efforts at a sufficiently large enough scale to be meaningful. People understand, value, and identify with places; many do not understand the abstractions of ecosystems, ecosystem goods, or ecosystem services. If somehow, law can shift its focus from detached concepts of “ecosystem management” to prioritizing the socio-ecological bonds that real people have with their physical environment, then environmental restoration may be possible at a larger and more meaningful ecological scale. Furthering a “land ethic” is not simply a project for civil society or for individuals; it is also a project for governments.

Many of our codified laws focus on human needs such as maximum sustainable yield in the ocean’s exclusive economic zones or reducing pollution loads in rivers. Those laws, which do not focus primarily on human needs such as the Endangered Species Act, have been the subject of political controversy because they have created in the minds of some individuals an “us” and “them” dichotomy. One potential strategy for bridging between anthropocentric and biocentric worldviews is for our

128. Id.
130. Richard Brooks, Ross Jones & Ross Virginia, Law and Ecology: The Rise of the Ecosystem Regime 383–85 (2002) (“The history of the relationship of ecology and environmental law reveal that they are most likely to come together when the public culture is focused upon the value of place or species… it is often the mixture of natural place and human culture which contributes to our valuing the place in question.”) (emphasis in original).
governance systems to focus on restoring long-term self-sustaining ecosystem processes within a place-based context.\textsuperscript{132}

One means of normalizing this place-based restoration is to shift our focus from the fragmented, market-driven approach of restoration to an “ecoscape” approach. The following section defines how an “ecoscape” as a socio-ecological concept may provide a better linkage between human governance structures and the physical environment than the term current technocratic “ecosystem management” approach.

B. What is an Ecoscape?

In some ways, it is easier, at first, to define an ecoscape by what it is not. It is not a synonym for the physical environment, for a landscape, or for an ecosystem, though it draws on each of these concepts. An ecoscape refers instead to a socio-ecological concept that links human place-based governance priorities with large-scale ecological restoration concerns. The choice to introduce a new term is an attempt to connect the dialogue between large landscape research found in the scientific literature with the scope of human planning.

The term “eco” comes from the Greek word for “household” and is incorporated in part because it is also a prefix in both the word economy and ecology. Like the term “household,” it can refer to both a place and a body of residents. The suffix “scape” derives from the Latin word for stem. Just as the stem connects the leaves with the roots, the suffix -scape denotes unity. So an ecoscape is a place intimately connected to a body of residents that is capable of ecological self-sustenance through governance at appropriate scales.

This concept of an ecoscape has been introduced in order to recognize that ecological governance requires deliberate human-initiated efforts to connect physical environmental places with the various groups of people making decisions about the given landscape or seascape including government officials, individual landowners, corporations, and civil society groups. Presently, as will be explored in the next subsection, most emerging ecoscape thinking is the product of scientists working with civil society groups who in turn work with individuals and government officials. As will be suggested in the following sections, government officials need to take a more active role in understanding the implications of an ecoscape for social and ecological planning since many potential ecoscapes will cross international and subnational political boundaries. It is in the political

\textsuperscript{132} Examples of ecosystem processes include forest succession, soil development, predator-prey interactions, pollination/transport of seed, decomposition, species competition, and hydrological flow regimes.
boundary regions where government involvement may be most effective in ensuring large-scale ecologically meaningful and socially acceptable restoration.

There have been some suggestions by some scholars for “ecosystem service districts” that would operate as institutions based on ecological units such as the watershed. While such ideas are valuable in terms of enlarging the ecological jurisdictional units, these calls do not address the challenges of system-wide restoration. Adopting watersheds as the basis for reconfiguring land and water practices may ultimately end up prioritizing certain ecological geographies over others in order to ensure that ecological values associated with water are protected over other ecological values such as land fertility.

In contrast, an ecoscape concept provides the opportunity to think outside of existing jurisdictional patterns and instead create jurisdictional patterns that reflect the experience of creating larger socio-ecological landscapes that a variety stakeholders are committed to restoring for both conservation and use. Scholars have been grappling with the need to create legal regimes that link people to places. As long as we do not have enough information to understand the key connections within seemingly disconnected environmental systems and as long as conservation efforts fail to take into consideration political boundaries including boundaries between public and private lands, we will have a need for ecoscape thinking. Ecoscape thinking shifts the fixation by government and private decision-makers over sometimes contentious jurisdiction and ownership to a potentially different legal framework based on the possibilities of protecting a sense of place.

Ecoscapes allow for the realization of ecosystem management at the landscape level. As several ecologists have observed, “without restoration at large spatial scales, the goal of protecting all species and ecosystems cannot be achieved.” The physical scale of ecoscapes is important for

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134. ROOKS, supra note 130, at 269 (describing nine elements of a place-based ecosystemic management regime including “an enabling law focusing upon the ecosystem and defining the objectives of its management” and “the establishment of a collaborative ecosystem governing process”).


environmental protection because ecoscapes allow for the protection of genetic, species, and ecosystem heterogeneity.\textsuperscript{137}

While landscapes may be dynamically changing environments and novel ecosystems are emerging all of the time, the concept of ecotope thinking provides a motivation for restoration because it focuses human attention, including our system of laws, on our relationship with the larger environment and on our role in recovering rapidly disappearing places. Protecting a socio-ecological “place” makes sense in the human psyche. After all, we are creatures of habit and part of that habit is having a place that looks and feels like someplace that we belong to or want to belong to. So if we come from the Pacific Islands, or want to experience the Pacific Islands landscape and seascape, we might expect palm trees along beaches and viable coral reefs. This may not have always been the ecological history of these islands but a certain degree of tropical vegetation and reef life features strongly in the cultural expectations of people from these regions today. Ecotope thinking might emerge where political communities react to a loss of culturally important environmental elements by either cooperating on restoration or demanding better governance over environmentally damaging behaviors.

The concept of protecting the environment as a social and political commitment is already understood by the international community as part of the UN Convention on World Heritage.\textsuperscript{138} The World Heritage Convention provides for protection of cultural landscapes that reflect a relationship between people and their natural environment. In addition to Tongariro landscape in New Zealand, the first UNESCO designated cultural landscape combining both natural community sites with sites that are important to the Maori people,\textsuperscript{139} there are eighty-five other national cultural properties as well as five transboundary properties.

Beginning in 1992, the World Heritage Committee revised its guidelines to include cultural landscapes based on a list of ten criteria.\textsuperscript{140} Two of these criteria are specifically ecologically based.\textsuperscript{141} Criteria IX provides for the protection of “outstanding examples representing significant on-going ecological and biological processes in the evolution of nature.”

\begin{footnotes}
\item[137] ALMO FARINA, LANDSCAPE ECOLOGY IN ACTION 89 (2000) (“[H]eterogeneity is more important for sustaining biodiversity [than previous models based on homogeneity of an area] heterogeneity is a property of the scale of landscapes.”).
\item[141] Operational Guidelines, supra note 140.
\end{footnotes}
and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals.  

Criteria X provides for protecting landscapes that “contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.” Of the approximately 91 cultural landscape projects registered with the World Heritage Committee, only three of the projects qualified on the criteria of protecting ecological processes and habitat conservation. In Gabon, the Ecosystem and Relict Cultural Landscape of Lopé-Okanda conserved the interface between dense and well-conserved tropical rainforest and relict savannah environments. In the United Kingdom, St. Kilda has been designated as an ecological cultural landscape based on its large bird colonies and the presence of three marine zones that support both marine and terrestrial biodiversity. In the United States, the Papahānaumokuākea Marine National Monument was designated to keep marine ecosystems and ecological processes intact by, for example, protecting large apex predators and restoring ecological processes on small islands and atolls within the monument.

Given the small number of projects being designated for international recognition, relying on the legalized recognition of a cultural landscape under the UNESCO Convention will not be sufficient for conserving most large-scale ecosystems. The motivation for most States to protect cultural landscapes is largely different from protecting a socially negotiated ecoscape. While a handful of global protected sites including the United States’ Papahānaumokuākea marine protected area and some of the single

142. Id.
143. Id.
island sites\textsuperscript{148} might be considered an ecoscape given the emphasis on large-scale protection coupled with some environmental values, most of the ninety-one properties listed by UNESCO are focused only minimally on protecting ecosystem processes through restoration. Unless there is greater attention placed by states especially in a transboundary context to protecting landscapes that meet especially Criteria IX, then there will be little synergy between UNESCO cultural landscapes and ecoscapes. What is important about the UNESCO cultural landscape program is that it represents an international precedent for legalization of landscape protection and an emerging norm for government protection of large-scale landscape and seascape through soft governance tools.

Landscape ecologists concern themselves with organic systems where the whole is always more than a sum of the parts\textsuperscript{149} and where certain premises of protection create sound planning rules: “bigger is better than smaller, connected is better than isolated.”\textsuperscript{150} The ecoscape becomes a physical form upon which and within which ecological connections are made possible between ecosystems, between differentiated populations, and between populations and ecosystems.\textsuperscript{151} Ecoscapes are both living systems and lived-in systems.

Ecoscapes dispel with the modern policy myths of a fixed subject for regulation. Unlike most contemporary political boundaries, ecoscapes are not fixed spaces. They depend on human interventions to define their boundaries and to identify subject ecosystems for restoration. As a result, ecoscapes can expand and shrink in order to respond to the level at which humans are willing to commit to restoring ecosystem functions. For example, an ecoscape might start as largely a watershed project, such as restoring sustainable populations of shellfish in the Chesapeake Bay, but might expand to include other stakeholders such as adjacent farmers with a concern for the sustainability of small scale farming or residents from neighboring cities who have some concern for the cleanliness of the Bay’s tributaries and surrounding forestland and a willingness to invest in restoring certain ecological values.


\textsuperscript{149} INGEGNOLI, supra note 125, at 18.


\textsuperscript{151} Non-connectivity is also possible within an ecoscape and may be important to ensure the genetic resilience of a given species. This line of reasoning is called the theory of “metapopulations” in ecological theory and explores interactions between and isolation of certain populations. DAVID GREEN ET AL., COMPLEXITY IN LANDSCAPE ECOLOGY 87 (2006).
C. Precursors to Ecoscapes

The idea of looking at landscapes as part of a system where the whole is greater than any assembly of the parts is not a new idea but has been well-developed by scientists and planners. As will be explained below in the first subsection, the idea that political boundaries do not align with ecological boundaries is also not new. What is new about the idea presented in this paper is the emphasis on (1) identifying shared socio-ecological spaces at the appropriate level in order to further long-term restoration objectives and (2) promoting high-level government action to harmonize transboundary decision-making concerning restoration. Before examining the potential role for governments in promoting ecoscape thinking, this paper reviews some government initiatives and a number of mostly civil society efforts to promote large landscape conservation across political boundaries.

1. Precursors to Ecoscape Concepts

This idea of designating large landscape and waterscapes for scientific work has already had some significant traction among both scientists and policymakers in countries such as the United States. Several scientists, including James Omernik of the U.S. Geological Services and Robert Bailey of the U.S. Forest Service have proposed the idea of “ecoregions” which are large areas that include similar geology, physiography, vegetation, climate, soils, land use, wildlife, water quality, and hydrology. Omernik has created maps for North America that include three levels of ecoregions. The first level includes fifteen ecoregions that can be used for collecting and comparing intercontinental data; level two contains fifty-two smaller ecoregions for collecting national level data; level three divides North America into 194 sub-ecoregions. On the macro level, Bailey has proposed fifteen ecoregion such as rainforest, savanna, and prairie that reflect very different diversity.

154. Id.
155. Id.
156. BAILEY, supra note 12, at 49.
The World Wildlife Fund (WWF) has also introduced its own concept of Global Ecoregions as a planning tool with 142 terrestrial, fifty-three freshwater, and forty-three marine ecoregions. WWF introduced its version of "ecoregions" as a chance to use ecological science in order to rank "Earth's most biologically outstanding terrestrial, freshwater and marine habitats" and prioritize conservation efforts. For purposes of conservation, an “ecoregion” is a “large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions.” Based on this definition, WWF has named a number of ecoregions including the Galapagos Islands, the Amazon Basin, the Serengeti, deserts of western Mexico, coral reefs of the Sulu Sea, and the forests of New Caledonia. While it is not clear from WWF’s publications, the concept of “ecoregions” seems largely focused on reducing human intervention in the ecoregion rather than understanding something more about the relationship between people and their places. WWF’s descriptions of ecoregions seldom recognize human beings as an intrinsic part of the biodiversity and are strangely and perhaps deliberately absent from their definitions.

Ecoregions are places that are bound by similar ecological values, and have become an influential idea for ecological research, civil society planning, and to a lesser extent government planning. Omernik and

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159. Id. at 168–69 (citing groups influenced by the concept of ecoregions including The Land Institute, The Nature Conservancy, and the Wildlands Project).
160. Id. at 135–46 (describing the use of ecoregions by the USDA for climate networks; the Long-Term Ecological Research Network of the National Science Foundation; the National Park Service for environmental sustainability; EPA for water body management; the North American Commission for
Bailey’s concept of ecoregions is sound from the perspective of holistic ecological management. Bailey is right that “[t]o conserve resources, we must be attentive to the sense of place, and match development to the limits of regions where we live.” Unfortunately, the ecoregion concept has made significantly less headway in terms of government policy. Perhaps, this is because the ecoregion concept relies on largely technical parameters rather than shared social understandings between people and their places. The “ecoscape” approach proposed in this paper is an effort to revitalize the potential of human governance to contribute to ecological restoration at levels large enough to be meaningful in terms of maintaining landscape/seascape-level ecological functions.

Some have proposed bioregionalism as a precursor to ecoscapes. Bioregionalism provides “reinhabitation” and “a body of thought and related practice” about “reconnecting socially-just human cultures in a sustainable manner to the region-scale ecosystem in which they are irrevocably embedded.” Bioregionalism is a broad-based grassroots movement concerned with place, politics, ecology, spirituality, and social change. It has become more of a gestalt than a physical concept. It is about integrating “mind and landscape, self and ecosystem, psyche and planet . . . cultivating mindfulness about human/nature relationships in the service of both self-realization and community health.” It is not about stimulating further government sponsored initiatives such as those proposed in this paper.

While the ecoscape broadens the concept of an ecoregion by highlighting political and legal mechanisms for decisionmakers to be more attentive to the sense of place, the ecoscape also narrows the ideological reach of bioregionalism and restores a role for governments. Like bioregionalism, ecoscapes are concerned with place and politics but instead rely on traditional channels of governments in hopes of place-based communities creating national, regional, or international priorities. As suggested earlier, many ecoscapes reach across international and national boundaries making diplomatic efforts and federal compromise for transboundary restoration particularly important. An emphasis on instilling ecological thinking at the highest levels of governance is essential to large-
scale restoration of socio-ecological systems since, as Ronnie Lipschutz suggests, governments support is “essential to the legitimation of local environmental governance.” \(^{171}\) And yet, most of the bioregional thinking is being done by civil society groups partially for fiscal reasons\(^ {172}\) and presumably also due to a lack of political commitment to large-scale ecological restoration.

2. Precursors to Ecoscape Practices

The concept of approaching conservation at a landscape/seascape level is beginning to resonate with policymakers who understand the dangers of continued habitat fragmentation and thus loss of connectivity. As a result, there are both top-down government funded efforts and bottom-up land initiatives to address the leviathan problem of large-scale conservation and restoration. Almost all of these initiatives are driven by contributions from environmental agencies or environmental advocacy groups. While these initiatives provide a framework to shift governance practices, they are not mainstream governance changes because a number of the targeted large landscapes seem to be valued more for their ecological values than socio-ecological values. Focusing largely on ecological values rather than socio-ecological values diminishes the importance of governance to the success of large-scale restoration projects. The governance aspect of the ecoscape discussed above in subsection b will be further refined as a policy suggestion in subsection d.

a. Top-Down, Large-Landscape Conservation and Restoration Practices

One of the premier large-landscape approaches to conservation and restoration is an effort initiated by the U.S. Department of Interior (DOI) called the Landscape Conservation Cooperatives.\(^ {173}\) There are presently twenty-two cooperatives administered by the Fish and Wildlife Service, including five cooperatives in Alaska, one in Hawaii, and one in the


\(^{172}\) Id.

What is innovative about these cooperatives is that they are public-private partnerships operating across political boundaries. For example, the North Atlantic Landscape Conservation Cooperative (LCC) has thirteen U.S. state partners, tribal partners, and Canadian provincial partners. The LCCs focus on a number of North American applied science problems related to climate adaptation, such as fragmented habitat, invasive species, and water quality. The implementation of the LCCs is expected to improve data sharing, communication between agencies and stakeholders, and supply science to inform conservation plans.

The concept of the LCCs was introduced in a Secretarial Order by Secretary of the Interior Ken Salazar in 2009 as a commitment to addressing the impacts of climate change. The Order works to coordinate climate change responses with impacts on resources under the stewardship of the DOI, and calls for the agency to work with a variety of public and private stakeholders to “develop landscape-level strategies for understanding and responding to climate change impacts.” While the word “restore” is not used within the Order, the Order implies that restoration is a viable strategy for conservation since it addressed the need for possible “acquisition of upland habitat and creation of wetlands and other natural filters and barriers to protect against sea level rise and storm surges.”

LCCs are not authorized to create binding regulatory networks and are limited to encouraging cooperation among stakeholders. While voluntary regulatory networks may emerge from this initiative and groups may agree to implement science-based conservation planning, there is no legal obligation to consider the LCC geographical unit in making future governmental decisions. What this means is that the LCC may inform a decision particularly if the decision is being made by the DOI but has no


176. Id.


178. SECRETARIAL ORDER No. 3289, supra note 173, at 3.

179. Id.

180. Id. at 1.
legal authority to influence the decision. This is where the concept of the ecoscape becomes relevant as a subsequent policy step towards building socio-ecological concerns into landscape-level restoration and conservation projects.

In addition to the U.S. LCCs, notable for their collaborative systems approach to landscape-level conservation planning for climate change adaptation, a number of nations in the last few decades have also invested national funds in large-scale restoration projects. Most of these projects are selected on an ad hoc basis. For example, in the U. S. there have been government investments in restoring the Everglades and the Chesapeake Bay. There have recently been a number of examples of national government legislation encouraging broader landscape-level restoration facilitated or funded in part by the government.

In 2000, the U.S. Congress passed the Estuaries and Clean Waters Act providing for development of a national estuary habitat strategy and financing for habitat restoration projects. Restoration is specifically defined in the Act as including activities that improve or create estuary habitat “with the goal of attaining a self-sustaining system integrated into the surrounding landscape” and including control of nonnative species, reintroduction of native species, and construction of reefs. The Act also created an Estuary Habitat Restoration Council to develop a restoration strategy with the goal of restoring 1 million acres of estuary habitat by 2010. In addition to the Estuaries and Clean Waters Act, there are a number of examples of site-specific or ecosystem-specific restoration laws. For example, the Lake Pontchartrain Basin Restoration Act of 2000 in Louisiana emphasized restoration of the second largest inland saltwater body in the U.S., and the Tijuana River Valley Estuary and Beach Sewage Cleanup Act of 2000 focused on a cross-border challenge of transboundary sewage.

Both the LCC and remediation law models are limited in their ability to carry out the ecoscape concept. The LCC efforts unfortunately lack social governance authority because the efforts focus mainly on academic

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183. Id. § 102.
184. Id. § 103.
185. Id. § 103(4)(B).
186. Id. § 106.
187. Id. § 501.
188. Id. § 802.
research and not on politics. In the case of estuary restoration laws, the restoration efforts give some lip service to multistakeholder initiatives, but provide only the most limited incentives to dispersed private actors to contribute to restoration efforts. 189

b. Bottom-Up, Large-Landscape Practices: A Review of Large-Landscape Conservation Projects

One of the earliest precursors to ecoscape thinking is the “Greater Yellowstone Ecosystem” (GYE) project190 which enlarged the management unit associated with the Yellowstone ecoregion beyond the federal boundaries of Yellowstone National Park to include important outlying areas in Idaho, Montana, and Wyoming. The expanded boundary includes two national parks, seven national forests, three national wildlife refuges, an Indian reservation, and around a million acres of private land. The private land provides buffers to federal lands and frequently includes rivers and migration corridors.

The Yellowstone to Yukon Region Conservation Initiative (Y2Y) project, started around 1993, extends the geographical range of the GYE project.191 The Y2Y was created by hundreds of academics and private conservation groups as a biodiversity initiative to include collective efforts targeted at around 1.2 million square kilometers.192 This Y2Y project also includes a number of different private stakeholders.193 The project encompasses swathes of two Canadian Provinces (British Columbia and Alberta), two Canadian territories (Yukon and Northwest), and five states in the U.S. (Montana, Idaho, Wyoming, Oregon, and Washington). The Y2Y ecoregion project is one of the most ambitious ecological conservation projects, encompassing programs for several large predator species as well as the headwaters of seven major rivers.194 As conceived, the project relied on the vision of a number of biologists and policymakers. Canadian attorney Harvey Locke was particularly instrumental in defining the project around three principles: connectivity, ecological processes, and umbrella

189. See id. § 203 (In the Estuary and Clean Water Act, private individuals are only mentioned once as being able to apply for small grants for restoration work on the Chesapeake Bay.).
192. Id. at 136–37.
193. Id. at 137.
194. Id. at 139–40.
species. Connectivity and umbrella species are the easiest to conceptually implement because they are easy to translate into policies such as wildlife corridors. More difficult to translate into policy is the concept of conserving ecological processes whereby the project endeavors to protect hydrological cycles, nutrient cycles, animal-plant relationships, and predator-prey relationships.

Other ecoscape precursors based on landscape-level conservation include the Algonquin to Adirondacks Conservation Initiative, which is another Canada-U.S. partnership focused on ecologically linking the Canadian Algonquin Provincial Park with the United States’ Adirondack Park across the Frontenac Axis in a 93,000 square kilometer project. One ambitious project encouraged by the North American Free Trade Agreement (NAFTA) Commission for Environmental Cooperation is the Baja, California to Bering Sea project, which seeks collaboration among Canada, Mexico, and the U.S. to protect a 4.8 million square kilometer large-scale, shared marine environment.

These ecoscape precursor projects are not exclusive to the developed world. In Asia, India and Nepal cooperate on the Terai Arc Landscape (TAL) program, which began in 1993, and works to reclaim monsoonal land as landscapes where humans can manage conservation forests for employment rather than damage the forest resource. Working with communities, the program has sought to reconnect pockets of native forest and to recover habitat through corridors and buffers for transit of large animals such as tigers. This project was considered one of the most successful rewilding programs in the world until conflict erupted in the area following influxes of population. The project has been challenged by simultaneous demands for poverty reduction and environmental protection—two goals that can collide in the short-term without enhancing the lives of communities or the environment. Overall, as a landscape based project, the TAL is relatively cost-effective, with restoration expenses of approximately two dollars per hectare.

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195. Id. at 146.
199. Id.
In Latin America, Mexican officials alongside all seven Central American States are committed to creating a Paseo del Jaguar designed to prioritize biodiversity protection through the protection and reconnection of currently fragmented jaguar habitat.202 “Costa Rica has already incorporated protection of the corridor into laws regulating development.”203 This ecoscape precursor project differs from the other large landscapes examples described in this subsection because it focuses on the recovery of one species rather than a more complex socio-ecological landscape.

In West Africa, the Fouta Djallon Highlands has a regional project concentrated in the central part of Guinea and connected to Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, and Sierra Leone.204 Started by the Organization of African Unity in 1981, this large-landscape and waterscape project focused primarily on protecting the watersheds for a number of transboundary rivers.205 One of the key aspects of the project is an effort to harmonize policies and practices among all of the Member States both within the Fouta Djallon Highlands plateau and the surrounding areas.206

Other ecoscape precursor projects are the efforts of individual countries. In Bhutan, for example the Bhutan Biological Conservation Complex project (B2C2) is designed to explore how the nation of Bhutan can be a “virtual laboratory for proactive landscape conservation.”207 B2C2 manages 14,800 sq. km. of the land (35% of the country) for conservation purposes.208 Project proponents focus on “in situ conservation of wild biodiversity” by designating protected areas, buffer zones, and biological corridors.209

In the U.S., the Highlands to Ocean Initiative focuses on the 5,350 square mile New Jersey and New York metropolitan areas as a landscape.210 Mount Agamenticus to the Sea Conservation Initiative based in Southern

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203. Id.


205. Id.

206. Id.


208. Id. at 12.

209. Id. at 47.

Maine initiative that includes ten national, regional, and local partners undertaking to protect 48,000 acres of ecologically significant land.\textsuperscript{211} Covering about 2 million acres, the Quabbin to Cardigan Collaborative seeks to protect landscape in both the Monadnock Highlands of north-central Massachusetts and western New Hampshire through collaboration between public and private partners.\textsuperscript{212}

In Southwest Australia, a number of NGOs have adopted the Gondwana Link ecoregion project that seeks to revive a large landscape that has become fragmented.\textsuperscript{213} This landscape-level project is a massive bushland restoration initiative that seeks to better connect the Stirling Range National Park to the Fitzgerald River national park through restoring native vegetation, removing invasive species, and creating better functionality of the landscape.\textsuperscript{214} The project proponents, including Noongar indigenous people, hope to be able to reverse habitat degradation since some of the land they are restoring was only cleared 50–60 years ago and biological connectivity still exists across the landscape for non-human species.

It may also be possible to build on the concept of existing peace parks as the base for future ecoscape efforts. The Red Sea Marine Peace Park between Jordan and Israel\textsuperscript{215} might be extended to take in additional shared frontier areas between Jordan and Israel and function as an ecoscape connecting terrestrial ecological processes with marine ecological processes. It is possible that the demilitarized zone ("DMZ") between North Korea and South Korea could become a core area for a future ecoscape since human development is currently prohibited within the DMZ.


\textsuperscript{213} The vision for Gondwana Link is: "Conservation at an unprecedented scale." The approach for Gondwana Link has been to:

[R]estore the strategic connections by increasing the scale and quality of conservation management. . . . Ultimately [the Gondwana Link] will have landscapes that continue to support human communities, but within nature-friendly landscapes that include large vegetated areas, linkages and ‘stepping stones’ that give all species and communities a better chance to survive.


\textsuperscript{214} Id.

transfrontier parks such as the Ais-Ais/Richtersveld Park between Namibia and South Africa might be extended to include non-park regions that share similar values.  

Other possible core areas for ecoscapes might be based on pre-existing transboundary biosphere reserves listed under UNESCO.

Each of these ecoscape precursor projects must be applauded for the vision of an environment that incorporates human cooperation in protecting core environmental elements. A common thread runs through most of the projects—a reliance on the tenacity and vision of private civil society. The Yellowstone to Yukon project with its combination of public and private lands has been uniquely successful among the ecoregion precursor projects described above, in part, because many of the lands that are encompassed in the project are already wildlands and the concept of wilderness has some resonance within both the United States and Canada. While it has required transnational cooperation between like-minded park services, it has not required intensive human interventions into the landscape in order to restore protection of ecological processes. Many of the other projects described above, such as the Terai Arc, rely on human intervention to support conservation through restoration. Because the projects are not yet fully recognized as legally protected areas either within a State or across the boundaries of States, the idea of setting legally cognizable restoration goals for these projects remains largely aspirational.

Even where programs have government support, this support tends to emanate from agencies already committed to environmental goals. The government support for the Yellowstone to Yukon project is largely been from Parks Canada, the Minister of Canadian Heritage and the United States National Park Service. Little cooperative attention has come from municipal or regional economic development agencies or land planning agencies. As a result, this important landscape initiative remains outside of core governance structures in both Canada and the United States where decisions such as resource extraction are made without regard for the long-term viability of the project area.


218. CHESTER, supra note 191, at 172.

219. Id. at 174.

220. Id. at 176.
D. Restoring Ecoscapes Through Government Action

With a few exceptions, most of the large ecoscape projects are the product of tireless private advocates who work with land trusts, private owners and sympathetic government agencies. Government led efforts such as the Landscape Conservation Cooperatives spearheaded by the U.S. Department of Interior are a recent and encouraging development, but such government programs are rare. This section calls for greater State government involvement in mainstreaming long-term restoration of the various socio-ecological spaces that we occupy by providing incentives for private actors to restore lands and waters and by creating adequately funded programs to jumpstart restoration in lands that private actors are either unwilling or unable to restore. The following subsections offer some policy proposals along with recognition of both the promise and peril inherent in the concept of restoring connections within fragile socio-ecological systems.

1. States should make the political commitment to manage for ecological function at the large-scale landscape level which may include the need for transboundary collaboration

There are a number of possibilities for how ecoscapes might be constructed across our existing political and ecological geographies. What is clear is that an ecoscape must exist on a large physical scale. One of the recurring challenges with the conservation of ecosystem processes is the repeated fragmentation of the landscape into smaller and smaller jurisdictional parcels. Coordinating ecological goals across these parcels has proven challenging and political boundaries have become obstacles to effective management.

There are some encouraging multilateral and unilateral developments indicating an emerging political will to protect at the large landscape level. As far as multilateral developments, the Large Marine Ecosystem (“LME”) projects originally sponsored by the United Nations Environmental Programme and several state government agencies such as the United States National Oceanic and Atmospheric Administration are demonstrating a clear commitment on the part of a number of states to invest resources in long-term management of regional large-scale landscape and seascapes. Several of the LMEs have formed commissions that are empowered to implement regionwide policies focused on large landscapes and seascapes including restoration goals.²²¹

²²¹ See, e.g., The Commission on the Protection of the Black Sea Against Pollution, Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (Apr. 17 2009),
In terms of unilateral developments, a large number of States, as part of their protected area programs, have designated what are referred to as Category V and VI areas by the International Union for Conservation of Nature (“IUCN”). These are areas that include large landscapes and large seascapes which may be managed by the public or by private owners. What is significant about these categories is the explicit recognition by States that these large protected areas are the product of ongoing social and economic interactions between humans and their environment and that they have the potential for “ecological and/or landscape restoration” and sustainable development.

It bears mentioning that the division between natural lands and multi-use lands is somewhat artificial. Many of the other IUCN designated protected area categories beyond Category V and VI also result from human interaction with the environment (e.g. wilderness, monuments). While there are practical reasons for subdividing land into various protected categories for ecological management purposes, there is also the danger of this type categorization resulting in a psychological fragmentation that might contribute to long-term fragmentation of management practices. It might be better to consider the various ecological protection categories as representing various qualities and conditions of a single place rather than as a mosaic for management planning.

Today the major gains in recognized protected areas are in Category V and VI lands. One theory is that this commitment to large scale landscape protection by communities results from local communities valuing multi-management protected areas. This increase reflects the importance of large landscapes and seascapes for communities because these areas are managed with the conservation of nature as the goal it that conservation provides economic, social, and ecological benefits.

http://www.blacksea-commission.org/_bssap2009.asp (The Black Sea Commission has the power presently to implement region-wide recommendations for restoration.).

222. UNEP WORLD CONSERVATION MONITORING CTR., THE WORLD’S PROTECTED AREAS: STATUS, VALUES AND PROSPECTS IN THE 21ST CENTURY 13 (Stuart Chape et al. eds., 2008), available at http://www.unep-wcmc.org/the-worlds-protected-areas_93.html (Category V lands include approximately 2,393 sites of 8,495,000 square kilometers and Category VI lands include approximately 4,276 sites covering 4,284,000 square kilometers.).


224. Id. at 21.

225. Shawn J. Leroux et al., Global Protected Areas and IUCN Designations: Do the Categories Match the Conditions?, 143 BIOLOGICAL CONSERVATION 609, 615 (2010).

226. See id. at 614 (“IUCN Category 1a protected areas do not consistently respect the criteria of ‘strictly controlled and limited’ human access . . . in many biomes, only a small proportion of protected areas, among all categories, exhibit a low mean Human Footprint.”).

227. See id. at 615 (“Because present Category VI protected areas have a low Human Footprint and also tend to be large, we believe these areas have a significant and unrealized potential for global
of LMEs and the growth in areas identified by government as protected large landscapes and seascapes reflect a growing government commitment for restoration at an ecoscape level.

2. States should incentivize private action and recognize private successes

The long-term success of an ecoscape depends on more than government financing and engagement. It depends on the willingness of private parties to conform their individual activities to the collective goals implicit in ecoscapes. There are of course monetary incentives that are available from tax credits to payments that may further conservation and restoration goals. However, governmental payment programs may risk “making environmental stewardship an issue of money rather than fundamental values.” As suggested above, monetary payments may not be sufficient to shift behavior because individuals are not motivated exclusively by monetary rewards. Instead, being a part of something that has a legacy quality may bring meaning to participants. Designing a truly self-perpetuating ecoscape requires engagement with private stakeholders particularly large landowners whose decisions to fence or not to fence can have implications for the mobility of certain species and the flow of genetic materials.

Building on examples of successful public and private collaboration for conservation, there are various opportunities for improving conservation values. In some cases, it may be enough to provide long-term public recognition of a landowner’s engagement in an ecoscape project. Community reputation may be more highly regarded by a private landowner than a side payment for conservation activity. In other instances, there may be a need for grants to cover costs associated with restoration of certain ecosystem resources. Also, there may be need for compensation payments for landowners who bear a disproportionate burden of a conservation policy such as the return of predators or herbivores onto lands that have been historically ranched or cultivated for at least two or more generations.


3. States should immediately focus on restoring connectivity in order to restore threatened ecological functions.

If we are to attempt to maintain ecological processes at a landscape level, it will be essential to restore better connectivity, which is defined as the “degree to which a landscape facilitates movement of species, population, and genes among resource patches, from ecological to evolutionary time scales.” One method of restoration is building connectivity corridors. Another approach to improving connectivity through restoration discussed below is reserve buffering.

Taking stock of the state of the landscape must be a high planning priority. Our uninhibited growth across the landscape has in some places taken on a pathological quality where we are unsustainably consuming our land. If we accept the popular wisdom that “pavement is forever” and “build it and they will come”, then we have to proceed with caution as human numbers and needs increase. Scientists observe that in the United States only fifteen percent of landscape locations needed for essential ecological connectivity are on public or private protected lands, twenty-eight percent are on multiple use public lands, and the remaining fifty-seven percent of needed connectivity locations are unprotected. There are important modeling efforts that can be used to map where policies need to be developed to protect connectivity. Investments in the type of quantitative work of scientists such as Dr. Theobald and his team that prioritize connectivity are particularly important in rapidly developing parts of the world where landscapes remain more intact than in the United States or Europe. This emphasis on identifying permeability should be a priority for government sponsored projects such as the implementation of the Landscape Conservation Cooperatives in the United States.

4. States should invest in land acquisitions for buffers to further restoration and conservation efforts.

Much has been written about the need for connectivity through ecological networks or ecological corridors. In some instances,
governments may be in a position to ensure buffering by either identifying buffer zones on existing government land or by acquiring additional private lands through conservation easements or market purchases. In many instances lands may need to be restored in order to provide sufficient ecological connectivity.

In order to assist with identifying lands in need of restoration, there may be a need for additional global “gap analysis” efforts focused on restoration priorities.234 “Gap analysis” identifies gaps between ranges of critical species and protected areas and prioritizes areas most in need of resources. While there have been some global collaborations to perform “gap analysis”235, these efforts are sporadic in light of pressing concerns about species loss. Ecoregional “gap analysis” that looks not just at biodiversity but also at other ecological processes such as loss of soil fertility would provide valuable management tools for restoring an ecoscape.

As a result of an ecoregional gap analysis, it may be possible to identify certain lands that could be purchased from or swapped with private landowners in order to pursue landscape level restoration. While there is nothing new about land exchanges, there has been insufficient effort at national or international levels to pursue strategic land exchanges for the purpose of restoring faltering ecosystem processes.236 Understandably government engagement in restoration for the purposes of conservation is a sensitive issue in light of the uncertain land tenure in many countries and the uneven power dynamics between communities and governments.

5. Promise of the Ecoscape

The ecoscape is a valuable tool for restoration because it provides the proverbial “big picture” of what systems humans need to focus their attention on in order to avert environmental collapse. It reminds policymakers that the whole is greater than the sum of the parts.237

234. BAILEY, supra note 12, at 91.


236. There are exceptions to this rule. For example, the U.S. Fish and Wildlife Service facilitated strategic land purchases outside the Lower Rio Grande Valley National Wildlife Refuge which creates a wildlife corridor that reaches to the Gulf of Mexico. Creating a Wildlife Corridor, U.S. Fish & WILDLIFE (Jul. 6, 2012), http://www.fws.gov/refuge/Lower_Rio_Grande_Valley/resource_management/wildlife_corridor.html.

237. GREEN ET AL., supra note 151, at 53. (“Holism stresses the . . . need to understand how wholes emerge from their parts.”) BAILEY, supra note 12, at 18 (noting that a “a system has properties that cannot be observed from simply looking at the pieces”).
Knowing that we cannot do historical restoration not only because of the sums of money that would be required but also because we are unwilling to expunge ourselves from the landscape, the concept of an ecoscape provides opportunities for new forms of ecological restoration. An ecoscape provides a substructure upon which to redesign anthropogenic habitats so that their use is compatible with use by a broad array of other species and to further the goals of “reconciliation ecology.”238

If government decision-makers reorient their activities around the concept of an “ecoscape” and acknowledge the potential for cumulative impacts at the “ecoscape” level, this would be a significant step towards integrated zone management and working at the level of the “problemshed.”239 The idea of integrated zone management has been championed as a management approach for linking land activities and coastal waters within a State. We are already seeing some transboundary ecological thinking with, for example, regional seas agreements like the Convention on the Protection of the Natural Resources and Environment of the South Pacific Region that entered into force in 1990. 240

The concept of the ecoscape provides a much more robust approach for climate adaptation because it permits an expanding range for animals and plants while striving for legal protections across the various jurisdictions. Implicit in the idea of ecoscape is both expansion of ranges as well as potential contraction of ranges depending in part on human decision-making. This flexibility in the concept is important because it allows for appropriate scaling depending on what ecoscape stakeholders decide are essential ecosystem processes for restoration.

From an ethical perspective, restoration efforts focused on an ecoscape approach rather than our current mitigation approach or ecosystem services approach should further Leopold’s land ethic which recognizes the land as a “collective organism.”241 Individuals living in an ecoscape can understand the significance of a restorative action by reference to the larger landscape. Holistic work is not easy because it is inherently complex but ecoscapes provide the advantage of embedding complex processes in a physical space

241. LEOPOLD, supra note 127, at 261.
that can be visualized and experienced firsthand.\textsuperscript{242} While we may not understand how complex ecological processes operate, we can understand that these complex processes require large amounts of connected space where key ecological functions are self-maintained and human interference is either absent or insignificant. For example, salmon cannot reproduce and feed in a one-mile rivulet and grizzly bears cannot live in a city park.

While legalizing the ecoscape may seem unattainable for certain States, the concept is not restricted to State interactions but holds great promise for international cooperation among intergovernmental organizations. To the extent that the Secretariat of the Convention on Biological Diversity, UNESCO, the Secretariat of the UN Framework Convention on Climate Change, the International Maritime Organisation, and the Food and Agricultural Organisation all concern themselves with protecting the environment held within the global commons, there is the opportunity for cooperation centered around the global ecoscapes that are already influenced by the activities of these organizations.

6. Peril of the Ecoscape

As with any ideas that will rely on multiple stakeholders that may be in conflict with each other, the ecoscape has inherent challenges. To the extent that policymakers are willing to give credence to the findings of landscape ecologists on the recurring need for connectivity and space to support resilience in ecological systems, one of the greatest challenge would be to ensure that thinking in terms of “ecoscapes” does not simply become an extension of the current reductionist rhetoric in favor of certain categories of ecosystem services.

For example, Martin Nie has observed in his research on United States national forests that the United States National Forest Service has embraced the concept of landscape-scale restoration.\textsuperscript{243} Yet, the restoration effort appears to be driven by thinking of the forests largely in relationship to the provisioning of wood products. As Nie observes, the so-called restoration programs almost all, “make linkages between restoration and the timber industry, operating on the principal that a viable wood products industry is necessary for the attainment and financing of various restoration goals.”\textsuperscript{244} This marks a dangerous precedent if restoration efforts support only certain

\textsuperscript{242} There is, of course, much more information to collect regarding species communities, species interactions within habitats, and ecosystems. Given the recent advances in GIS technology, we have some knowledge, albeit it is not complete (and may never be complete), about how physical landscapes and seascapes are constituted.


\textsuperscript{244} Id. at 10242.
ecological processes that can be financially underwritten rather than an array of ecological processes. There are many ecosystem processes that are undervalued including decomposition of organic matter, hydrological sheetflow, and mutualism.\footnote{Common forms of mutualism include pollination and zoochory where animals disperse the seeds of plants.}

If we can assume that an ecoscape is far more than a place where business interests sustain various resources as economic assets and is instead a space of democratic deliberation about the needs of this generation, future generations, and other species, a second key challenge emerges. The ecoscape does not belong to any one population or interest group—it is a collective landscape. One might even go so far as to theorize that the ecoscape is a regional commons that defines who we are and who we will become. The ecoscape embraces already politically delineated borders populated with vested stakeholders in the regulatory process. Self-interest may easily become a barrier to large-scale planning. Even if self-interest is not at issue, numerous interested parties mean challenges in coordinating management. More parties are likely to mean more conflict resulting in the need for more process.\footnote{J. David Allan, Donna L. Erickson & John Fay, The Influence of Catchment Land Use on Stream Integrity Across Multiple Spatial Scales, 37 FRESHWATER BIOLOGY 149, 158–159 (1997) (Ecologists working in Michigan were discouraged about the possibility of reaching a comprehensive management for the Raisin River basin because of the presence of eighteen different federal, state, regional, and local authorities with different objectives and interests.).} The need for more process means more delay and less effort put in to tackling some of the technical challenges of doing restoration work.

**CONCLUSION**

This is a formidable challenge for this generation. Ecoscapes as units for policymaking entreat us to think beyond our ordinary political boundaries pre-defined for us based on distant events of history and politics. But too much complexity can be overwhelming. With issues such as economic development, social welfare, and human conflict resolution topping the political debates around the world, there is little room for conversations about human relationships with places. Such conversations seem philosophical rather than pragmatic. But if the concept of an ecoscape is to become a normative reality, there will be a need for conversations on what we as individuals living in particular socio-ecological landscapes at a very particular time in history value communally and what we expect the next generation to inherit. Are we comfortable with landscape species that we value like wildflowers disappearing because of problems with pollinators that we are not addressing as national priorities? Are we at peace
with local land users making decisions with regional and possibly global impacts such as removing valuable habitat for migratory birds? Can we live in a world without wild fish?

The success of restoration of an ecoscape requires collaboration, conversation, and commitment at all levels of public and private governance. Ecoscapes may need to be jumpstarted with government funding, but the long-term viability of these places will depend on all actors who live in a landscape agreeing to make certain concessions and tradeoffs in order to achieve something that may only partially reflect their self-interest. We do this on a regular basis with national constitutional law—individuals and institutions collectively restrict unfettered freedoms to achieve community social goals. If certain alternative categories of freedoms including our freedom to belong to a certain kind of landscape were to become the subject of negotiations among individuals and communities, then there might be the shared energy for restoring key components of our threatened ecoscapes. But time is of the essence if we want to protect places that are important not just for individual lived experiences but also for community identity.247 If we wait too long the importance of our relationship with a given ecoscape may not be able to be salvaged.

Even if we cannot reverse time, focusing on restoring healthy human relationships with ecological places offers the possibilities of reviving certain long-term social and ecological values that are essential for the survival of existing ecoscapes. Indeed, “[m]odern humanity yearns to re-establish and restore an ecology of shared identity” and restoration “provides a context of negotiating a relationship with nature and community.”248 Our communities need corridors and buffers in order to connect to each other in ways that matter both ecologically, but as importantly, socially. The introduction of ecoscape thinking offers an intermediate way between a philosophy of dominion over the land and a sense of powerlessness. Ecoscapes offer the hopeful possibility of connecting us to places where we can relate to rather than compete with our environment.

247. See Thiago Rangel, Amazonian Extinction Debts, 337 Sci. 163 (2012) (Ecologists working in the Amazon observe that we have a narrow “window of opportunity for forest regeneration” if we hope to recover species and ecosystem functions. If we miss this opportunity, we increase the possibility of “extinction debts” beyond the already expected local losses in eastern and southern Amazon of thirty percent of the endemic amphibians, twenty-five percent of the mammal species, and fourteen percent of the birds).

PACIFIC ENVIRONMENTAL MIGRATION IN A WARMING WORLD:
IS THERE AN OBLIGATION BEYOND STATE BORDERS?

Gil Marvel P. Tabucanon

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INTRODUCTION

The impacts of environmental changes are steadily being felt in various regions of the world. As sea and air temperatures rise, hurricanes and floods are occurring in some areas while droughts and disruption to rainfall are felt in others. In the polar and high mountain regions there is the melting of glaciers and ice caps. The Intergovernmental Panel on Climate Change (IPCC) projects that the greatest single impact of environmental change will be on human migration and displacement. Yet international migration, as an adaptive response to minimize the adverse impacts of environmental threats, has rarely reached national and regional agendas. Often countries and regions are silent on legal and policy frameworks relative to potential

environmental resettlements of vulnerable populations, among them the low-lying Pacific atoll states.

This paper asks whether states have obligations beyond their borders, particularly towards environmentally vulnerable countries whose populations may require international resettlement. Using the juristic writings of Pufendorf, Vattel, and Kant as lens of inquiry, three diverse viewpoints are pursued: (1) states do not have an obligation, their primary concern being self-protection; (2) the decision to aid affected populations is optional, the primacy of the states’ freedom to choose who, or who not to admit within their territories being the main concern; and (3) an obligation exists based on a universal duty of beneficence. Pufendorf, Vattel and Kant were chosen based on their influence in the fields of legal, moral, and political philosophy all of which survive to the present. This paper posits that current environmental challenges are a global concern, and thus require global responses. Pufendorf and Vattel’s views, while sound within the logic of a bounded state paradigm, are too self-interested and territorially circumscribed to adequately respond to the global and transnational reach of climate change. The paper concludes that states not only have moral, and arguably legal, obligations to provide humanitarian assistance and hospitality towards populations beyond borders, but that such obligations require both states and their citizens to do far more than current practices suggest.

I. ENVIRONMENTAL MIGRATION IN THE PACIFIC

Environmental migration is not new in the Pacific. Pacific Islanders have moved great distances in the past, environmental threats being among the triggers. Recent events and processes, however, suggest that environmental migration is expected to increase significantly in the coming years. The Pacific Region, with its low-elevation island nations dispersed in a vast ocean setting, is particularly vulnerable to challenges from the physical environment. The region is predicted to be among those where the adverse effects of environmental changes can be felt the most. Campbell estimated that by mid-century there could be “between 665,000 and

1,750,000 climate migrants in the Pacific region” when the total population is expected to exceed 18 million. Though tentative, the prediction is nonetheless daunting, taking note of an increasing number of people displaced worldwide due to environmental factors.

Coastal flooding due to unusually high tides displaced a number of people in the Marshall Islands, Kiribati, and the northern coast of Papua New Guinea in December 2008. Already people are relocating due to saltwater inundation and contamination. The first batch of Carteret islanders had resettled in Bougainville Island, Papua New Guinea in 2009 on a plan that will ultimately transfer 1,700 residents. Other vulnerabilities include coral bleaching, soil erosion, and increased salinization of water reserves. For example, if Tuvalu and Kiribati’s fresh water lens reserves become contaminated with sea water, then the islands would become uninhabitable. The I-Kiribatis and Tuvaluans would have no choice but to relocate. Sea water intrusion into farmlands and freshwater aquifers have been reported in the Solomon Islands. A study showed that increased salinity in the coastal areas of Thailand killed off the coconut trees, as in fact “no crops will gain from increased salinity.”

While the extent of the impacts of environmental changes are still subject to debate, plans for proactive migration of human populations are emerging, particularly among small island states. In 2005, President Anote Tong of Kiribati spoke before the 60th Session of the United Nations
General Assembly on the need of atoll countries to consider the relocation of their populations. In 2008, during the 63rd UN General Assembly session the President of Vanuatu noted the possibility that “some of our Pacific colleague nations will be submerged”. Nauru’s President argued about the necessity to review the “implications to sovereignty and international legal rights from the loss of land, resources and displacement of people.” Should relocation become necessary, what is ensured is not only the physical survival of the inhabitants, but the continuation of their cultural and traditional legacies.

II. OBLIGATION BEYOND STATE AND REGIONAL BORDERS

Do states have legal and moral obligations beyond national or regional borders? Extraterritorial obligations arise from various sources, among them historical ties and treaties. For instance, colonialism has left the Pacific region with a “complex legacy of legal and political associations.” Under New Zealand’s Citizenship Act of 1977, residents of New Zealand’s former colonies, the Cook Islands and Niue (now self-governing countries in free association with New Zealand), are considered to be New Zealand citizens with open migration access to New Zealand and access to its social services. Under the same act, inhabitants of Tokelau, a New Zealand territory, are ipso facto New Zealand citizens. This agreement has implications for environmental migration and has facilitated the movement of former colonial peoples to New Zealand following devastating environmental events. In 1990, Hurricane Ofa nearly necessitated an evacuation of the island Niue to New Zealand. Additionally, Hurricanes Val (1992) and Percy (2005) destroyed most of Tokelau’s agriculture and led to “severe food shortages” such that New Zealand had to relocate Tokelauans to New Zealand.

Due to past association and perhaps continuance of strategic military and economic interests in the Pacific, the United States bound itself by treaty by giving migration rights and privileges under the Compact of Free Association (COFA) to citizens of Micronesia, Palau and the Marshall

19. Id.
Islands. Likewise, the arrangement would have implications for environmental migration in terms of access to U.S. social services in disaster situations and would guarantee entry rights to the U.S. mainland, should extreme conditions occur. Under Article IV, section 141(a) of the COFA, citizens of the Marshall Islands and the Federated States of Micronesia "may be admitted to, lawfully engage in occupations, and establish residence as a nonimmigrant in the United States and its territories." Further, the citizens of the associated states have access, within their home states, to U.S. social services including the disaster response and recovery and hazard mitigation programs under the Federal Emergency Management Agency. Obligation beyond state border with implication for environmental migration, thus, is not new in the Pacific.

States generally cooperate and enter obligations with other states when it is in their interest to do so. The benefit may be direct or accruing in the future; conversely, cooperation may be terminated when it becomes apparent that its continuance becomes detrimental or burdensome for the state. The Trans-Tasman Travel Arrangement, allowing citizens of Australia or New Zealand to travel, live, and work in each other’s state, cannot be explained only in light of past historical ties, but also the economic benefits of a hassle-free exchange of visits and workers from English speaking nations with a similar level of development. Papua New Guinea, which was formerly part of the Australian commonwealth in the early 1900s, but whose economy is deemed lagging behind that of Australia, does not have similar privileges. An exception, due to close cultural and geographical ties, are Torres Strait islanders who, by treaty, are given visa-free access to travel to Australia’s northern islands under the 1985 Torres Strait Treaty between Australia and Papua New Guinea.

Pursuing the question further, do states have an obligation towards countries with which they have neither historical ties nor a reasonable expectation of economic benefits? This paper offers divergent views.

23. Id. § 141(a).
24. Id. § 221(a)(6).
expressed on this issue, reflecting three principal approaches: (1) states do not have an obligation, their primary concern being self-protection; (2) obligation is optional or a matter of charity, the primacy of the states’ freedom to choose who or who not to admit within their territories being the main concern; and (3) an obligation exists based on a universal duty of beneficence.

A. Self-Protection as a Primary Obligation

There are those who maintain that, far from being a source of humanitarian concern, cross-border environmental migration is in fact a security threat to the world’s states. As migratory pressures increase so do instability and conflict. The Oxford Research Group foresees the likelihood that “the protection of national and maritime borders and the detention of illegal immigrants is likely to become an increasing priority” for military and border patrol agents. As fears were expressed about Bangladesh’s vulnerability to flooding, India decided to build a “2,100-mile high-tech ‘separation barrier’” in 2003. While likely infiltration of extremists was cited as reason for the fence’s construction, Indian officials were “increasingly inclined to cite climate change refugees, rather than the Islamist threat, as a concern.” The ASEAN Regional Forum (ARF) Defence Officials Dialogue in 2008 identified “climate change as a threat multiplier,” a “non-traditional threat” from which the military would need to “continuously prepare itself.” At the 2011 International Organisation for Migration (IOM) workshop on Climate Change, Philippine Ambassador Manalo reported a “general agreement among ARF member states that forced migration was among the transboundary threats presented by climate change.”

According to the securitized view of climate change, tensions will ensue between those displaced and their destination states. Cultural, ethnic, and racial differences will beget “fearful reactions” and “inflammatory politics” from the receiving society, as migrants compete for jobs and

30. Id.
32. Id. at 6.
limited resources. Discourses in climate security and migration “conjure up an image of processes that are likely to [spin] out of control,” and are therefore highly threatening. The situation is similar to what 17th-century German jurist Pufendorf envisioned as a state of nature where self-protection is a primary obligation. While aliens are not necessarily enemies, they do not deserve full trust either. In their “desire to preserve themselves” aliens “rush to arms,” and spur “men on to injure others.”

[A]ny man who is not our fellow-citizen . . . is to be regarded, not indeed as an enemy, but still as an inconstant friend. The reason for this is that men are not only perfectly able to injure each other, but for various reasons very often willing to do so. For in some cases perversity of nature, or the passion for ruling and possessing superfluities, spurs men on to injure others. Other men, though of modest temper, rush to arms in the desire to preserve themselves . . . .

For Pufendorf, man is too selfish to consider other people’s welfare. He argues, reminiscent of Hobbes, that such self-interest propels man to act violently towards his fellowmen, although unlike Hobbes, Pufendorf believes man is not exclusively selfish by nature. To protect individual and collective interests, mankind needs to enter into covenants and agreements. By extension, states sign treaties with benefit and self-preservation in mind:

The duties thus set forth derive their force from the common relationship which nature established among all men even before any act was exchanged between them. But it is not enough to confine within such a circuit the duties which men owe each other. For not all men are so constituted that they are willing to do

34. Elliot, supra note 28, at 3–4 (discussing other authors, such as Kurt Campbell, who “worry about ‘massive migrations . . . potentially involving hundreds of millions of people . . . perhaps billions of people’ and ‘a significant portion of humanity on the move,’” thereby suggesting that “‘uncontrolled migration’ would be ‘more likely to overwhelm the traditional instruments of national security (the military in particular) and other elements of state power and authority’”).
35. Id.
36. Id.
everything, with which they can help others, out of mere humanity and love, and without assuring themselves of some hope of receiving their equivalent. . . . Moreover, it often happens that other men do not know how they may serve our interests. . . . And so, if mutual offices, the real fruit of humanity, are to be practiced more frequently between men, and by a kind of set rule, it was necessary for men themselves to agree among themselves on the mutual rendering of such services as a man could not also be certain of [or] for himself on the mere law of humanity. 38

While Pufendorf subscribes to mankind’s basic equality and exhorts individuals to “exhibit the services of humanity,” morality alone is insufficient for the long-term preservation of the state. 39 What Pufendorf calls “duties of humanity” does not only consist of “not to have hurt another” or “not to have deprived him of the esteem he is owed.” 40 It is in conferring “something good . . . on the other” so that the minds of men may be “conjoined by a still closer bond” 41 and in being “glad that others who share my nature also live upon this earth.” 42 Thus, the “affinity and kinship established among men by nature must be exercised by means of mutual duties.” 43

In exceptional cases, and subject to the primary rule of state preservation and protection, Pufendorf admits it is lawful not only for individuals but also for “entire cities and provinces” to emigrate, if such action is being compelled by a “hostile force.” 44 While Pufendorf does not define hostile force, it may include any life threatening situation facing an individual or community such as extreme environmental events:

Another way in which someone unwillingly changes states occurs when he is compelled by hostile force to subject himself to the sovereignty of another as citizen and subject, whether or not he changes his residence at the same time. This is generally admitted, is licit not only for individual citizens—at least those bound by no

38. SAMUEL VON PUFFENDORF, TWO BOOKS ON THE DUTY OF MAN AND CITIZEN ACCORDING TO NATURAL LAW 48 (Oxford: Classics of International Law, 1927) (1682).
39. Id.
41. Id. at 164.
42. Id. at 165.
43. Id.
44. SAMUEL VON PUFFENDORF, ON THE LAW OF NATURE AND NATIONS, BOOK 8, 126 (Basil Kennet, D.D. trans., 3rd ed. 1712).
other bond than the common bond of citizens—but also for whole cities and provinces, when there appears to be no other way of promoting their welfare.\textsuperscript{45}

In spite of this injunction, Pufendorf cautions that humanity reverts to their animalistic nature in unstable and stressful situations, from which only the state affords genuine protection.\textsuperscript{46} For instance, under stable conditions people do not generally wish harm for other people. Insecure and uncertain situations, however, witness “great multitude[s] . . . to whom every right is worth less.”\textsuperscript{47}

There is no one who does not strive to protect himself against such persons, if he loves his own safety; and that protection cannot be had more conveniently than by help of states . . . For surely it is evident that man is an animal of the kind that loves itself and its interest to the utmost degree.\textsuperscript{48}

Extreme or prolonged environmental changes are among the conditions that spawn insecurity. Thus, for Pufendorf, it is within reason to protect the state by any means, as it is to seek out one’s personal protection within the cover of a sovereign state. Only the state can protect man from such threats. Yet, while security implications of climate change deserve consideration, it is one thing to view environmental migrants as wholesale threat, and another to regard them as vulnerable human beings deserving help. Pufendorf does include the admission of vulnerable migrants who are compelled to leave their homes by hostile forces, among the duties of humanity.\textsuperscript{49} This duty is, however, subordinate to the paramount obligation of citizens to protect the state from being weakened in any imaginable way.\textsuperscript{50}

Ultimately, the choice to securitize borders vis-à-vis the environmentally displaced peoples raises questions such as: is it fair to be born on a continental landmass while those from atoll nations remain vulnerable when shut out at the borders? While securitizing the issue may

\textsuperscript{45} Pufendorf Political, supra note 40, at 265–66.
\textsuperscript{46} Samuel von Pufendorf, On the Duty of Man and Citizen 104–05 (Frank Gardener Moore trans., Oxford University Press 1927).
\textsuperscript{47} Id.
\textsuperscript{48} Id. at 103, 105.
\textsuperscript{50} Id.
be politically expedient and caters to populist anxieties about not letting strangers in, a policy that turns a nation’s back against affected populations is ultimately unethical, and as unethical policies go they cannot be sustained in the long run.

B. Benevolence as Charity

Some Pacific Rim countries have admission opportunities potentially benefitting environmental migrants under their humanitarian and compassionate programs. The decision to admit migrants is, however, optional and subject to ministerial discretion. The United States, under section 212(d)(5)(a) of the Immigration and Nationality Act, grants the Secretary of the Department of Homeland Security discretion to parole an individual into the U.S. temporarily for humanitarian reasons or for significant public benefit.51 In response to the January 12, 2010 magnitude 7 earthquake in Haiti, which killed up to 230,000 people,52 the United States granted “humanitarian parole” to Haitian orphan children to come to the United States for inter-country adoption.53 New Zealand’s Immigration Act of 2009, section 61(1) empowers the Minister of Immigration with discretion to grant “a visa of any type” to any person, regardless of the status of that person’s stay in New Zealand, provided no deportation order is in force.54 The decision to grant a visa may be given at “any time” and is within the Minister’s “own volition” and “absolute discretion.”55 It may be argued that the discretion may include migration opportunities for the environmentally displaced. In the case of Australia, recognizing there are humanitarian and compassionate claims that do not fit neatly into refugee or refugee-like situations, the Australian legislature granted the Minister of

54. Immigration Act 2009, §61(1) (N.Z.) (“Grant of visa in special case: (1) The Minister may at any time, of the Minister’s own volition, grant a visa of any type to a person who (a) is unlawfully in New Zealand; and (b) is not a person in respect of whom a deportation order is in force.”).
55. Id.
Immigration wide discretionary powers for reasons of “public interest.”\textsuperscript{56} The Minister, through his or her “intervention powers,” is allowed to override unfavorable decisions of review bodies and make a decision more favorable to the applicant.\textsuperscript{57} However, unlike in the United States and New Zealand, where the ministerial discretion may be invoked at first instance, Australia’s ministerial discretion provisions may only be exercised at post-review levels and as an applicant’s final avenue of appeal.\textsuperscript{58}

There are downsides to this benevolence as charity approach. Firstly, the non-compellable and non-reviewable nature of the discretionary decisions does not give rise to rights and entitlements. Secondly, the interest and well being of vulnerable populations may, in theory if not in practice be thrown out of the consideration any time. The virtually unbounded latitude of ministerial power subjects applicants to the minister’s personal whim and changing political climate of the times. For instance, at any time a securitized approach which brings with it highly restrictive admission policies may be imposed irrespective of the situation. Thirdly, in the case of Australia, preventing the invocation of the power until the last tier of the administrative process makes the process more cumbersome, if not unjust.

As earlier stated, the non-compellable and non-reviewable power of ministerial discretion does not guarantee any definite legal right or protection for environmental migrants. In the \textit{Ozmanian} case, the Australian Federal Court stated that the nature of the discretionary power “makes it clear that the Minister is not under a duty to consider whether to exercise the power under § 417(1) in respect of any decision, whether or not the Minister is requested to do so by the applicant or any other person, or in any other circumstances.”\textsuperscript{59} The “no duty to consider” provision was likewise affirmed in \textit{Bedlington},\textsuperscript{60} triggering criticisms about the “unsettling implications” of discretionary powers and how they are “almost

\textsuperscript{56}. Report by Senate Select Committee on Ministerial Discretion in Migration Matters 2004, at xi, 41 (Austl.) (quoting Ms. Biok, Legal Aid Commission of New South Wales, to the Committee Hansard on September 22, 2003).

\textsuperscript{57}. \textit{Ministerial Intervention, Austl. Gov’t Dep’t. of Immigration and Citizenship}, http://www.immi.gov.au/refugee/ministerial_intervention.htm (last visited Mar. 28, 2013) (discussing the prerequisite that there be a prior review tribunal decision on an applicant’s case before the minister can intervene and exercise his public interest powers and defining review tribunal as any of the three appellate bodies reviewing the eligibility applications of refugees or migrants: Refugee Review Tribunal (RRT); the Migration Review Tribunal (MRT); or, in certain circumstances, the Administrative Appeals Tribunal (AAT)).

\textsuperscript{58}. \textit{Id}.

\textsuperscript{59}. Minister for Immigration and Multicultural Affairs and Another v Ozmanian (1996) 46 A.L.D. 244, 16 (FCR) (Austl.).

\textsuperscript{60}. Bedlington and Another v Chong (1998) 87 FCR 75,78 (Austl.).
The near absolute nature of the Minister’s personal judgment in exercising such “discretion” on the one hand, coupled with the “no duty to consider” provision has brought about charges of the Minister “playing God”; the “Minister is under no obligation to consider a request to exercise discretion, no matter how strong a case may be.”

According to eminent Swiss jurist Vattel, under the “eternal and immutable law of nature,” a “state owes to another state whatever it owes to itself, so far as that other stands in real need of its assistance, and the former can grant it without neglecting the duties it owes to itself.” Every state ought to act “for the preservation of others, and for securing them from ruin and destruction...as far as it can do this without exposing itself too much.” Thus, if “a nation is afflicted with famine, all those who have provisions to spare ought to relieve her distress, without, however, exposing themselves to want.”

Whatever be the calamity with which a nation is afflicted, the like assistance is due to it. We have seen little states in Switzerland order public collections to be made in behalf of towns or villages of the neighbouring countries, which had been ruined by fire, and remit them liberal succours; the difference of religion proving no bar to the performance of so humane a deed. The calamities of Portugal have given England an opportunity of fulfilling the duties of humanity with that noble generosity which characterizes a great nation.

The motivating impulse for such a deed is twofold: the noble fulfillment of the duty of humanity, and the mundane possibility of a quid pro quo when helping states may “stand in need of assistance” in the future. Yet, for Vattel, while nations have the duty the same is optional. Each nation ultimately determines whether to carry out its obligation, in effect, converting what was otherwise an extraterritorial duty to one of charity. While nations are obliged to “lend each other mutual assistance” for their improvement and perfection, they remain “free and independent of

64. Id.
65. Id. at 136.
66. Id.
67. Id. at 135.
each other, in the same manner as men are naturally free and independent.” Thus:

As a consequence of that liberty and independence, it exclusively belongs to each nation to form her own judgment of what her conscience prescribes to her—of what she can or cannot do—of what is proper or improper for her to do: and of course it rests solely with her to examine and determine whether she can perform any office for another nation without neglecting the duty which she owes to herself. In all cases, therefore, in which a nation has the right of judging what her duty requires, no other nation can compel her to act in such or such particular manner: for any attempt at such compulsion would be an infringement on the liberty of nations.

C. Duty of Benevolence

Kant argues for states to bestow the right of admission and hospitality to non-citizen visitors and sojourners. He says that while states have the right to refuse entry of visitors, it cannot do so violently, or if the non-admission leads to the visitors’ destruction.

[States] may refuse to receive him when this can be done without causing his destruction; but, so long as he peacefully occupies his place, one may not treat him with hostility. It is not the right to be a permanent visitor that one may demand. A special beneficent agreement would be needed in order to give an outsider a right to become a fellow inhabitant for a certain length of time. It is only a right of temporary sojourn, a right to associate, which all men have. They have it by virtue of their common possession of the surface of the earth, where, as a globe, they cannot infinitely disperse and hence must finally tolerate the presence of each other.

The grant of “hospitality” not only bestows the right of temporary sojourn, but more importantly the “right of a stranger not to be treated as an
enemy when he arrives in the land of another.” 73 It is a human being’s “right to associate,” with fellow human beings “by virtue of their common possession of the surface of the earth,” as “[o]riginally no one had more right than another to a particular part of the earth.” 74

The right of hospitality has deeper and wider implications than seems at first. Unlike Pufendorf and Vattel (who held that states have the last say in determining entry regardless of need or condition among migrants), for Kant admission is obligatory when failure to do so would spell “destruction” to those wanting to get in. Kant posits that states “cannot legitimately send a person back to a country where she or he will die or be killed as a result of being sent back.” 75 Kant’s imperative thus anticipated the international law principle of non-refoulement, and more. For while under existing international law asylum states are prohibited from returning victims of persecution or torture to their home states pursuant to the 1951 Refugee Convention and 1984 Convention against Torture or other Cruel, Inhuman or Degrading Treatment (CAT), Kant’s principle subsumes any one in distress who is seeking asylum. 76 While the non-refoulement right under CAT is broader in range than that spelled out under the Refugee Convention, the protection is nonetheless restricted to situations involving torture. 77 On the other hand, Kant’s right of hospitality protects any forced migrants (which potentially includes environmental migrations) from being returned to their home.

73. Id. at 20.
74. Id. at 21.
76. U.N. Convention Relating to the Status of Refugees, July 28, 1951, 189 U.N.T.S. 137, 176 (Article 33(1) states: “No Contracting State shall expel or return (‘refouler’) a refugee in any manner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social group or political opinion.”). See also U.N. Convention Against Torture or Other Cruel Inhuman or Degrading Treatment, G.A. Res.39/46, art. 3, U.N. Doc. A/Res/39/46 (Dec. 10, 1984) (“(1) No State Party shall expel, return (‘refouler’) or extradite a person to another State where there are substantial grounds for believing that he would be in danger of being subjected to torture. (2) For the purpose of determining whether there are such grounds, the competent authorities shall take into account all relevant considerations including, where applicable, the existence in the State concerned of a consistent pattern of gross, flagrant or mass violations of human rights.”). Article 1 of the Convention Against Torture defines torture as “any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity. It does not include pain or suffering arising only from, inherent in or incidental to lawful sanctions.” Id. at art 1.
Kant argues that individuals, and by extension states, must “[a]ct so that you treat humanity, whether in your own person or in that of another, always as an end and never as a means only.”  

The maxim stems from his view of humanity as beings endowed with reason, hence are ends in themselves bound by the same universal rules. Thus human beings may never be used as a means to an end. As bearers and agents of reason, humanity has a special place in Kant’s scheme of things. Another Kantian principle is to “[a]ct only according to that maxim by which you can at the same time will that it should become a universal law.”

To Kant, these categorical imperatives are binding on mankind without exception, simply because human beings are rational. To violate the categorical imperatives would be to violate the laws of reason and morality. If a person (or by extension, society) wishes to act or promulgate rules, that person cannot simply regard itself as special or superior, and take exception to moral rules. To do so is contrary to reason. For example, to Kant, a policy that obliges the state to assist populations internally displaced by natural or man-made disasters, but not those who cross international borders, would be contrary to reason. While environmental migrants (people, for example, displaced as a result of “natural or human-made disasters”) displaced within their own countries are identified as a discrete category of persons deserving protection under international law, those who cross international borders are not similarly protected. International environmental migrants are not a “formal legal category of people in need of special protection” and there is no “coordinated legal and administrative system” to relocate them in a “planned and orderly manner.”

78. IMMANUEL KANT, FOUNDATIONS OF THE METAPHYSICS OF MORALS 47 (Lewis White Beck trans., 1959) (1785) [hereinafter KANT FOUNDATIONS].
79. Id. at 46.
80. Id. at 39.
81. Id. at 46.
82. The Guiding Principles on Internal Displacement of the UN Commission on Human Rights (now UN Human Rights Council), identifies “internally displaced persons [as] persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.” Francis M. Deng, Guiding Principles on Internal Displacement, 33 INT’L MIGRATION REV. 484 (1999), available at http://go.galegroup.com/ps/i.do?id=GALE%7CA54955701&v=2.1&u=vol_r8111l&it=r&p=ITOF&sw=w.
83. Id.
85. Ilona Millar, There’s No Place Like Home: Human Displacement and Climate Change, 14 AUSTL. INT’L L.J. 71 (2007); see also INT’L ORG. FOR MIGRATION, WORLD MIGRATION 2008:
To Kant, the duty to help others in distress is a categorical imperative, an absolute moral law. Hospitality, thus, cannot be refused in times of distress or life threatening situations, such as environmental disasters or threats. The “meritorious duty to others,” arises for a person who is “going well” while “he sees that others have to contend with great hardships.” It may be argued that Kant’s principle of hospitality goes beyond physical survival. Forced migrants, whose need for hospitality may be temporary or long-term, have needs beyond physical survival. For instance, when sea levels rise, making low lying islands uninhabitable, the need for resettlement may be permanent. The longer the resettlement, the stronger would be the need to protect group identity and rights, and for the migrants to retain their cultural and ethnic identity as a people.

Some countries and regions have, through domestic legislation or treaty, acknowledged an obligation towards victims of environmental disasters from other countries. Both the Swedish Aliens Act (2006) and Finnish Aliens Act (2009) mention “environmental disasters” as a basis for the grant of protection and residency in Sweden and Finland, respectively. The Swedish Aliens Act, Chapter 4, section 2(3) defines a “person otherwise in need of protection” as an alien “unable to return to the country of origin because of an environmental disaster.” Chapter 5, section 1 entitles “persons otherwise in need of protection” to a “residence permit” in


87. Hospitality means the right of a stranger not to be treated as an enemy when he arrives in the land of another.” IMMANUEL KANT, PERPETUAL PEACE, supra note 72.

88. KANT FOUNDATIONS, supra note 78, at 33, 39.

89. Kleingeld, supra note 75, at 84 (noting Kant’s strong support for refugee and individual rights over colonial powers). According to Kleingeld, Kant’s universalist arguments have greatly influenced modern day institutions, among them the League of Nations and United Nations. Article 27 of the International Covenant on Civil and Political Rights, a United Nations treaty, states: “In those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language.” The International Covenant on Civil and Political Rights, art. 27, Dec. 16, 1966, 999 U.N.T.S. 171.

The Finnish Aliens Act, Chapter 6 section 109(1) on the other hand, grants “[t]emporary protection” to aliens in “need of international protection and who cannot return safely to their home country or country of permanent residence, because there has been ... an environmental disaster.” Temporary protection may be for a “short duration,” and “lasts for a maximum of three years in total.”

In Africa, there is the regional practice of allowing those affected by natural disasters such as famine and drought to cross international borders. The practice may in part be attributed to the African Union’s expanding the UN Refugee Convention’s definition of “refugee,” to include those compelled to leave their country owing to “events seriously disturbing public order.” While some governments are careful not to characterize the practice as an outright obligation arising from the AU treaty definition, it may be argued that the definition recognizes an extraterritorial obligation towards those affected by environmental threats, assuming these seriously disturb public order. At the very least, the definition may be seen as contributing to the development of the protection rights for the environmentally displaced on “humanitarian grounds under customary international law.”

III. DISCUSSION

Thus far, this paper has noted Pufendorf, Vattel, and Kant’s views on state obligations beyond borders. It has reflected on what each might have said relative to state obligations on environmental migration. As earlier said, all three were chosen based on their writings and far-reaching influence in law, morality, and political philosophy. Pufendorf, Vattel, and Kant agree on man’s fundamental equality, and the universal morality to aid people in distress, including those living beyond borders. Whether the grant...
of beneficence is mandatory, or whether it admits of prior exceptions is where Pufendorf, Vattel, and Kant differ.

For Pufendorf and Vattel, the state, its needs, and its protection, assume priority over other matters including the duty to dispense hospitality and beneficence. Pufendorf particularly provided a philosophical justification for the protection of a self-enclosed and protectionist state. He regarded people as primarily self-interested. To him, as for Hobbes, denizens in the original, albeit hypothetical, state of nature due to strong conflicting interests endanger one another’s well-being and security. The situation is untenable and ultimately self-defeating. Thus, people enter into covenants and establish a state, regarded as the highest protector of individual rights. It is in the context of the state as chief protector of rights that, for Pufendorf, the protection of the state itself overshadows all other concerns. Humanitarian considerations for outsiders, unless this redounds to the state’s interests, take a back seat.

Yet, the same logic goes against Pufendorf. Much like a state of nature inhabited by self-interested individuals, an international regime of protectionist, self-interested states not subject to the constraints of higher moral or legal principles, is ultimately unsustainable. Unless states cooperate and recognize extraterritorial obligations, no lasting solution to world problems may be found. Contrary to the original intent, a protectionist, state-centered viewpoint ultimately drags states to conflict, such as when migrants force their way into neighboring states rather than have the flow of migration managed through law. Vattel’s view, on the surface appears benign. However, it is founded on basically the same premise of self-interest and protectionist thinking as Pufendorf’s hence, equally problematic. The effects of environmental change transcend borders, hence require progressive thinking, perhaps a veering from traditional realist to more cosmopolitan modes of problem solving.

A. Law

States, as members of the United Nations, have pledged to achieve “international cooperation in solving international problems of an economic, social, cultural, or humanitarian character.”95 To achieve this, they made a covenant to promote human rights and dignity “for all” regardless of “race, sex, language, or religion.”96 The use of “humanitarian”

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95. U.N. Charter art. 1, ¶ 3.
96. Id. at art. 1 ¶¶ 1–3.
in this context is generic, referring to the promotion of human welfare generally, and not particularly to war or conflict situations.

Under international human rights law, everyone has the right to life. The right to life is one of the foundational principles of international relations. Likewise, every person has a right to adequate food, clothing, housing, and the continuous improvement of living conditions. Moreover, everyone has the right not to be deprived of his or her means of subsistence. Climate change, by way of extreme weather patterns, deprives peoples’ means of subsistence in a significant way. Particularly, continuous coastal flooding and inundation would render low-lying islands uninhabitable.

The obligations elaborated in various human rights treaties are traditionally regarded as duties owed by states to populations within their borders. Under this line of reasoning, state obligations do not extend to persons beyond state boundaries. The territorial scope of treaties principle under Article 29 of the Vienna Convention on the Law of Treaties is invoked to support the argument that “[u]nless a different intention appears from the treaty or is otherwise established, a treaty is binding upon each party in respect of its entire territory.” A closer reading of the law, however, reveals that no such intra-state limitation exists. The intention, suggested by the term “entire,” is to “prevent states parties from claiming that the treaty is not binding for a certain part of the territory—or to make sure that such intention is explicit beforehand.” Assuming arguendo, that Article 29 limits the scope within state territories, it may be argued, at least for the twin international covenants on civil and political rights, and economic, social and cultural rights, that a “different”—and universal—intention appears. Both treaties, as their preambles explicitly states, were envisaged to “promote universal respect for, and observance of, human rights and freedoms” pursuant to the United Nations Charter, and the Universal Declaration of Human Rights. The International Covenant on

102. International Covenant on Economic, Social and Cultural Rights, supra note 98; International Covenant on Civil and Political Rights, supra note 99. The preamble to the Convention on Civil and Political Rights states: “Considering that, in accordance with the principles proclaimed in the Charter of the United Nations, recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the
Economic, Social and Cultural Rights is particularly explicit relative to the obligation to provide international (hence extraterritorial) cooperation and assistance: Article 2(1) obliges state parties to “take steps, individually and through international assistance and co-operation . . . to the maximum of [their] available resources . . . including particularly the adoption of legislative measures”; Article 11(2) mandates states to recognize the “fundamental right of everyone to be free from hunger” and obligates states parties to take measures “individually and through international co-operation” to provide everyone their human right to adequate food.

Admittedly, the enforcement of the positive right to adequate food is limited in practice, a subject matter beyond the scope of this paper. Thus, while the right to life, like the right to food, is compellable as a negative right under international customary law (the right not to be killed or not to be intentionally starved as when another nations’ food supply is cut off, for example), it may not be compellable when expressed as a positive right, (for example, the right to compel delivery of bags of rice or to undergo medical treatment under ordinary situations).

Although technically not “law,” the General Comment No. 12 of the Committee on Economic, Social and Cultural Rights provides an important interpretation on the joint responsibilities of states to provide disaster relief and humanitarian aid in emergency situations, which would include extreme environmental events. It declares that “[s]tates have a joint and individual responsibility, in accordance with the Charter of the United Nations, to cooperate in providing disaster relief and humanitarian assistance in times of emergency, including assistance to refugees and internally displaced persons.” 103 While internationally displaced environmental migrants are technically not subsumed in the above comment, they are not excluded either, hence they may be included among those requiring “disaster relief and humanitarian assistance.” 104

The 1992 U.N. Framework Convention on Climate Change (UNFCCC) mandates “developed country [p]arties” to “assist the developing country [p]arties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.” 105 While migration as a form of adaptation may not have been considered during the


104. Id.

framing of the Convention in 1992, today, migration is increasingly considered together with in situ measures as a probable adaptation response. The UNFCCC’s definition of adaptation, not being limited to in situ situations, may be understood to subsume resettlements in both national and international levels.\textsuperscript{106}

\subsection*{B. Justice and Equity}

Admittedly, notions of justice are more settled within a state setting while “comparatively little attention has been directed to them in a global setting.”\textsuperscript{107} Among the contemporary philosophers arguing along Kantian lines was John Rawls. Using a hypothetical device of the “veil of ignorance” and “original position,” Rawls articulated principles of justice free from bias and self-interest.\textsuperscript{108} These are the principles of liberty and difference, which Rawls argues, will guide society towards equal liberty with an activist slant towards the least advantaged. The first principle grants equal liberties for all: “each person is to have an equal right to the most extensive basic liberty compatible with a similar liberty for others.”\textsuperscript{109} The second principle acknowledges that, while societal and economic inequalities do exist, the principles of justice will have to be applied favoring the least-fortunate members of society, and positions need be open to all under fair conditions of equal opportunity.\textsuperscript{110} While Rawls limits his principles within the nation state, some argue that an expanded interpretation of Rawls will have a bearing on issues of justice in an international setting.\textsuperscript{111} Carens in particular argues that Rawls’ principles in fact “strengthens the case for open borders and reveals its roots in our deep

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\bibitem{108} John Rawls, \textit{A Theory of Justice} 136–37 (Harvard University Press 1971). The principles are chosen by members of society from a “veil of ignorance,” a hypothetical situation devised by Rawls where participants, to ensure impartiality, do not know about their personal situation and societal status.

\bibitem{109} \textit{Id.} at 60.

\bibitem{110} \textit{Id.} at 60, 101–02 (“Those who have been favored by nature, whoever they are, may gain from their good fortune only on terms that improve the situation of those who have lost out. The naturally advantaged are not to gain merely because they are more gifted, but only to cover the costs of training and education and for using their endowments in ways that help the less fortunate as well. No one deserves his greater natural capacity nor merits a more favorable starting place in society. But it does not follow that one should eliminate these distinctions. There is another way to deal with them. The basic structure of society can be arranged so that these contingencies work for the good of the least fortunate [the “difference principle”].”).

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commitment to respect all human beings as free and equal moral persons.”

Behind the “veil of ignorance,” in considering possible restrictions on freedom, one adopts the perspective of the one who would be most disadvantaged by the restrictions, in this case the perspective of the alien who wants to immigrate. In the original position, then, one would insist that the right to migrate be included in the system of basic liberties for the same reasons that one would insist that the right to religious freedom be included: it might prove essential to one’s plan of life.

Following Beitz and Carens interpretation of Rawls, states have an obligation under the principles of justice to enhance opportunities for migration, particularly favoring the least advantaged segments of society.

Under the emerging, albeit controversial, international law principle of “common but differentiated responsibilities” (Principle 7 of the Rio Declaration), certain states, in view of their contribution to environmental deterioration, as well as level of technological and financial capacity, are given greater responsibilities in responding to environmentally induced problems. Based on tonnes per capita the top four greenhouse gas emitting countries are developed countries of Australia (at 27.9), the United States (20.7), Canada (22.2), and Ireland (15.6). They are also the most developed Pacific Rim countries, and, except for Canada, have close historical and social connections with many Pacific nations. Thus, it may be argued that an expanded interpretation of the “common but differentiated

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113. Id. at 258.

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth’s ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Id.

115. RODNEY TIFFEN & ROSS GITTENS, HOW AUSTRALIA COMPARES 160 (Cambridge University Press, 2nd ed. 2009). While it is extremely difficult to isolate causations of climate change considering natural variables, nevertheless the reasons for thinking recent changes in climatic and weather patterns are “anthropogenic” in origin are compelling.
responsibilities” principle mandates these countries to undertake a greater role in finding solutions not only in mitigating carbon emissions but in responding to the impacts of climate change, among them environmental displacements. Enhancing migration opportunities for environmentally vulnerable Pacific populations would be among the logical ways the “common but differentiated responsibilities” principle may be implemented.

C. Morals

Kant believes that morality allows no exceptions. Whereas Pufendorf and Vattel argue for the state’s freedom to choose whether to exercise duties toward non-citizens, Kant believes that states have the duty—a categorical imperative—to aid people in distress, whether these be citizens or non-citizens, within or outside state borders. To Kant, the “principle of humanity” gives rise to the “meritorious duty” to help others who “struggle with great hardships.” 116 For it could be that in another time and circumstance the helper would be “need[ing] the love and sympathetic participation of others.” 117 States may argue that the Kantian rule of universalizing moral principles and actions is utopian. Yet, they cannot deny that more than any other philosopher, Kant’s imperatives come closest to the principles enunciated by the Universal Declaration of Human Rights. Everyone has the right to life. 118 Corollary The corollary to this is everyone’s right not to be deprived of his or her means of subsistence. 119

Most of us intuitively acknowledge a moral obligation to relieve human suffering or distress when doing so would not equally endanger our life and limb. 120 This acknowledgement stems from our common humanity and is most manifest in one’s instinctive (almost reflexive) response to save a drowning person from a pool. Admittedly, the demand to respond to such a situation is more compelling within those closest to us: family, neighbors, community. Yet, visitors in a foreign land on their holidays would be equally pressed to save a drowning local child should they be in a proximate situation to do so. The obligation, thus, is not limited to blood relations or psychological proximity, but one rooted in our basic humanity, the sameness of the human condition we share. Writing on the universal obligation to help famine victims of Bangladesh in the early 70’s, Singer

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116. KANT FOUNDATIONS, supra note 78, at 33, 39.
117. KANT GROUNDWORK, supra note 86, at 41.
118. Universal Declaration of Human Rights, supra note 97, at art. 3.
posits that such an obligation extends to individuals beyond state borders.\footnote{121}{Peter Singer, \textit{Famine, Affluence, and Morality}, 1 PHIL. & PUB. AFFAIRS 229, 229–30 (1972).} His argument is premised on the fact that suffering from lack of food and medicine is bad, and that it is within the power of other states to prevent or relieve the suffering in such a situation. Singer believes that the more privileged nations can do something to reduce the number of starving people without giving up the basic necessities themselves.\footnote{122}{\textit{Id.}} As extreme or prolonged environmental changes not only displace people but, based on experience (among them the Bikinian and Banaban resettlements—at least in the initial phases), places them in situations of near starvation, Singer’s arguments apply equally to them.

Expectedly, not all thinkers followed Kant’s universalist line of thinking. Walzer, for instance, argues for community based rights, hence comes closer to Pufendorf and Vattel’s views on migration: “[a]cross a considerable range of decisions that are made, states are simply free to take in strangers in [or not].”\footnote{123}{M\textsc{ichael} W\textsc{alzer}, \textit{Spheres of Justice: A Defence of Pluralism and Equality} 61 (Basic Books 1983).} Much like Vattel, he justified the exclusion on state liberty and the states’ right to self-determination. Yet, Walzer’s right to exclude is constrained by three factors, foremost was the duty to aid aliens in dire need:

First, we have an obligation to provide aid to others who are in dire need, even if we have no established bonds with them, provided that we can do so without excessive cost to ourselves. So, we may be obliged to admit some needy strangers or at least to provide them with some of our resources and perhaps even territory. Second, once people are admitted as residents and participants in the economy, they must be entitled to acquire citizenship, if they wish. Here the constraint flows from principles of justice not mutual aid. The notion of permanent “guest workers” conflicts with the underlying rationale of communal self-determination which justified the right to exclude in the first place. Third, new states or governments may not expel existing inhabitants even if they are regarded as alien by most of the rest of the population\footnote{124}{Joseph H. Carens, \textit{Aliens and Citizens: The Case for Open Borders} 49 REV. OF POL. 251, 266 (1987).}. 

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\item[121.] Peter Singer, \textit{Famine, Affluence, and Morality}, 1 PHIL. & PUB. AFFAIRS 229, 229–30 (1972).
\item[122.] \textit{Id.}
\item[123.] M\textsc{ichael} W\textsc{alzer}, \textit{Spheres of Justice: A Defence of Pluralism and Equality} 61 (Basic Books 1983).
\end{enumerate}
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Walzer’s duty to aid aliens “in dire need,” it is submitted, applies to environmental migrants forced out of their homes by life-threatening environmental forces or processes beyond their capacity to cope.

CONCLUSION

The impacts of environmental threats facing humankind today do not respect national boundaries. True, most environmental migration occurs internally, but many have already crossed borders, and international environmental migration is projected to increase in the years ahead. Transnational challenges require transnational responses. As stated earlier, the state-centered paradigms of Pufendorf and Vattel seem too parochial and territorially bounded to meaningfully respond to the international reach of the impacts of climate change. Further, these challenges cannot be adequately addressed through protectionist approaches, as the same would likely escalate rather than resolve conflict through law and policy.

Unlike international refugee laws, there is as yet no categorically binding framework for environmental migrants. Yet, nation states may, through domestic laws and policies, extend obligations beyond borders to peoples in distress, from natural or man-induced disasters. Based on emerging principles of international law, equity and justice, as well as taking cue from Kant’s imperatives, states are morally if not legally bound to extend obligation beyond borders towards populations in distress. It remains to be seen whether today’s territorially bounded states, by heeding this obligation, will provide a more humane and cosmopolitan framework towards affected populations as climate change makes its impact felt in the Pacific and other regions of the earth.
TRANSCRIPT OF THE FEDERALIST SOCIETY’S 2012 NATIONAL LAWYERS CONVENTION:

ENVIRONMENTAL LAW, FEDERALISM, AND THE ENERGY REVOLUTION: CAN STATE AND FEDERAL REGULATORS ADAPT TO INNOVATIONS?*

Panelists:

Jason B. Hutt, Partner, Bracewell & Giuliani LLP

Professor James R. May, Environmental Law Center, Widener University School of Law

Craig Segall, Associate Attorney, Sierra Club Environmental Law Program

Joel R. Burcat, Saul Ewing LLP

Moderator:

Hon. Timothy M. Tymkovich, U.S. Court of Appeals, Tenth Circuit

* The following is a transcript of a panel held on November 17, 2012 at the 2012 Annual National Lawyers Convention in Washington, D.C.

Before I introduce this morning’s speakers, I must mention two headlines that caught my eye this week as I was preparing to attend The Federalist Society convention here in D.C. The first headline came from Colorado. Incidentally, I'm Judge Tim Tymkovich. I'm a judge on the Tenth Circuit Court of Appeals in Denver, and so in the morning's Denver Post earlier this week, I saw one headline, which was “The Message of the Longmont Vote.” The other headline from the Denver Post was “Drill Ban Flames Anti-Frack Forces.” Why the headline? The reason for the headline was the City of Longmont, Colorado, on November 6th, just last week, voted to ban oil and gas drilling using hydraulic fracturing, or fracking, within the city limits of the city.

As most of you know, or will know by the end of this morning's presentation, fracking releases natural gas from shale formations by injecting a liquid composed of water, sand, and chemicals into shale under high pressure. This increased pressure fractures the shale surrounding a well and allows the gas to flow from the well and be thereby extracted. Well, the Longmont vote has set off a contentious debate among city, state, and federal regulators in Colorado and raises the question of local control of statewide resources.

The second headline I saw this week was from the Washington Post just a few days ago, and the Post headline was “The New Boom: Shale Gas Fueling an American Industrial Revival. This article explains how cheap natural gas is providing energy options for manufacturing interests in the United States and acting as incentive for many previously offshore operations to consider moving back to the United States because of the availability of cheap energy. The article also tells us that the United States will soon overtake Russia as the world's largest gas producer. It appears our country may have gone from scarcity to abundance of one of our major resources of carbon-based energy. How will state and federal regulators deal with this new energy boom, even as many local voices are expressing concerns about environmental consequences that are yet to be fully understood?

We have an excellent panel this morning to discuss these questions representing a variety of points of view of the respective state and federal perspectives as well as the environmental and business community.

Moving from right to left, our first speaker is Jason Hutt. Mr. Hutt is a partner with Bracewell & Giuliani in their Washington, D.C., office. He advises energy companies, manufacturers, project developers, and others.
He is a graduate of Vermont Law School. A bit of a theme we have this morning, I see.

Our second speaker is James May. Mr. May is a professor of law and co-director of the Environmental Law Center at Widener University. Professor May has published more than fifty book chapters and Law Review articles and is co-author of a forthcoming book, “Environmental Rights and the Constitutional Protections: Implications for Present and Future Generations.” Professor May is a graduate of the University of Kansas, out in the Tenth Circuit. Go, Jayhawks.

PROFESSOR JAMES R. MAY: That’s right. Thank you. Hear, hear.

JUDGE TIMOTHY M. TYMKOVICH: Our third speaker is Craig Segall. Mr. Segall is a partner in the Environmental Law Program of the Sierra Club. His practice focuses on climate-related regulatory issues, including significant work on any unregulated hydraulic fracturing. He is a graduate of the Stanford Law School. Welcome.

CRAIG SEGALL: Thank you.

JUDGE TIMOTHY M. TYMKOVICH: Our last speaker is Joel Burcat. Mr. Burcat is a partner in the Harrisburg, Pennsylvania office of Saul Ewing and serves as chair of the firm’s oil and gas practice. His principal areas of practice are environmental law, oil and gas, natural resources, and environmental litigation. He has both federal and state government experience and is a graduate of Vermont Law School as well. He’s also the co-author of a treatise on environmental law, Pennsylvania Environmental Law and Practice, and its 2012 edition will soon be available.

With that, let’s turn to our first speaker.

JASON B. HUTT: Thank you. For anyone wondering, the mascot for Vermont Law School is the Fighting Swan.

PANELIST: Intimidating.

JASON B. HUTT: It is quite intimidating.

So good morning, and thanks for the opportunity to speak to you. As sort of the lead-off speaker, I thought it would be helpful to sort of set the landscape, talk a little bit about why is it that this is an important topic of discussion, a little bit about what’s driving that debate, and then cover a
little bit of what the federal landscape looks like here in Washington as we head into the second Obama administration, and let some of the other panelists sort of cover the state level and some of the other issues.

So with that sort of overview, this topic has really changed the global energy picture, and I wanted to provide a couple of statistics just to sort of put that in perspective in terms of what it has meant for the global economy, for geopolitics, and for the environment.

On the shale gas side, I think this is sort of a helpful orientation statistic. The EIA’s latest Energy Outlook puts the 2010 production of gas at five trillion cubic feet per year, which is twenty-three percent of the total U.S. dry gas production. They project by 2035 for that to be 13.6 trillion cubic feet per year, which will be forty-nine percent of U.S. dry gas production. So by 2035, half of all dry gas production in the United States will be from shale gas.

This is not actually just a discussion about gas. It’s also a discussion about oil, because the advent of combining horizontal drilling technology with hydraulic fracturing has led to a much more enhanced production of oil as well. From a statistical standpoint, the U.S. and the IEA’s World Energy Outlook, the U.S. is predicted to be the largest global oil producer by 2020 and a net oil exporter by 2030. That’s a game-changing set of statistics if you look at where we were ten years ago with respect to a dependence upon foreign oil and a discussion about everyone racing to FERC and the Department of Energy to try to import natural gas into the United States and build natural gas import facilities. That’s where I focused my practice for about five years: trying to build those facilities to bring natural gas into the United States.

So, speaking about the economic implications of all this: first of all, low energy cost. In the first eight months of 2012, the average spot price for natural gas was about $2.55 per MBTU. I think that is significant not only just in the price and what it has brought to the marketplace, but it has informed the development of manufacturing facilities, petrochemical facilities, and fuel switching by power generation facilities in the United States with those low prices and the dependability of those low prices going into the future.

From a jobs standpoint, we’ve all heard a lot about jobs leading up to the beginning of November. Moody’s analysts have reported that, since 2002, exploration and drilling for shale gas and oil has added a million jobs to the United States economy. I think folks will remember President Obama’s speech to the DNC where he talked about the creation of 600,000 more jobs with shale gas.

From an environmental standpoint, the Department of Energy’s study shows that the life cycle of greenhouse gas emissions is fifty-three percent
lower than the life cycle of coal emissions. So there’s a dramatic reduction in greenhouse gas emissions associated with that fuel switching and the burning of natural gas instead of coal. It’s not a zero-greenhouse-gas-emission technology. Very little energy is free of any environmental impact, but this does reduce our global footprint in terms of greenhouse gas emission cost by fifty-three percent from that perspective.

I am going to talk a little bit about how that statistic—and Craig will probably touch on this, too—may be revised based on some of the rules that are upcoming about air emission reporting. That is sort of why we are talking about this. I mean, this is a game-changing technology, both from a geopolitical perspective and from an economic perspective.

What’s driving it? Well, environmental issues in Washington have sort of an arc. The driver to that arc is not just law but also policy and the media and public perception on environmental issues. If you look at climate change, if you look at the MTVE debate, if you look at the shale gas debate, which are sort of national-scale debates that have local consequences, they have an arc where initially the public isn’t even aware that it’s going on. Then, as the public becomes aware, they start to ask a lot of questions, and there’s some suspiciousness about it. Then, the two sides start to bring out information and begin to try to inform the public.

That happened about five or six years ago, I think, with respect to shale gas, and the industry had a difficult time explaining itself to the public at that time. They have gotten better at it. It is a difficult technology to explain in that realm, and the pace at which this evolved was so fast that it was difficult to keep that education process up with that pace.

Once that initial set of education happens, oftentimes initial regulatory decisions are made based upon that. I think we have passed that stage. Then, there’s some reengagement and additional education. I think we are probably at this stage, and next there will be revised regulatory approaches. So that is kind of where we see ourselves in that arc, or where I see things in that arc. I think that it’s sort of helpful to remember that it’s not just legal and policy, which I know we’re all here to discuss, but public perception, because public perception ultimately drives politics.

One of the key things about that public debate has been what are the risks associated with shale gas. The two primary risks that have been talked about a lot are the risks to drinking water resources and air quality in areas where there is intensive exploration and production. I think most of that debate has been notwithstanding a lot of credible studies by industry, by universities, by state and federal agencies, which are widely discounted by a lot of the environmental groups as being sort of slanted or artificially narrow in scope. But there is a lot of credible science out there. It is being better and better understood and is being expanded to look at all the
different parameters associated with shale gas, and I can point you to those afterwards if you are interested.

From a public debate standpoint, though, the anti-fracking advocacy groups continue to portray this as something that has dire environmental consequences. The Sierra Club has changed, or evolved, its campaign from beyond coal to add a different plank to that, which is now beyond natural gas. That’s very important because they have an initiative to bring a move away from the consumption of natural gas in the country at this same time. That is, in part, driving this public perception.

Hollywood had a toe in this debate with the Gasland documentary by Josh Fox. At the end of this year, they are going to put both feet in with a full cinematic film, which is going to basically portray the natural gas industry going into a local town and will feature Matt Damon as one of the landmen. So, that will again fuel this debate and public perception about how shale gas works, and I think that will be an important moment.

From an elections standpoint, both sides really embraced natural gas. If anyone saw the second presidential debate, it was sort of a competition to see who liked natural gas more, a little bit comical in that respect, but it is an important resource. It was an important resource in key battleground states, so a lot of accolades were paid to the job creation and the benefits associated with it. We’ll see where that brings us in the future.

So, what’s happening in Washington? Let’s just take it from the three-branch perspective and talk about the legislature first. From a congressional standpoint, Congress obviously passes laws, passes budgets, and has an investigative power. While Congress doesn’t really pass very many laws anymore and certainly not on the environmental front, there is one bill that was proposed in the 112th Congress called the “FRAC Act.” It was proposed by Diana DeGette from Colorado. It never really had much support to begin with, and I don’t see its passage before the 112th Congress is gone. From a budget standpoint, we really just extend former budgets. The budgeting decisions with respect to EPA and Department of Energy, however, could obviously play into the amount of monies that are available to study shale gas and some of the studies that are ongoing.

From an investigative standpoint, there have been several investigations by congressional committees into environmental risks associated with shale gas. I would expect that to continue going forward, questions being asked to the different executive branches. It is an interesting statistic because I primarily think about shale gas from an environmental perspective, and I mention the one bill that is sort of worthy of talking about here. There is, however, a CRS report that just came out that looked at how many bills were introduced in the 112th Congress that actually had an effect or would have had an effect on the supply and demand and environmental issues
associated with natural gas. The tally is over 150. So, there are a lot of bills that relate to energy policy that have a direct effect on supply and demand issues, and that in turn has an effect on the environmental issues associated with it.

The executive branch is the deeper discussion. Certainly, EPA is the first agency that one thinks about. There is a lot going on there. From a study standpoint, EPA is working on their hydraulic fracturing study. They have arrived at a scope now. The initial feedback from the study is expected by the end of the year, and the report is expected to be released in 2014. I don’t expect to hear a lot in the December 2012 release if it comes out. I think it will better inform where EPA ended up with the scope of its study. I don’t expect to hear much about the retroactive and perspective site studies they are doing. I don't think that they have made sufficient progress in the science of doing those studies.

Last week, EPA published in the Federal Register a solicitation of scientific input. They are going to take additional input from industry and environmental groups until, I think, April of 2013. I have to get ready to start saying that. So, they’re seeking input. Because I expect they will get a whole lot of information in for the study, they did caution in the Federal Register statement that they are going to be looking for peer-reviewed materials and giving priority to that in terms of what they are going to pay the most attention to.

From an air policy standpoint or an air regulation standpoint, EPA issued a regulation in the last year that is designed to address air emissions from production sites. This is broadly called “green completions,” which are required by 2013. They also have a set of regulations that are in place that are going to, for the first time, require reporting associated with greenhouse gas emissions. I think that the reporting will be an important milestone in the discussion about what the air impacts are. I also think, in the context of the federal-state debate, that if you were to pick a media in which there is more of an article for a federal framework for regulation, it is air. This is due to its ubiquitous nature and character as more of a shared resource. It also doesn’t historically have the same degree of state focus from a resource standpoint that oil and gas regulations have. So, when you get to the state level, states have always had a greater degree of control over the harvesting of the resources within the state and the protection of the resources that are unique to the state. The geologies are different. The water resources are different. The drinking water below the ground is different. There is a long tradition of leaving that to the states to govern and protect.

Interestingly, there is definitely a different view as to what the cost of the green completions is going to be from an industry and an EPA standpoint. EPA’s estimates are about $33,000 per well. Industry estimates
are about $62,000 per well. I don’t see those as drivers in where we go with natural gas policy. The price of natural gas is a major driver in where we go with natural gas policy, and so the most important agencies over the next four years are going to be the Department of Energy and FERC at the federal level. I am going to touch on that in a second. I just want to finish up on EPA.

The diesel guidance is probably going to come out by the end of the year. This relates to what does EPA mean with respect to its authority to require Safe Drinking Water Act permits for the use of diesel and hydraulic fracturing. EPA has proposed six different chemical abstract service numbers that they would count within the umbrella of their authority. I think the industry has almost uniformly migrated away from the use of that chemistry and their fracking fluids, and so you won’t see a lot of permits obtained in that realm. The question remains whether, between the proposal and the final, there will be an expansion of what EPA has used as their interpretation of diesel.

Now, the last thing that I’ll touch on with EPA. EPA’s enforcement office has viewed themselves as an engine for change, because they don’t need legislative and regulatory authority to get into an enforcement action based on existing law and then seek concessions in those settlements, which we will call “injunctive relief,” where industry or the industry player that’s before them promises to go beyond compliance, to put something additional into a bilateral agreement between themselves and EPA.

That agreement, while bilateral, is published and made available through the Federal Register and then placed on the DOJ’s website, and that becomes a bar over which later settlers in the same industry in an enforcement initiative have to jump over. We saw this with respect to EPA’s enforcement initiative in the refining industry. We saw it in the coal-fired power plant industry. We are seeing it in cement and glass manufacturing. Well, in February of 2010, EPA announced an enforcement initiative from 2011 to 2013 with respect to the energy extraction industry. The leading edge of all of that is a series of requests for information that the agency rolls out to different industry players, which require them to respond. This often evolves into an enforcement action, and so we’re seeing that in the industry. EPA’s Office of Enforcement and Compliance Assurance is certainly viewing themselves as someone who can play a role in changing the regulatory environment for the industry.

I think those are the key agencies. There is Health and Human Services. ATSDR is also looking at that. Within there, the SEC is placing more scrutiny on disclosure requirements. With respect to the Department of Energy, which I think is really just an important agency to spend a little bit of time on, the Natural Gas Act gives it the authority to license and approve
the export of natural gas to non-Free Trade Agreement countries, and the Department needs to take into account the public interest.

So, it will be very important to see what their second report looks like here in December. The first report suggested that four billion cubic feet per day would be a threshold at which there will be implications on the U.S. economy, and that will be very important in looking at the price of natural gas at the federal level.

With that, I will turn it over to Jim May.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Jason. Professor May?

PROFESSOR JAMES R. MAY: Good morning. I don’t know if you noticed something that happened just after the election, and I am not from Ohio. I am not from a state that was inundated with political commercials, but there was this great change in the commercials that were on television. Did anyone notice the big shift just on Wednesday, the day after the election? We went from political commercials to commercials advancing natural gas. I kid you not. I mean, it sounds bizarre, but that’s what happened. The very next day, there were more than ninety commercials that came out on national television promoting the natural gas industry. I just think that that’s very notable, and it speaks to maybe where we are headed, as Jason pointed out.

Now, my name is Jim May, and I teach environmental law and constitutional law and a variety of subjects at Widener University School of Law, where I’ve been for 25 years. Just to give you my bona fides perhaps in this area, I’m also—as the judge mentioned—from Kansas, and I’m a mechanical engineer. That was my undergraduate degree. Where you’re concerned about engineering, you’re also concerned about transportation and fuels. So, I learned about hydraulic fracturing three decades ago in engineering. It is not a new technology. It’s been around for about 100 years, in fact, and it’s been commercial for more than a half a century. What we’re talking about really with fracturing is the horizontal fracturing. There is a vertical fracturing where you drill down to get to the natural gas. What the debate today is about, however, is the use of horizontal hydraulic fracturing.

My background also includes fifteen years as a federal litigator, including in the Tenth Circuit. My last case there was in 1992 in the Pacific Mutual case about substantive and procedural due process issues. So, I’m going to talk about five things in ten minutes. Are you ready?
PROFESSOR JAMES R. MAY: All right. I’m going to start with the end of the story, but these five things are: first, what is hydraulic fracturing, because that’s part of my charge; second, the environmental effects, also part of my charge; third, how it’s regulated; fourth, some constitutional challenges; and last, the future.

Let me begin with the future; first of all, my kids. I have an eleven and a fourteen-year-old, and I’ll link this together in a moment. When they come home from school, of course, they don’t want to talk. I give them a period of time to have a snack and all that, but they will invariably say something like, “Gosh, Dad, something really troubling happened today at school, and it was really disturbing at school.” Immediately, I just want to know the end of the story, that everyone is okay, and that everyone is safe, and then I’ll sit down, relax, and listen to the rest of it. Usually, it’s about rotten lettuce or something. I don’t know. But, here’s the end of the story, the future. I see, as Jason mentioned, federal laws concerning disclosure on the way. I see lots of opportunities for lawyering, by the way. I see a revisiting of the Safe Drinking Water Act and the Toxic Substances Control Act concerning disclosure. I see pretreatment standards on the horizon under the Clean Water Act for indirect dischargers. I see Clean Air Act regulations, the ones that EPA is working on, being implemented. I see Congress considering revisiting some exemptions that are in the laws. I see Congress revisiting the Energy Policy Act of 2005 and a revisitation, really, of national energy policy.

We saw that recently in President Obama’s remarks, too. He discussed our energy future, an all-of-the-above kind of scenario and with particular emphasis on domestic supplies. And, that’s a euphemism, guys. “Domestic supplies” means natural gas, really. Now, yes, of course, there’s coal and there’s petroleum. But, looking to the future, there’s a whole lot of emphasis on the potential for natural gas to fuel our future and to get us out of the Middle East, to save lives, and to secure our national security.

So, first of all, what is hydraulic fracturing? As I mentioned, we’re really talking about the horizontal part, but it was invented, if you will, in 1902 in Fort Worth, Texas. It led to a boom, but it involves a pressure. It involves pressure underground where you inject water with chemicals, and you break up shale formation. Shale formations are a little bit permeable, and you can get to the gas inside of them. They are anywhere, depending upon where you are in the country, from a mile to six and a half miles below the surface of the planet.

Now, in between, and much closer to the surface of the planet, is oftentimes drinking water. Drinking water, again depending upon where you are in the United States, might be anywhere from 500 feet to about
1,000 to 1,500 feet below the surface. So, the actual horizontal fracturing goes much deeper than where the drinking water is.

There are “major plays,” they’re called. Yes, it sounds like something Shakespearian, but that’s not what we’re talking about. The major shale gas plays are in the United States. You’ve probably heard of Marcellus shale and Utica. Those are in the eastern part of the country, and there are about two dozen other major plays throughout North America. So, they are ubiquitous and abundant.

Now, there are, secondly, environmental concerns that arise with hydraulic horizontal fracturing. Let me go through six of these in a minute. The first one is about air pollution. With construction and also with the operation of the hydraulic fracturing, there might be volatile organic compounds that need to be burned off or captured and otherwise garden-variety pollution from the generators in the process.

Secondly, there is a brine intrusion potentiality. When you dig down deep, when you get way down to where the shale gas is, you’re really digging back into history. You’re digging back tens of millions of years. With the shale gas, made up of animals and plants that have long since died—and they’re still giving to us, thank you very much—there is also ancient ocean water. It is very, very salty, and so we call that “brine.” That’s down there, too, and it can contaminate and cause problems elsewhere.

There’s sedimentation and erosion on the “well pad,” and this is where you actually build the doggone thing. There can be runoff that can cause issues primarily for surface water. There can be spills and leaks. There can be contamination of drinking water, as was mentioned, closer to the surface of the planet.

Lastly, there’s an awful lot of water used with hydraulic fracturing. You need a lot, anywhere from one to fifteen million gallons per well. A typical well pad, depending upon where you are and what state you are in, might have as many as six wells. That might be as much as twenty-seven million gallons per day per pad. About seventy percent of that comes from surface water and about thirty percent comes from groundwater. This is one thing, just to point out: with the water that goes in, not all of it comes back. Most of it actually doesn't. It's called “flowback water.” Depending upon where you are and what not, it might be between ten, twenty, maybe thirty percent of the water that goes down comes back. That’s called “flowback water.” The rest of the water stays in the formation, and quite frankly, as engineers, we don’t know where it goes. As Woody Allen said about love, it has a mind of its own.

So there are also chemical constituents in that water that is injected, as many as 200 different kinds of chemicals. Not all are injected at the same
time—maybe only a dozen or two different kinds of chemicals to try to help the fracking process. And then there are “proppants.” They are called p-r-o, double p. a-n-t-s, “proppants.” They are things that prop open the formations to get to the natural gas, and that’s usually sand or ceramic material or what have you. So there’s an awful lot of water that’s in use, consumptively and otherwise, for hydraulic fracturing.

Okay, third. There are federal laws and state laws that address hydraulic fracturing, but the state—and I’m sorry for the pun, but I can’t stop myself—but the state of regulation of hydraulic fracturing is, of course?

ATTENDEE: Fracture.

PROFESSOR JAMES R. MAY: Thank you. That’s right. Fracture. Okay, you’re with me. All right. So, anyway, thank you. I’ll be appearing in the lobby later on.

Okay. But largely, hydraulic fracturing is exempted from federal law—largely. Some examples: the Safe Drinking Water Act exempts hydraulic fracturing from laws that concern underground injection. NEPA presumes that certain kinds of activities are federally permitted activities, so therefore you don’t need an EIS. It’s not a significant impact, and in some instances, you don’t even need an environmental assessment. Clean Water Act has exemptions for stormwater discharge. It also has exemptions for certain kinds of reinjection of contaminated water. The Resource Conservation Recovery Act, the nation’s hazardous waste law, has exemptions for oil and gas development, including hydraulic fracturing, which are known as the “Bentsen Amendments,” named after Lloyd Bentsen, of course, from Texas. The Comprehensive Environmental Response Compensation Liability Act—you know it as CERCLA—also exempts reporting requirements and ultimately liability requirements for releases of certain kinds of chemical constituents associated with hydraulic fracturing, as does the Oil Pollution Act, as does the Clean Air Act for certain kinds of activities. But, EPA is working on, as Jason mentioned, new source performance standards for venting of volatile organic compounds. Now, there’s also the Toxic Substances Control Act, which has a requirement or at least the agencies can require health assessments, and there have been petitions to have those health assessments occur to determine the health impacts of hydraulic fracturing.

But really, the game is occurring at the state level where the typical state requirements include requirements about design, requirements to disclose contents of hydraulic fracturing fluid, requirements about where the well pads can be located, when the hours of operation can be, truck traffic, a whole variety of state requirements, insurance bonds, disclosure
requirements, notification requirements for releases and what have you, and guess what else? Bans, moratoriums. As was mentioned, one most recently is, of course, in Longmont, Colorado, but the State of Vermont has banned hydraulic fracturing. Some counties in southeastern Pennsylvania, Bucks County, and portions of Montgomery County have banned hydraulic fracturing. So, nationally, there’s a lot going on at the state and local level.

So, last, the constitutional components here. Now, this is a brave new world. Sorry to use that expression, but with hydraulic fracturing, there are loads of issues concerning separation of powers and federalism and individual rights that are on the horizon. If I were to come back here in ten years, there would be panels dedicated to constitutional challenges and opportunities concerning hydraulic fracturing. It would have a skimpier name, but at least something like that.

Now, just two more minutes, on the federalism side of it, primarily two right now: preemption and the Dormant Commerce Clause. There are issues about the extent to which states can regulate, or choose not to, hydraulic fracturing. So at least the way the lay of the land is right now, I doubt that there’s much of a federal preemption claim for state action, because there’s no express preemption, and it’s a really hard claim to make that the federal government is occupying the field of hydraulic fracturing.

On the Dormant Commerce Clause side of it, things get a little dicier. As states get out ahead, and some states are looking into restricting the out-of-state transportation of hydraulic-fracturing-produced natural gas, it’s going to run into Dormant Commerce Clause issues, as well as the energy produced from that.

Second, Congress. Now, to the extent that Congress tries to get involved, there will be those Commerce Clause challenges, particularly in light of the Sebelius case. Has Congress exceeded its Commerce Clause powers, and regulating its disclosure, requiring disclosure? Is that an exceedance, or would regulations be an exceedance? If we have cooperative federalism and Congress enacts a law that uses spending power, likewise that raises Sebelius kind of concerns about whether Congress is in fact coercing the states along.

And last, individual rights. As states and localities and what have you begin to require buffer zones and an effective way that people engage in hydraulic fracturing and other kinds of practices on land, there will be Fifth Amendment issues, of course, along the way, by taking private property for public use without just compensation. But there will also be some other ones, some sleepers, including substantive due process issues about liberty and entering into contracts and rights of contract, that states can’t abridge those, and Compact Clause issues to the extent that states try to come up
with means to work together, and lastly procedural due process claims. We’ll be seeing a lot of those under *Mathews v. Eldridge*.

So to return to the metaphor, it’s a brave new world out there in hydraulic fracturing, and I look forward to the discussion. Thanks for having me here.

**JUDGE TIMOTHY M. TYMKOVICH:** Thank you.

**JUDGE TIMOTHY M. TYMKOVICH:** Mr. Segall?

**CRAIG SEGALL:** Hi. I’m Craig Segall. Thanks for having me.

So, this is an incredibly interesting area because there’s so much going on. You just heard I think maybe a third of what’s actually going on in the last two presentations. There’s just this vast complex. So, I think the place I’d like to start is with International Energy Agency, which is more or less the equivalent of the U.S.’s Energy Information Agency. It’s a statistical body not really known for being that out there.

They came out with a report this summer called *The Golden Age of Gas*, which is a good-sounding title, and which contained a bunch of pretty interesting conclusions. The first that I’ll highlight is that an awful lot of what we need to do in engineering to be better on production probably has maybe seventy-eight percent of cost to a lot of production, so they said this is manageable, we can put a lot of these productions in place, we can go forward with lots of gas production. Then, they said on page ninety of the report, but here’s the thing. We modeled this, and if you do that, you wind up just from CO2 combustion emissions from all that, not even counting the methane, the amount of which is pretty hotly debated, at around four degrees C. or about six degrees Fahrenheit temperature increases by the end of the century, which is disastrous. That’s about as much warmer as it was colder during the Ice Ages. You’re talking about catastrophic, civilization ending temperature changes, and climate shifts.

When asked about this, Fatih Birol, who is the Chief Economist of the IEA, said, “Well, yeah, we said it was a golden age of gas, not a golden age for humanity.” Oh! So the question I think we face is to what degree those two golden ages are commensurate—in some regards, they are; in some regards, they aren’t—and what steps can we take to head off the larger problems, and those really fall into two really big buckets.

The first set of buckets is what we’ve mostly talked about so far, which is the production side: what can and should we be doing to ensure that this process—to the extent it’s going on, and, oh, is it going on—is done well. The second, which we’ve talked a bit less about and which I think is in many ways a much harder problem is the consumption side: what do we do about
gas as a matter of a natural energy policy. It has some major pluses; it has some major minuses. And how we get at that is going to be I think pretty difficult.

Turning first to the production piece, I am going to suggest this should be, although it may not actually be, the less controversial of the two. When you get right down to it, as Jason and I were talking about before the panel, a lot of this is engineering, not ideology, and a lot of it is engineering, both in serving the small sense of how you design your well and the large sense about appropriate level of regulatory impact, who does it, where do they do it, how does it occur. There, I think what you are really seeing, and that arc that Jason talked about, is a slow reassembly of the usual cooperative federalist structure of environmental law, where over the period before the gas boom occurred, the oil and gas industry was able to procure, for good reasons and bad, a really wide array of exemptions to various major federal statutes, as Professor May outlined. Those are now beginning to either be erased or reconsidered, and I think they will go on being reconsidered and erased over the next 4 years, the next decade.

You have already heard the outline of that. We are finally getting the first really good federal baseline standards for air emissions. They’re a start. They cover basically new sources, leaving the vast bulk of emissions uncontrolled in the industry. They don’t deal with methane directly. There are various pieces of infrastructure down the distribution and transmission chain they don’t touch at.

So, if you run the numbers, they cover–let me make sure I have this right–on the order, I’d say, of twenty-five percent of the volatile organic compound emissions. So VOCs, for those of you who may not play with those regularly, are variously carcinogenic ozone-forming compounds. You come out with the methane, but they leave maybe seventy-five percent of those, a bit more of the methane on the table. But, that’s a start. And the states will help implement those. States can help fill in those gaps. To the extent that EPA hasn’t touched it, the states can use that data and so on.

Similarly, EPA is developing a lot of information under the reporting rule that Jason mentioned. That is going to be a back-and-forth process due to a lot of industry EPA negotiation. Right now the numbers that are coming in are partial. They don’t contain how they calculated them. Essentially, they are emissions engineering equations. Right now, you get the final result, not the numbers used to calculate it, so there will be verification challenges and basically trying to get all this measurement in place the next couple of years. But, those numbers will get better, and help us better understand where the emissions are.

Similarly, on water, you are seeing EPA begin to reassert its water authority. Under the Safe Drinking Water Act, as many of you will know,
fracturing was largely exempted back in 2005. Part of that was a deal that EPA struck that looked pretty good at the time to keep diesel, which is one of the main sources of really troubling carcinogens, out of the fracture loads. Industry and EPA apparently differed over what they thought that meant, whether it covered all fracturing or just coalbed methane, which is a pretty small set of it, and continue using quite a lot of diesel for quite a lot of years. But one result of that was the statutory exemption Congress carved out that said fracturing is exempt, except for diesel. So EPA is able to use that authority now to say: “Okay. If you are fracturing with diesel, which frankly we had thought you would not be doing, here is what you will need.” In functionally, this will set (in the form of this guidance) federal baseline standards for casing and cementing, how you keep what you’re putting down the well down the well, and make sure that that which is coming up the well does not wind up in the aquifers along the way. And the states can again use that to help develop their own permitting programs, and it will help set the federal baseline.

On land, BLM—I don’t think folks have mentioned this yet—is working on a set of rules which are fairly modest—they’re less rigorous than rules already in place in some states—around disclosure and waste management, which again may help export some federal standards to the states. The National Park Service and the Forest Service also have rulemakings at earlier stages of development.

And on waste and disclosure, there’s thus far less direct federal activity, although EPA is working forward, and an awful lot of petitioning. In the nonprofit community, which I represent, this has been a major focus of our first years of campaigning: trying to identify these gaps in federal authority that can be fixed administratively. I agree that Congress isn’t likely to do a lot on this, at least in the next Congress. And petitioning for administrative change, bringing enforcement cases, trying to strengthen the rules we have and moving them along, so that we can rebuild this cooperative federal structure where we finally have the federal baseline standards and better data coming in.

These are, for the most part, classic problems where you need some federal intervention: where trans-state air pollution; watersheds across states; waste problems, where Pennsylvania, for instance, sends an awful lot of its waste to Ohio and tried to do to New Jersey, which New Jersey wasn’t happy about, where typically you need some federal environmental law that comes out and says: “Okay, here is how we’re going to manage this larger-than-you problem.” So all of that is going forward, and we talk more about the particulars of that. But I think, in many ways, it’s sort of the standard environmental-industry debate. Industry says it will cost a lot. Environmentalists say it’s free. It’s probably somewhere in the middle.
EPA does something, not enough, maybe too much. We sort of gamble on in the way that we do with the sort of problem, and with only novel here is that we're lacking many of the authorities we'd usually have, which makes it harder to come to a resolution that helps control this in a fast way, especially given the pace with which industry is changing.

The second part of the puzzle, which will take only a few minutes to talk about, I promise, is consumption. So here we have I think a really thorny, interesting problem. On the one hand, I would much rather live next to a natural gas power plant than a coal power plant. You have far less emissions of sulfur and nitrogen, and mercury, and that’s great. You are in a better place. On the other hand, I’d rather now live next to a power plant, and there are big questions about how the natural gas boom is influencing America’s power mix and America’s emissions mix. So let me highlight a few of those for further discussion on the panel.

The first I’m going to touch on is climate. As I mentioned, if we just switched coal to gas, which is what the IEA was modeling, I noted at the beginning of my talk, you don’t wind up where you want to be on climate. You perpetuate the climate crisis. You cut CO2 emissions, but you don’t cut them enough to actually get you significant temperature decreases by the end of the century. You’re still on a path for catastrophic warming. So that alone, in the absence of other carbon control policies—energy efficiency, possibly CCS, carbon capture—isn’t going to get you where you need to go to maintain a safe climate. It may be part of that answer, but the question is how much can you leapfrog it, how much do you avoid basically creating another generation, in our view, of sunk investment in carbon infrastructure as opposed to capturing energy efficiency, capturing wind, capturing solar. And there’s an awful lot, I should say, of energy efficiency on the table that we have not captured.

So as we’re in this period now where coal plant owners and utilities are trying to decide what we invest in next: they must either retrofit their plants in the next few years, retire them, switch to gas, invest in efficiency, and that range of choices is now proceeding through state public utility commissions, IRPs, and state energy planning processes across the country. That’s going to be a big part of the question interacting with these federal rules and federal air rules, like EPA’s pending carbon pollution standards for power plants, all of which help—and coal and then create space for what could be gas, could be renewables, could be efficiency, and will actually be some mix of all three, the scope of which will turn a lot on what we decide to do about carbon and how serious we get about it.

The other big question on consumption that I’ll highlight is what we do about export, and Jason mentioned this briefly. There is at present a huge amount of export proposed before DOE, which is a radical shift—no one
thought this would happen—on the order, I believe at this point, of forty-six percent of current U.S. production. Obviously, exporting all that would require major increases in production. Equally obviously, I think, all those terminals won’t get built, but some percentage of them will, and the question is what do we do about that. Liquefied natural gas is how one exports gas, and it is actually quite carbon intensive as a form of gas. Depending on who you talk to, it’s between thirty and forty percent more carbon intensive than ordinary gas, because it takes a lot of energy to cool and ship it. High-end LNG probably overlaps with low-end coal, but even if it doesn’t, it’s a lot of carbon we’re exporting. Is that a good idea? What will it displace? Will it displace things, or will it just add to more carbon use elsewhere in the world, and how do we control it? There are big questions about DOE’s authority and FERC’s authority over that process: what they have to analyze before they make that public interest determination, and what degree it’s a good idea to give up some amount of our domestic natural gas resources into this international market, which turns both on how we export carbon and how we reshape our utilities at home.

So having said all those questions, I’ll say this. The natural gas boom is mainly an exceptionally mixed blessing. On the one hand, we have this resource to manage, which creates all sorts of fairly pressing production questions, but it also means that although we have an opportunity to depart coal, we face this risk of essentially doubling down on gas and missing climate targets that will cause enormous trouble over the next 50 years, century, two centuries. So I think that’s the question we’ll be talking about. Thanks.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Craig, Mr. Burcat.

JOEL R. BURCAT: Well, good morning, everyone. The other speakers have spoken largely about federal issues and overall issues, constitutional issues. What I thought I would do is focus a little bit more on state issues and a little bit more on why I as a person, who has been an environmental lawyer now for thirty-two years and someone who considers himself an environmentalist, why I feel very strongly that the proper place for the majority of regulation of natural gas development in the United States is with the states.

And I’m going to start out with a quote from a person I think very highly of, a great American and a great Secretary of DEP in Pennsylvania, Michael Krancer. Mike Krancer, in testimony to Congress in May of this year stated, as follows. He said, “There is no question that states can do, and are doing, a better job regulating the oil and gas extraction technique of
hydraulic fracturing within their borders than the federal government could do. No one-size-fits-all is applicable in this field. Each state is different and has different geography, topography, geology, hydrogeology, and meteorology. In fact, the states in which hydraulic fracturing has and is taking place have been regulating that activity for many years already. The states are already light-years ahead of the federal government in terms of experience and knowhow about their own individual states and about the science and technique of hydraulic fracturing.” He goes on to say a little bit later on, he says, “I can tell you unequivocally that the federal government could not have implemented and executed what we have done and done very well right here in Pennsylvania.” And I feel very strongly that I agree with Secretary Krancer on his remarks, and his remarks, by the way, are quite lengthy. He goes into lots and lots of detail in those remarks to Congress.

But there are a number of points that I think that we need to talk about as to why this is important and why the proper place for the majority of regulations is the states. And we certainly have already heard why it is that there are certain federal issues and probably issues that ought to be federal issues, as Jason pointed out, certain constitutional limitations, certain concerns, as were raised by Craig.

To me, the number-one issue that I think that we are facing right now, I believe, is North American energy independence, and you look at the ongoing tragedies that are going on right now in the Middle East, and you see the necessity for the United States being absolutely disconnected from Middle Eastern fossil fuels. The fact of the matter is, with any turmoil in the Middle East, what we need to do is we need to avoid the situation of having us be dependent, as we are so dependent right now, on Middle Eastern sources of fuel.

It’s interesting for those of us with gray hair in the room or maybe no hair in the room. When we had the alternate day rationing that was taking place in New Jersey and New York as a result of the tragedy of the hurricane, it reminded many people—and in fact commentators said this on television—that it was reminiscent of 1973. And I remember that very well.

You probably weren’t born, so I’m not even going to look at you on that one.

But I remember it quite well. I was a sophomore in college at the time, and I remember the long lines of cars across the United States. You saw this on television day in and day out while that was going on as a result of the oil embargo that took place. While certainly we don’t want to have a repeat of what recently occurred and we certainly don’t want to see that ever happen again, because of the turmoil that exists in the Middle East, the constant turmoil apparently, plus the threat to this country’s national
security, it certainly seems to me that one thing we want to do is become energy independent. And while we’re focused right now on natural gas, bear in mind that places like the Bakken shale, including Pennsylvania and Ohio, there are other places where oil is also accessible as a result of hydraulic fracturing. So I think that one thing we want to do is we want to move away from our dependence on Middle Eastern sources and foreign sources, and we want to really achieve North American energy independence.

It’s been reported that the United States will become the biggest producer of oil within the next five years. That’s been reported in the past week, and that’s certainly to me a great change and should make a huge change to national security in this country, if nothing else.

I think that we would all agree that it would be great if we could see increasing amounts of the use of natural gas vehicles. I think we would like to see larger gas uses of automobiles, and I think that one of the things we need to do is that we need to be wary of the situation where I think the administration is attempting to assert increased regulation. And we really want to get away from that, I believe, and avoid the situation where the states, which are already doing an excellent job of regulating, are forced out of the field that they know so well.

We have two tragic situations that have occurred, one within the past couple of years and one just this week, where we’ve seen what’s happened when the federal government has had sole regulation, such as in the Gulf of Mexico, and we know that that hasn’t worked out too well in the BP Deepwater Horizon situation. There was no state involvement in that, and likewise, just the other day, the Black Elk Energy platform. While we of course pray for the safety of the workers and the responders in that situation and hope that everyone there is going to be safe and there aren’t going to be any additional injuries, at the same time we see that the federal government is not a panacea when it comes to the regulation of energy production.

So, clearly, what we see now, with the discussion that we have had today and with the many, many federal initiatives that are going on, is that there is currently an ongoing charge by the current administration to have a usurpation of state regulatory authority, and one thing I think we want to do is we want to try to avoid that.

Let me give you a couple reasons why we ought to avoid that, and I have alluded to one of them, but let’s start out with this. And that is, that unfortunately, when it comes to regulation within the United States, the federal government often takes a one-size-fits-all approach. Secretary Krancer stated that in his comments, it’s been stated numerous times, whereas the states on the one hand are very, very familiar with the varying topography, the varying geology, the varying conditions that exist in their
individual states, and they can adapt to those individual conditions, it’s a much more complicated process when you are issuing a nationwide regulation, even when that regulation attempts to exert a certain amount of flexibility. It’s really an almost impossible task, and so, consequently, because there are such differences really from one region of a state to the next, it is very difficult I think to abide by the one-size-fits-all approach that the federal government often finds itself having to perform.

Another concern is that the reasons that a federal program might be established would be a situation where there is a perception that the federal government can regulate an industry better. And as I mentioned a few minutes ago, there are certainly legions of examples where that clearly has not occurred, even though there is that perception that they can regulate the industry better.

Another is a need to regulate. Another reason that the federal program might be established is a need to regulate on a regional basis as an environmental condition as regional impact, for example, such as air pollution or regional issues associated with the watershed. And as Jason pointed out a few minutes ago, there certainly I think will be a significant role for EPA and for other agencies in air issues, as air does not adhere to state and regional boundaries. Likewise where you do have regional watershed issues, I think we will see an increase in regulation, and I think there’s an increase in justification for that.

But, you know, in places like Pennsylvania and in other places, we already have river basin commissions. For example, in Pennsylvania, we have the Susquehanna River Basin Commission, and the Susquehanna River Basin Commission covers large sections of Pennsylvania, New York, Maryland, and into the Chesapeake Bay. That River Basin Commission exerts regulatory authority over hydraulic fracturing, over drilling, and over the use and discharge of water. Likewise, on the eastern part of Pennsylvania going up into New York, we have the Delaware River Basin Commission, and the Delaware River Basin Commission covers, again, New York, Pennsylvania, but also New Jersey and Delaware. And the federal government plays a role in this, as well. Professor May alluded to the Compact Clause. Those commissions are formed as a result of the Compact Clause in the Constitution, and those commissions have been in existence and actually right now I think are probably exerting authority that was written into those compacts some fifty years ago or so, that to a large extent, they have never really utilized in the past. But those authorities already exist in many instances to cover regional issues. And I think we’ll see perhaps a greater push on the federal side to establish regional regulatory bodies like that.
Another reason why state regulations are preferable federal regulation is that it may be necessary for the full-scale development of a regulatory program to regulate an industry. But the problem with that is that it would require an enormous bureaucracy to do that and I think with literally thousands of employees. So if we had a situation where there was no regulation, we had a new industry that had no regulatory structure in place today, you could say, well, gee, we need a federal program to come in and to take over and to be responsible for this. But what we have seen, for example, with oil and gas is that the states have been regulating oil and gas development within their boundaries since there’s been the extraction of oil and gas in those states.

Pennsylvania, first law in the books is in the 1850s. That’s over 150 years ago that we’ve had laws on the books, and we’ve had a regulatory structure in place. Pennsylvania over the past four years has doubled the size of the bureaucracy within Pennsylvania DEP that deals with oil and gas regulation. There are over 200 employees today dealing with permitting and enforcement issues, when just a few years ago we had 100 and a few years before that perhaps forty or fifty employees to deal with the much larger needs of regulating this industry, which has been growing so quickly. But if we were to have a federal overlay, we would need a much larger bureaucracy either within EPA or the Department of Interior or perhaps within both, and we don’t need another large federal bureaucracy. Even utilizing programs like the Primacy Program, which we see in NPDES permits and other permits as well, even with that kind of an overlay, you still need a federal bureaucracy to manage and to have oversight over these state programs, and to me, that’s just an unnecessary expense at this point.

Finally, I just want to touch base on a couple of issues. There are some main concerns I think that states have, and I think the states are handling these, I’m going to say, either reasonably well or very, very well. And these issues would be issues such as well construction. I think that that’s an important issue that you have to understand: that every state—if it doesn’t have actual construction requirements regarding the actual drilling of the well—has requirements regarding the casing and cementing of these wells, and these are requirements in fact have been growing stronger and stronger. Pennsylvania’s new Act 13 actually came into effect after a stronger regulation went into effect, and I know that Pennsylvania will be promulgating stronger regulations yet on well construction.

Chemical disclosure. I think one of the mistakes that industry made a few years ago was vigorously challenging and pushing off chemical disclosure, but now what we’ve seen is that eighteen states have mandatory disclosure requirements, and these disclosure requirements are easy enough for any of us to find. There is an organization called FracFocus.org. You go
onto their website, and you can see what has been utilized at any well site in those eighteen states, and others are doing it, even where they’re not in those states, on a voluntary basis.

I think the states also have a concern regarding protection of water quality. I know that Pennsylvania has taken this role very seriously. There have been cases that have been referred criminally, so that we now have criminal prosecutions relating to the oil and gas industry. We have had criminal prosecutions in water quality issues for many years, but we also have extensive water quality investigations and extensive water quality enforcement actions that have been taking place in Pennsylvania and at other states as well.

Another concern at the state level I think is transparency of state programs. One of the things we’ve seen—and I focus again on Pennsylvania, which is where I am from—is that compliance and inspection in Pennsylvania is now, I would say, at an all-time high in terms of information being transparent. There was a time in Pennsylvania way, way before the oil and gas boom, the Marcellus boom, when it was much more difficult to obtain government documents. In fact, the law which is called, and still is called, the Right to Know Act, sometimes we refer to as the “Right Not to Know Act,” but the Right to Know Act has been improved over the past five or six years, and the Right to Know Act in fact requires disclosure of virtually all government documents with a relatively small number of government documents that do not have to be disclosed. And the burden is now on the government to be able to show that a document should not be disclosed, rather than on the person seeking disclosure. And there is a Pennsylvania Office of Open Records, and what we’re finding is that there’s just a gigantic number of requests and a gigantic release of documents. So we have a lot of transparency in our state programs.

Just one last point and I’ll make this to instill a little bit more controversy into our program today, and that’s the position of NGOs such as the Sierra Club. Understand that the debate, I don’t believe is about how much natural gas use should we allow between industry and NGOs, but there is a document that the Sierra Club has released back in May called Beyond Natural Gas, and their executive director—this is Michael Brune—said, “We are going to be preventing new gas plants from being built wherever we can. The closer we look at natural gas, the dirtier it appears, and the less of it we burn, and the better off we will be.” Clearly, the goal of NGOs is to stop the use of natural gas, and certainly we all applaud energy efficiency. I think there’s a huge role for wind. There’s a huge role for solar, but I think we have to recognize that there is also going to be a huge role for natural gas. And that natural gas has been able to do what years and years of politicians talking and legislation coming on the horizon trying to
reduce the amount of dependence on coal and other forces and other sources of hydrocarbon-based energy, natural gas has been able to do what all that legislating and all that discussion hasn’t been able to do, and that has been to displace coal in particular as a source. And we’re seeing a greater and greater reduction in the use of coal across the United States today, specifically as a result of natural gas.

Just one last point that I just have to make because it’s relevant to last night’s discussion. Last night when we heard a very interesting presentation from Mr. Thiel, he was talking about the fact, he was saying very little innovation, not a whole lot of innovation over the past decade or so; in fact, I think he said the past forty years that level of innovation has been way, way down. I think I could argue with him on a number of different points regarding that, but certainly when you take a look at natural gas and oil production in the United States, who would have thought ten years ago when they were talking about peak oil and peak natural gas in the United States, who would have thought that today we’d be sitting on—in Pennsylvania, for example—a reserve of natural gas that’s the second largest in the world. Who would have thought that the cost of natural gas would be so low that it’s actually driving coal out of business? Who would have thought with natural gas today, with the innovation and the combination of horizontal drilling and hydraulic fracturing, who would have thought that the innovation that’s involved in that very, very technical use of science, who would have thought that we’d be seeing today these great, great possibilities on the horizon? And not just on the distant horizon. They’re right here.

So I’m all in favor of it. I think we’ve got great, great innovation that’s going on right now, and I’m hopeful that the states will be allowed to do what the states can do best. Thank you.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Joel. Thank you, panel.

What we’re going to do next, I’m going to allow some responses by the panelists, and then we will take questions from the audience. As we get started here with this round, if you have a question, go ahead and move up to the microphone in the center there, and I will get to you.

I think I will turn first back to Craig. Joel made I think two points that I’d be interested in your response to. First was this overall question that natural gas, of course, is a fossil fuel, and to the extent fossil fuels are contributing to global warming, that even a little use of natural gas can get in the way of a larger goal, first point.
The second point is he made a spirited argument that the best regulation is state and local regulation in this area, and I wonder if you agree with that or you have a different point of view.

CRAIG SEGALL: I do have a different point of view. So let me take the second point first, and I think what’s striking is what Joel just outlined bears basically no resemblance to what the federal government is actually doing. No one is talking about EPA issuing permits for every gas well in the country. No one is talking about a bureaucracy of that size, and it’s certainly not what EPA is talking about. Lisa Jackson herself has said that.

What we are talking about is the reestablishment of the federal baseline standards that apply to virtually every other industry in this country. Yes, it’s true. Conditions vary from state to state. They vary from locality to locality, but that’s true basically for everyone else. The oil and gas industry is not such a special snowflake that it cannot be regulated by federal standards, so what are the feds actually doing? They are applying mostly industry’s own best practices through EPA’s air rules as a baseline across all the states. Many of those states did not have those rules, and it’s cleaned that up. They are providing extremely basic and quite general standards around casing and cementing. They will hopefully do the same around waste and disclosure. These are not, and I don’t think should be, either controversial or particularly overreaching. The states will remain as they have remained under all federal environmental statutes, the arbiters of individual permits and most enforcement. That’s just a true thing.

So I think the specter of some sort of looming federal regulatory rush that will profoundly change the industry just isn’t so. You see that in the actual cost estimates for these regulations, which are small, small percentages of not actually cost-positive, but you get to capture the gas you don’t emit. You see that in the ongoing expansion of the boom. There is just not a real threat from federal regulation of the sort we are talking about, which is largely focused around waste, water, and air quality standards, to either displace the states in a meaningful way or to slow the boom. It just will not happen. That is not what the government is about, and if you paid attention to the President during the debate, you will know that’s not where he’s focused. If anything, we think the administration is often too positive on natural gas. This is not an area where the feds are rushing in to block the industry. They are trying to catch up and get the baseline standards in place they didn’t have in place, because the industry sought exemptions for years that have in many cases result in serious accidents.

And I will just add, I think describing the Macondo disaster as a fail as an indication by state regulation is better than federal is really disingenuous. I tend to think the worst environmental disaster in American history for
which BP just pled guilty to counts of manslaughter and criminal
destruction of Congress is actually a better indication that this industry, like
any other industry, has serious problems or can have them and warrants
close watching. They have done real damage, and it makes sense to get
baseline standards.

Now, as to the climate question, look, we’ve run these numbers, and,
you know, one of the real tragedies of where we are and how slow our
climate response has been is the atmosphere is seriously out of balance. We
are way over where we need to be in terms of CO₂ concentration and
methane concentrations, and one of the consequences of that is the sort of
emissions reductions that natural gas offers, while substantial with regard to
criteria pollutants—and there I think that is really something we ought to be
talking about—are not substantial enough in terms of carbon reductions to
give us where we need to go. They don’t reduce temperatures fast enough or
enough. Does that mean we use no natural gas? No. But it does mean that
when utilities are making these decisions, they have often left huge amounts
of efficiency on the table. Your first response shouldn’t be to increase your
emissions. Your first response should be to figure out how to reduce
demand and load. It’s cheaper, often by billions of dollars, in terms of net
present value as you look across the decades, and it’s more effective. It’s
also often a better source of jobs, because you are talking about large-scale
energy efficiency retrofits and industrial changes. So that’s where we want
to go, I think.

JUDGE TIMOTHY M. TYMKOVICH: Thank you. Professor May.

PROFESSOR JAMES R. MAY: Do you have a question, or would you like
me to—

JUDGE TIMOTHY M. TYMKOVICH: Comment on what you just heard.

PROFESSOR JAMES R. MAY: Sure. Okay. Look, I think this is really a
fascinating topic, and it’s been a terrific panel to be a part of, so, again, I
want to thank you.

There are certain dichotomies going on here. We have these sort of
cognitive dissidents. Now, for folks who think that the federal government
is poised to usurp local control, I just see it differently. I don’t think the
federal government right now or in any time in the near future is poised to
displace state and local control over something that’s been controlled that
you’ll mention since the 1850s.

I do see interest in federal involvement at the margins for things that
involve interstate commerce, for things that involve national security and
safety, and I think that’s the role that the federal government should be considering with these kinds of issues, but we all can’t have it both ways. Concerning states’ rights, the other part here to consider is for folks who are proponents of state regulation from stem to stern of oil and gas and particularly hydraulic fracturing, then why the push through state legislatures around the country, including in places like Harrisburg and in Albany, to preclude local control, local land use control? So, it just seems to be inconsistent to tell the federal government to stay out because it’s a state matter, and then to tell the subnational units that they can’t do it, either. I mean, that just seems to invite capture, and so I think under our constitutional system, it needs to be avoided.

The second thing is about national control. Folks who are pushing for national control, again, there’s dissidence there because–Joel is right–oil and gas has traditionally been a matter reserved for state control, and it’s been recognized under the Tenth Amendment, all the way back to Justice Holmes’s remarks Pennsylvania Coal v. Mahon. It has been recognized, is recognized as traditionally a state function under state police power. So to get involved in that arena, it raises constitutional friction.

And last, concerning the remarks about NGOs, first of all, not all NGOs are opposed to horizontal gas drilling. A lot of NGOs are proponents of it, including environmental public interest groups. So picking out Sierra Club, that’s one, right. But there is, again, cognitive dissidence. For the NGOs who were opposed to horizontal gas drilling and domestic production of natural gas–and this is a question that sometimes doesn’t make me the most popular person in the room when I talk to my friends on the NGO side of things—as opposed to what? What are you going to replace it with? Nuclear power or–those of you from Texas, my apologies–nuclear power? You know, what else are you going to do? So, this is a domestic supply that’s available, and if the engineering can be accomplished, then it can help to provide for a sustainable energy future for you, for my kids, for your grandkids, and so on. It can help. It can be a bridge fuel to conservation and some other renewable energies and engineering that can be used in the future.

Last thing is along the lines of making, but I think the bottom line is it has to be done safely, and the engineering exists. That’s my opinion. You might disagree with me, but I think at least on this panel, I have heard agreement about that. The engineering exists to make it safe, but that’s first. Second, some places in this country–again, I might disagree with some remarks you’ve heard–it isn’t safe yet. There are problems. There’s water contamination. There’s surface water contamination. There are air pollution issues. There are issues about the casement, where the casement standards are different from state to state. It’s the “Wild West,” some people have
described it. So, as an engineer and as a lawyer, how do you advise your clients, and how do you meet design requirements? That’s where the federal government, that’s where I see a niche for the federal government to come in concerning casing and cementing and monitoring and disclosure requirements, to level the playing field across the country so that we don’t have this feeling of a huge gap between what’s being done from state to state.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Jason?

JASON B. HUTT: Well, I agree with Jim that natural gas is a glidepath to a low-carbon economy, and I don’t think it’s realistic to think that you can leapfrog yourself to a low-carbon economy. I just don’t think that’s realistic, and I think this is a gift in that sense, that it is domestic to get there as opposed to a dependence on foreign natural gas.

With respect to the engineering, I want to go back to the discussion about the diesel guidance, because that’s coming out here in December. This is an excellent example, because I talked about the fact that the industry is not using the diesel anymore. So, why is EPA spending so much time and energy on issuing the guidance? Well, the guidance is about the design, casing, and cementing standards associated with a well in order to keep what’s inside the pipe, the diesel, from going outside the pipe to the environment. What EPA will say and what the states will have to take notice of is that these standards that are designed to keep one fluid from inside the pipe from getting outside the pipe need to be seriously considered for every other type of chemistry that’s inside the pipe that you don’t want to go outside the pipe. So, this isn’t really about the use of diesel at the federal level and bringing those standards to bear. It’s about what the engineering standard should be, and this is going to be the way in which EPA uses its existing authority from Congress to begin to explore that realm.

With respect to these local moratoriums and bans, I would be more impressed and take more note if a locality or a municipality or a city banned the use of natural gas that came from hydraulic fracturing as opposed to banning hydraulic fracturing within their jurisdiction, because that actually takes recognition of what their dependence is on the fuel source and what it means to their economy.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, Jason.
Let’s go ahead and take questions from the audience. Go ahead and identify yourself and also direct to whom your question is presented, and please keep your questions relatively brief. Thank you.

JOHN R. HAYS JR.: Sure. I am John Hays. I am one of, I guess, that sorry cast of characters. I happen to be both from Texas and an oil and gas lawyer, and I teach a course called Energy Law and Policy at the University of Texas Law School.

My question concerns the federalism issue, since this is The Federalist Society, and I guess the question would be, in the first instance, directed to Professor May. I certainly have not seen a hue and cry to have uniform federal standards for drilling and casing, and indeed, there are a lot of localized issues dealing with formations in particular circumstances. That’s one of the reasons why we are working with folks to file comments on Railroad Commission rulemaking, updating the casing rule this coming Tuesday. It’s being very actively looked at.

I can’t resist, and I am not going to speechify here, but I want to throw out a few facts. People talk about water as if fracking is a huge problem. The average frack job uses about 4.5 million gallons of water. That’s the amount of water used to irrigate a golf course for twenty two days, to grow 6.75 acres of corn a season, or to run 1,000-megawatt coal plant for eleven hours. So, we need, and I guess the other question, perhaps Mr. Hutt, is how we can bring honest factual knowledge to these discussions. Knowledge, such that when we talk about the impact on global climate, assuming it’s having that impact—and I don’t even get into that—we tend to forget that China is bringing on one new coal plant every week.

JUDGE TIMOTHY M. TYMKOVICH: Okay. Let’s go ahead and get to the question, one for Professor May and then one for Mr. Hutt.

JOHN R. HAYS JR.: Sure, sure.

JUDGE TIMOTHY M. TYMKOVICH: Thank you.

PROFESSOR JAMES R. MAY: Okay. Well, I’m going to just start, if you don’t mind.

JUDGE TIMOTHY M. TYMKOVICH: Go ahead, Jason.

JASON B. HUTT: I mean, how we bring it is better information. I agree with your point. It’s about water efficiency, and the troubling part for the industry is that they are the late comer. So, if you have a finite pool of water
in a jurisdiction, you’re the marginal user if you’re the last comer to that jurisdiction. So, when you talk about it in sheer volume, it is very dramatic, but when you talk about it in terms of water efficiency, natural gas is a highly efficient fuel.

How do you accomplish educating the public? I am putting on a suit and tie on Saturday and coming out here and talking about it, and I am going to keep talking about it until we clear it up.

JUDGE TIMOTHY M. TYMKOVICH: Thank you.

PROFESSOR JAMES R. MAY: To second that, I was at a National Judicial College conference last week trying to talk facts and what have you, as well, but facts are facts, right? And then there is disagreement about what those are from place to place and what have you.

Now, concerning your remark about casing and cementing and there is not a hue and a cry, maybe this is a west-of-the-Mississippi/east-of-the-Mississippi kind of thing. But there is discussion, and a hue and cry is over, I don’t want to exaggerate, but there’s a lot of discussion about trying to standardize—including from industry, from my friends in industry, from engineering friends in industry—cementing and casing requirements somehow, including to reflect local geography and what have you from the national level. So, I do see that occurring at least on the East Coast right now.

I don’t know if, Joel, you have been hearing any of that kind of a push for federal standards for casing and cementing?

JOEL R. BURCAT: In Pennsylvania, we’ve got pretty strict standards for casing and cementing, and the whole notion of casing and cementing to me, though, really belies the whole concept that there is no push to have a massive federal program. You can’t simply say as the federal government, we’re going to have a casing and cementing requirement and then just throw it out there. There has got to be a mechanism for making sure that the states in fact are enforcing that program, and there has got to be a mechanism of oversight. Ultimately, I think there could be a permitting mechanism. So, I think that we could very well see the elephant’s nose under the tent before too long.

JUDGE TIMOTHY M. TYMKOVICH: Let’s take the next question, please. Thank you.
TYLER WARD: Hi. My name is Tyler Ward. I’m a 3L at Vermont Law School, but I’m from Kentucky where we produce both coal and natural gas.

JOEL R. BURCAT: By the way, this just goes to prove that Vermont is in fact taking over D.C., so welcome.

TYLER WARD: My question is both to Professor May and to Mr. Burcat. I think recently, arguably, there’s been no usurpation by the federal government, except recently the EPA vetoed thirty six 402 permits, because the 404 permits were already issued. It was unprecedented in vetoing the thirty-six 402 permits for coal mining operations.

So, in doing that, are you worried that this type of power grab by the federal government of properly issued permits by states is something to be concerned about?

PROFESSOR JAMES R. MAY: Okay, a couple things. First of all, you are from Vermont, and so just for whatever it’s worth, Vermont is the only state in the United States that has banned hydraulic fracturing. Now, other states have in Australia, New South Wales, and Victoria. Provinces in Canada are looking into it, but Vermont has banned hydraulic fracturing.

Now, the sideline to that, I’m told anyway, I am told it doesn’t have any shale gas.

PROFESSOR JAMES R. MAY: Oh, there’s that.

JUDGE TIMOTHY M. TYMKOVICH: They didn’t make it easier, but they won’t get the gas next either, under your previous point.

PROFESSOR JAMES R. MAY: Right.

ATTENDEE: Ban surfing.

PROFESSOR JAMES R. MAY: What? I’m sorry?

ATTENDEE: Ban surfing.

PROFESSOR JAMES R. MAY: Ban surfing, that’s right.

JUDGE TIMOTHY M. TYMKOVICH: Actually, Lake Champlain has great waves.
PROFESSOR JAMES R. MAY: So, concerning the question regarding federal involvement, again, maybe my alarm clock hasn’t gone off yet concerning horizontal shale gas drilling and federal involvement, but I don’t see it yet. Not that the yet means that it’s imminent. Yes, it has EPA’s attention. EPA is more and more involved. There are some examples where EPA gets involved and vetoes permits, including concerning surface mining runoff and coal excavation, but come on, you know, we’ve had a Clean Water Act for forty years, and you can count the number of permits that EPA has vetoed coming out of the 404 program on your fingers and toes and if you have a couple of kids, theirs too. Over forty years, that’s it. So I don’t see it.

JUDGE TIMOTHY M. TYMKOVICH: Joel?

JOEL R. BURCAT: Just the only thing I will add to that is I think that based on the proposed regulations, based on the discussion out of Washington, and certainly based on the investigations that EPA is currently involved in, it certainly has all the indications of a federal program on the verge. And, I’m sure you’ve taken Professor Firestone’s environmental law class, which I believe he’s still teaching and was teaching when I was there many, many years ago. One of the things that you learn, of course, is that federal programs don’t start out, generally speaking, with a gigantic program. They start out small, and often there may just be an investigation that’s undertaken by Congress or by a government agency, and then over time, that program grows and grows and ultimately develops into a larger program.

So, I believe that we are seeing an effort being made right now. We’re seeing the forward edge of a potentially very large regulatory program.

CRAIG SEGALL: And, if I could just add, you know, you would want the federal government to pay attention to this, regardless of how you happen to feel about fracking and natural gas use. You are talking about tens of thousands of wells and a major expansion of the industry that has been, as everyone has observed, fundamentally shifting international energy landscape and a lot of the basic pollution control priorities EPA has. It would be startling if the feds were not trying to better understand this, and I’d say racing forward with a study that won’t be out until 2014 and air rules that were last updated in 1982 does not to me strike one as a rush to regulation.

PROFESSOR JAMES R. MAY: If I could, Joel, the framers of the Constitution, this is what again troubles me. Again, we’re all making this
up as we go along. It’s a brand new area, right? That’s what makes it so fun. We have a republic where we split the atom of sovereignty. We leave some degree of control to the federal government in so many facets of regulation. We also have the 10th Amendment that ensures that the states have certain reserve powers, but at the federal level, the Supreme Court has long recognized and in the Federalist papers that there is a role for the federal government in certain—and there, I’m going to get myself in trouble because I’m at The Federalist Society–areas of society. So, if not a matter that concerns national security, climate change, safety, and 1.5 million facilities across the country, I mean this rhetorically, but then what? I am not making a pitch for federal control. I just mean it seems like questioning whether Congress has the authority to get involved and EPA has the authority to get involved, again, I just wonder about that.

JUDGE TIMOTHY M. TYMKOVICH: Question.

ROD SULLIVAN: Yeah. I’m Rod Sullivan from Florida Coastal School of Law. You know, we are in an energy global climate change problem now. Our global footprint is bad because of our use of coal, but we tend to forget that our use of coal was brought about by the 1973 federal policy of subsidizing coal plants. Now, we’re going to embark upon a policy of subsidizing or approving the use of natural gas, and I wonder whether or not twenty years from now, maybe not myself, but other people in this room may be meeting to discuss the incidental releases of natural gas that are talked about in movies like Gasland and Promise Land, and natural gas having a CO2 equivalency that’s fourteen times more potent than CO2, whether we might not be exacerbating the problem of global climate change.

The last question and the most controversial, I guess, is this: If you’re an environmentalist who is truly concerned about global climate change, isn’t the overall solution nuclear power as opposed to natural gas or wind or solar?

JUDGE TIMOTHY M. TYMKOVICH: Is that for Craig?

CRAIG SEGALL: I’ll take it. So, two points. First, as to gas, I mean, I think that’s the right question, and let me talk a little more concretely, both as to that and as to the nuclear question about where I think it’s actually going.

So, gas plants are fairly unlikely to be limited by most of the current federal air quality standards. They just aren’t big emitters of mercury or of SO2. They do with some NO2 issues. What that means is that the gas plant
discussion will take place in two contexts. The first is in the context of federal carbon policy where we have EPA now beginning to get carbon standards for new plants, and one thing we have really pushed them on is to make sure that the standards they’re setting for new gas plants keep those plants as efficient as possible, and that on the upstream side, they are both measuring and controlling methane leaks as much as possible, the idea being if you are going to burn gas at all, you shouldn’t be doing it with little combustion turbines. You should be doing it at basically top-flight efficiency, and you should be moving toward carbon capture to the extent that’s possible.

Now, the question of nuclear, you know, nuclear may wind up having a role here. The Club’s formal position is not one of opposition, but they are really concerned, one, about the waste and, two, about the relative capital cost. In the near term, we are looking at two to three years from which a large chunk of national coal capacity will be retired, on the order of a third perhaps. Now, that’s capacity, not use, most of the older, less-used plants going down. So, our first wave of policy priority at the Sierra Club—and this goes to the question of what does the bridge mean and how do you actually wind up with a bridge rather than a cul-de-sac towards something that’s really low-carbon—is, okay, every time one of those plants goes down, let’s get involved in the IRP, the integrated proceeding for that utility, and figure out what is the efficiency potential, what can they do with purchase power for renewables, what do you need to make up in terms of maybe increased gas use of existing as plants, if you need to build new, what’s cheap and relatively low-carbon. Nukes for the most part show up just in the Southeast as realistic possibilities of new plants. There are a few that TVA is considering. There is one plant, Levy, that Progress is considering in Florida. Right now, they’re pretty far off in the horizon. So, right now, in those two to three year windows, our priority has really been trying to leverage energy efficiency up.

And just one last point on that. In a lot of especially the Southeast, where nukes are the biggest possibility and we also have a lot of existing coal, utilities are not doing well in efficiency. It’s around 0.3 percent savings a year, 0.5 percent savings a year. National lead represent around two percent savings as year, and I would say show me a business that can’t get one percent better a year, which is what you need in most cases to replace a lot of these coal plants. We just did this for TVA. They can take 1,500 megawatts of coal offline, save the money that they spend over, I think it’s $10 billion on scrubbers, if they spend about half that on efficiency. They just haven’t done it, just to get to one percent. So, that’s where we’re building our house for this next five years. You just get a lot out, and then the next wave, you know, the next two-thirds of coal plants,
that’s where you start getting interesting questions about baseload; how well can you engineer the grid to balance renewables and have better energy storage? So, you don’t need big baseload capacity like nuclear or new gas, but it’s this engineering problem, how do you reengineer the grid as you move? And the first tranche of that is getting the oldest, dirtiest coal off and replacing it as much as possible with zero-carbon options and then looking to the next tranche where it gets harder is the problem, gets more and more interesting and considerably harder the deeper you go in changing the grid.

JUDGE TIMOTHY M. TYMKOVICH: Good question, and unlike many Federalist Society presentations, we will let the Sierra Club have the last word.

JUDGE TIMOTHY M. TYMKOVICH: Thank you, panel.
**LEGAL IMPEDIMENTS TO SUSTAINABLE ARCHITECTURE AND GREEN BUILDING DESIGN**

**Danielle Changala**

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INTRODUCTION

As governments, businesses, and the global community embark on an effort to address climate change, it is imperative that the United States’ legal, regulatory, and political systems foster the adoption of resource-efficient and low-carbon technologies, practices, and infrastructure. Paramount to these efforts is the incorporation of sustainable architecture and green building design. Buildings represent nearly forty percent of U.S. greenhouse gas (GHG) emissions.1 Conventional buildings inefficiently use energy and water, require significant amounts of raw materials and natural resources for construction and operation, generate harmful indoor pollutants, and account for a substantial portion of other harmful environmental air pollutants.2 While the initiative to transform the building sector is already underway, significant barriers impede its progress.

This Note examines particular legal impediments to the adoption and implementation of sustainable architecture and green building design. Part I describes sustainable architecture and green building design. Further, it discusses why sustainable architecture and green building techniques must be adopted in order to effectively address global climate change. Part II discusses the doctrine of federal preemption, how it has been applied by courts to preempt state and local building codes, and its implications for the development of progressive state and local green building regulations. Part III discusses the intellectual property rights associated with sustainable architecture and the ambiguity of its protection under current copyright law.

I. SUSTAINABLE ARCHITECTURE AND GREEN BUILDING DESIGN

A. Sustainable Architecture and Green Buildings Defined

Sustainable architecture and green building design are interchangeable terms used to refer to buildings that are constructed, operated, and

1. U.S. ENVTL. PROT. AGENCY, BUILDINGS AND THE ENVIRONMENT: A STATISTICAL SUMMARY 2 (2009), available at http://epa.gov/greenbuilding/pubs/gbstats.pdf (This figure includes the GHG emissions generated during the life cycle of a building and from the activities that occur within a building.).
2. THE LAW OF GREEN BUILDINGS, REGULATORY AND LEGAL ISSUES IN DESIGN, CONSTRUCTION, OPERATIONS, AND FINANCING 3, 5 (J. Cullen Howe & Michael B. Gerrard eds., 2010).
renovated in a resource-efficient and sustainable manner. The U.S.
Environmental Protection Agency (EPA) defines green building as “the
practice of creating structures and using processes that are environmentally
responsible and resource-efficient throughout a building’s life-cycle from
siting to design, construction, operation, maintenance, renovation and
deconstruction.” Green building design seeks to use energy, water, and
other resources efficiently; protect occupant health; and reduce waste,
pollution, and environmental degradation.

B. Why Buildings Matter: Conventional Building Impacts

Americans, on average, spend ninety percent of their time indoors.
Furthermore, the majority of buildings in which Americans work, sleep,
and eat do not incorporate green building concepts. Additionally, the long
time of buildings—the average nonresidential building exists for
seventy-five years—implies that designs can have direct environmental and
human health impacts for decades. Conventional buildings require
extensive amounts of raw materials for construction and operation, generate
enormous waste streams and air pollutants, and use substantial quantities of
water and land. Additionally, buildings consume an immense amount of
energy and are responsible for producing a significant amount of GHG
emissions.

1. Environmental Impacts

Buildings have major environmental impacts. Buildings in the United
States use an estimated thirty-nine billion gallons of water per day and
account for ten percent of the nation’s total water consumption. Additionally, buildings and related infrastructure constitute approximately

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5. Id.


7. THE LAW OF GREEN BUILDINGS, supra note 2, at 5.


9. THE LAW OF GREEN BUILDINGS, supra note 2, at 5–11.

107 million acres of developed land.11 In addition to the direct land impacts of a physical building space, buildings also require roads, sewer lines, utility poles, parking garages, and other infrastructure for service and maintenance.12 Thus, poorly sited buildings and urban sprawl result in an inefficient use of land and increased habitat disruption and fragmentation.13 Furthermore, buildings require vast amounts of raw materials and natural resources for their construction and operation.14 Buildings account for forty percent of all raw materials used in the United States.15 Moreover, much of these materials are wasted during the construction and demolition (C&D) of buildings. Building-related C&D generates approximately 160 million tons of waste per year, totaling nearly twenty-six percent of non-industrial waste generation in the United States.16 Wastes include lumber, manufactured wood, roofing materials, metals, plaster, plastics, foam, insulation, textiles, glass, and packaging.17

Additionally, there are many human health effects associated with buildings. Buildings contribute to cancer-related illnesses and asthma caused by indoor contaminants such as dust mites, molds, insects, secondhand smoke, and household chemicals.18

2. Energy Use Impacts

Buildings use energy to heat, ventilate, cool, light, and power the activities within their walls. According to the United Nations Environmental Programme (UNEP), buildings use thirty to forty percent of all primary energy produced worldwide.19 In the United States specifically, residential and commercial buildings consume over fifty percent of all energy consumed in the U.S. and seventy-three percent of generated

12. THE LAW OF GREEN BUILDINGS, supra note 2, at 9.
13. Id.
14. Id.
electricity. Energy consumption in buildings costs over 390 billion dollars per year. Globally, existing buildings account for forty percent of the world’s energy consumption. Projections of future energy consumption reveal that energy use in the United States is expected to increase by approximately nineteen percent by 2025. Furthermore, not only do buildings account for a major proportion of the total energy and electricity consumed in the United States, but they also typically use energy inefficiently. One estimate suggests that if the United States could capture its full efficiency potential by 2020, it would consume twenty-three percent less energy per year, resulting in over 9.1 quadrillion British thermal units (BTUs) in savings.

3. GHG Emissions and Climate Change

As a result of their energy consumption, buildings also account for a significant portion of total GHG emissions. Burning fossil fuels results in the release of carbon dioxide (CO\(_2\)), a heat-trapping GHG, into the atmosphere. Since the United States is heavily dependent on fossil fuels for electricity generation, the combustion of these fossil fuels—such as petroleum, natural gas, and coal—produces immense GHG emissions. Approximately sixty-eight percent of the United States’ electricity is generated by fossil fuels. Accordingly, buildings in the United States account for forty percent of the nation’s total GHG emissions and twenty-four percent of global CO\(_2\) emissions. With the exception of China, U.S. buildings are responsible for more GHG emissions than any other country’s


27. BUILDINGS AND THE ENVIRONMENT: A STATISTICAL SUMMARY, supra note 1, at 2; CASE STUDIES IN THE RESIDENTIAL SECTOR, supra note 22.
total anthropogenic GHG emissions. In fact, according to the U.S. Department of Energy’s (DOE) 2006 estimations, emissions from U.S. buildings were approximately equal to the total combined emissions of the United Kingdom, France, and Japan.

C. Benefits of Sustainable and Green Building Practices

1. Environmental and Human Health Benefits

Green building practices seek to minimize the land, energy, water, and resource-intensity of buildings by designing structures that use resources more efficiently, improve indoor air quality, and result in an overall smaller environmental impact. Green buildings provide environmental, human health, and financial benefits. On average, green buildings are twenty-five to thirty percent more energy efficient. Improving building energy efficiency could provide for up to eighty-five percent of future energy demand. Additionally, almost a quarter of all the emission reductions necessary to prevent devastating climate change impacts could come from employing energy efficiency measures in buildings. Furthermore, green buildings offer a thirty percent reduction in energy use, thirty to fifty percent in water savings, a thirty-five percent reduction in carbon emissions, and a fifty to ninety percent reduction in building construction and operation waste.

Green buildings reduce land use impacts by selecting and developing environmentally sustainable sites. Green building site development includes measures such as selecting locations where an urban infrastructure already exists, minimizing parking and discouraging excessive automobile use, managing stormwater to reduce stormwater runoff, and managing landscaping and parking lots to reduce excessive open pavement and heat.

32. LAWRENCE L. OSTEMA, GREEN BUILDING AND SUSTAINABLE DEVELOPMENT, THE PRACTICAL LEGAL GUIDE 13, 43 n.21 (Jonathan E. Furr et al. eds., 2009).
generation. Green buildings also improve water use through native landscaping, moderating water used for landscaping, and using water-conserving fixtures inside the building.

Green buildings also promote healthier indoor environments. They emit less indoor pollutants through better siting, operate better building material source controls, use improved lighting quality, employ daylight harvesting and natural shading, improve thermal comfort, and make use of enhanced ventilation, heating, and air conditioning systems.

2. Financial Benefits of Sustainable and Green Building Practices

Sustainable building practices not only have environmental and human health benefits, but financial benefits as well. Although green buildings are typically perceived as more expensive than conventional buildings, analyses of green buildings compared to conventional designs demonstrate that the average premium of a green building is slightly less than two percent, or three to five dollars per square foot. Financial benefits of green buildings result from energy and water savings, reduced waste, improved indoor air quality, greater employee productivity, reduced employee health costs, and lower operation and maintenance costs. An upfront investment of about two percent of construction costs usually yields a life cycle savings of over ten times the initial investment. Green buildings also increase the property value of a building. For example, American homebuyers are willing to pay eleven to twenty-five percent more for a green home than they would for a conventional home. Furthermore, a national effort to implement green building practices could generate 2.5 million American jobs.

34. JERRY YUDELSON, GREEN BUILDING A TO Z, UNDERSTANDING THE LANGUAGE OF GREEN BUILDING 16 (2007).
35. Id.
36. KATS, supra note 30, at 5.
37. Id. at 3.
38. Id.
41. About USGBC, supra note 31.
The most established and widely used green building rating system is the United States Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) System. The USGBC developed the LEED system to provide a national standard and rating system for green buildings. LEED is a voluntary, points-based rating system that allocates points by measuring a building’s performance based on its design, construction, operation, and maintenance. LEED was designed to comprehensively evaluate and address a building’s ecological footprint throughout its lifecycle. LEED has created different rating systems for different types of buildings, including new construction, speculative buildings, commercial interior, existing buildings, homes, schools, and neighborhood developments. LEED is an internationally recognized rating system and serves as the benchmark for green building rating and certification standards. Several states and local governments have adopted LEED standards into their local building codes. California, Washington, and Connecticut require that all state buildings meet LEED criteria. Additionally, forty-five states, as well as various school districts and universities, have adopted LEED-based initiatives through legislation, executive orders, resolutions, ordinances, policies, and incentives.

42. THE LAW OF GREEN BUILDINGS, supra note 2, at 25.
44. THE LAW OF GREEN BUILDINGS, supra note 2, at 17.
45. Id.
46. YUDELSON, supra note 34, at 13; see also THE LAW OF GREEN BUILDINGS, supra note 2, at 18–19.
47. About USGBC, supra note 31.
49. LEED PUBLIC POLICIES, supra note 48, at 7–8, 18.
50. Klass, supra note 48, at 344.
II. FEDERAL PREEMPTION OF STATE AND LOCAL BUILDING CODES

A. State and Local Building Codes

The direct regulation of land use has traditionally fallen within the scope of the state’s inherent police powers. Although states have enacted legislation and regulations developing the basic structure of local land use, states have historically delegated the majority of their authority to local governments. With this constitutional and state-delegated authority, state and local governments have enacted various forms of green building initiatives. Additionally, several cities, counties, towns, and state governments have incorporated USGBC’s LEED standards into local policy.

At the local level, governments use their zoning authority to promote green building development. Local green building legislation is generally enacted as either: (1) green building mandates for public construction projects; (2) incentives for private construction developers; or (3) mandates applicable to both public and private projects.

At the state level, authorities employ various mechanisms to implement green building initiatives. Since green buildings encompass such a vast array of issues—relating to energy efficiency, renewable energy, water efficiency, air quality, construction materials and waste, location and siting, and building life cycle—state initiatives vary significantly based on their particular objective. Typically, state initiatives include mandates, recommendations, financial incentives, temporary programs, or technology-specific laws or regulations. Interestingly, as states have made a more concerted effort to address climate change they have begun to override...
local laws that interfere with the state’s policies and goals for green development. Similarly, the federal government has also recently asserted some control over land use regulations in its effort to address climate change and promote renewable energy technologies.

**B. Doctrine of Federal Preemption**

Under Article VI, Clause 2 of the United States Constitution, federal law is decreed as “the supreme law of the land.” Accordingly, when a federal law conflicts with a state law, federal law “preempts” state law. To determine whether a state law is expressly or impliedly preempted, a court must examine Congress’s intent in enacting the federal statute—“’[t]he purpose of Congress is the ultimate touchstone’ in every preemption case.” Congress’s intention to preempt a field can be evinced “through a statute’s express language or through its structure and purpose.” If Congress’s intent to preempt is not expressly contained in a statute’s language, structure, or purpose, preemption can “be inferred if the scope of the statute indicates that Congress intended federal law to occupy the legislative field, or if there is an actual conflict between state and federal law.” Therefore, the federal government can preempt state action through express preemption, implied “field” preemption, or implied “conflict” preemption.

The doctrine of federal preemption includes a presumption against preemption. Federal preemption questions must recognize “the assumption that the historic police powers of the States are not to be superseded by the Federal Act unless there was a clear and manifest purpose of Congress.” The doctrine of federal preemption is often viewed as a favorable doctrine. Not only does it create national uniformity, but it also establishes standards to safeguard individual liberties and advances social

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58. See Klass, supra note 48, at 342.
60. U.S. CONST. art. VI, cl. 2.
63. Altria, 555 U.S. at 76 (citing Jones v. Rath Packing Co., 430 U.S. 519, 525 (1977)).
64. Id. at 76–77 (citing Freighliner Corp. v. Myrick, 514 U.S. 280, 287 (1995)).
65. Id. at 76; Freighliner Corp. v. Myrick, 514 U.S. 280, 287 (1995).
and political goals. Federal preemption, however, can also have adverse effects, particularly in regard to hindering progressive state policies. As Justice Brandeis said, “[i]t is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.” Accordingly, federal preemption has the potential to suppress the states’ role in experimenting and developing innovative public policies.

C. Federal Regulation—Energy Policy and Conservation Act

In 1975, Congress enacted the Energy Policy Conservation Act (EPCA). As a result of the oil embargo and pressing concerns of American dependence on foreign energy resources, Congress sought to enact legislation to promote domestic energy conservation. Specifically, EPCA was designed to reduce the nation’s “domestic energy consumption through the operation of specific voluntary and mandatory energy conservation programs.” As originally enacted, EPCA required manufacturers to label appliances and required the Secretary of the Federal Energy Administration to implement energy efficiency standards if the labeling program was ineffective. EPCA preempted state regulations if they were anything other than the applicable federal rules for testing and labeling. However, EPCA did not preempt state regulations that differed from federal regulations if they were justified by a state or local need, did not interfere with interstate commerce, and were more stringent than the federal standard.

In 1978, Congress enacted the National Energy Conservation Policy Act (NECPA), which amended EPCA insofar as only allowing states to prescribe their own regulations if they were more stringent than federal standards, or if the Secretary found that a state had a significant state or

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73. Pub. Law No. 94-163, § 327(a), 89 Stat. at 927 (codified as amended at 42 USC § 6297(1975)).
74. Id. § 327(b).
local interest justifying its regulations and the regulations would not unduly burden interstate commerce.\textsuperscript{75} NECPA also created a national conservation program for appliances and required the Department of Energy (DOE) to prescribe minimum energy efficiency standards for regulated products.\textsuperscript{76} After determining that establishing minimum energy efficiency standards would not result in significant energy conservation or justify the economic costs, the DOE adopted a “no-standard standard,” which allowed states to request waivers from preemption.\textsuperscript{77} Consequently, separate state appliance standards began to emerge.\textsuperscript{78} When challenged, the D.C. Circuit Court of Appeals “held that the DOE erroneously concluded that ‘nostandard’ standards was appropriate and instructed the DOE to adopt federal efficiency standards.”\textsuperscript{79}

Congress further amended EPCA in the National Appliance Energy Conservation Act (NAECA) of 1987, which established federal energy efficiency standards for residential appliances.\textsuperscript{80} NAECA also amended NECPA’s preemption provisions, making preemption much broader than it previously had been.\textsuperscript{81} NAECA provided that states could no longer adopt energy efficiency standards that were identical to the federal standards, made it more difficult for states to obtain waivers of preemption for more stringent state efficiency standards, and required that states established by a preponderance of the evidence that state regulation was justified by unusual or compelling state or local interests to obtain a waiver of preemption.\textsuperscript{82} EPCA was subsequently amended in the Energy Policy Act (EPACT) of 1992 to expand the federal appliance program to include energy efficiency standards for commercial and industrial appliances.\textsuperscript{83} EPACT also generally incorporated the preemption provisions established by NAECA.\textsuperscript{84}

\textsuperscript{78} S. REP. NO. 100–6, at 4 (1987).
\textsuperscript{81} Id. § 6297(c) (2006).
\textsuperscript{82} Id. § 6297 (2006); see also Air Conditioning, 410 F.3d at 500 (stating that the rationale for stricter preemption standards was to “counteract the systems of separate state appliance standards that had emerged as a result of the DOE’s ‘general policy of granting petitions form States requesting waivers from preemption,’ which caused appliance manufacturers to be confronted with ‘a growing patchwork of differing State regulations which would increasingly complicate their design, production and marketing plans’”).
\textsuperscript{83} 42 U.S.C. §§ 6295(a), 6313.
\textsuperscript{84} Id. § 6316(a)–(b).
Thus, as amended EPCA’s express preemption clause prohibits any “[s]tate regulation concerning the energy efficiency, energy use, or water use” of a “covered product.” 85 Under the statute, “covered product” includes refrigerators, air conditioners, central air conditioners and heat pumps, water heaters, pool heaters, furnaces and boilers, dishwashers, clothes washers, clothes dryers, florescent lamp ballasts, kitchen ranges and ovens, lamps, showerheads, and faucets. 86

D. State and Local Laws Preempted by Federal Law in the Courts

Two recent district court cases have demonstrated the courts’ positions on the scope of federal preemption of energy efficiency appliance standards. 87 In Air Conditioning, Heating and Refrigeration Institute (ACHI) v. City of Albuquerque and in Building Industries Association of Washington (BIAW) v. Washington State Building Code Council, the United States District Courts for the District of New Mexico and Western District of Washington, respectively, examined whether local building codes were preempted by the federal energy efficiency appliance standards promulgated under EPCA.

In ACHI v. City of Albuquerque, local and regional distributors of heating, ventilation, air conditioning, and heating products, along with the trade associations that represented these products, challenged the City of Albuquerque’s ordinance that imposed minimum energy efficiency standards, asserting it was preempted by EPCA. 88 The challenged ordinance, which was promulgated as part of an initiative to “significantly reduce carbon dioxide and green house gas emissions,” established a set of performance- and prescriptive-based options to achieve greater energy efficiency in buildings. 89 The court determined that the ordinance presented a question of express preemption. 90 Accordingly, the court began its analysis with the interpretation of the federal statutory provision alleged to

85. Id. § 6297.
86. Id. §§ 6295(b)–(j).
89. Id. at *2.
90. Id. at *6.
preempt the city law.\textsuperscript{91} Additionally, examining the legislative history of EPCA, the court stated that:

The legislative history makes it clear that the purpose behind § 6297’s broad preemption provision was to eliminate the systems of separate state appliance standards that had emerged as a result of the DOE’s ‘general policy of granting petitions from States requesting waivers from preemption,’ that caused appliance manufacturers to be confronted with ‘a growing patchwork of differing State regulations which would increasingly complicate their design, production and marketing plans.’\textsuperscript{92}

Accordingly, although noting the “laudable” goals to improve energy efficiency in the building industry, the district court held that the city ordinance was expressly preempted by “the long-standing federal statutes governing the energy efficiency of certain” products.\textsuperscript{93}

In \textit{Building Industries Association of Washington (BIAW) v. Washington State Building Code Council}, the district court for the Western District of Washington was asked to determine whether certain amendments to Washington’s State Energy Code were preempted by EPCA.\textsuperscript{94} In passing the amendments to Washington’s building energy code, the legislature noted that:

\textit{[E]nergy efficiency is the cheapest, quickest, and cleanest way to meet rising energy needs, confront climate change, and boost [Washington’s] economy. More than thirty percent of Washington's greenhouse gas emissions come from energy use in buildings. Making homes, businesses, and public institutions more energy efficient will save money, create good local jobs, enhance energy security, reduce pollution that causes global warming, and speed economic recovery while reducing the need to invest in costly new generation. Washington can spur its economy and assert its regional and national clean energy leadership by putting efficiency first. Washington can accomplish this by: Promoting super efficient, low-energy use building codes; requiring disclosure of buildings'}

\textsuperscript{91} \textit{Id.} (citing Medtronic, Inc. v. Lohr, 518 U.S. 470, 484–85 (1996) (“The purpose of Congress is the ultimate touchstone in every preemption case.”)).  
\textsuperscript{92} \textit{Id.} at *7 (citing S. REP. No. 100-6, at 4).  
\textsuperscript{93} \textit{Id.} at *12.  
energy use to prospective buyers; making public buildings models of energy efficiency; financing energy saving upgrades to existing buildings; and reducing utility bills for low-income households.95

In 2006, the Washington Building Code established minimum requirements for the design of new residential buildings by regulating their exterior envelopes, HVAC selections, water heating systems, and efficient use and conservation of energy.96 Building on the requirements of the 2006 Code, the 2009 amendments required a fifteen percent reduction in annual net energy consumption in all newly constructed buildings.97 Similar to the court’s analysis in ACHI, the court determined the case was a question of express preemption. However, unlike ACHI, this case implicated one of EPCA’s preemption clause exceptions. Under EPCA, “a regulation or other requirement contained in a State or local building code for new construction concerning the energy efficiency or energy use of such covered product is not superseded” if it complies with seven enumerated requirements.98 Finding that the Washington regulations fit within the exception to EPCA’s preemption clause, the district court granted summary judgment to the State.99 On appeal, the Ninth Circuit affirmed the district court’s holding, finding that the “Washington Building Code satisfie[d] the conditions Congress set forth in EPCA for exemption from federal preemption.”100

Although the courts ultimately reached different holdings, these cases illustrate the concern and strength of EPCA’s preemption provision. While exceptions to preemption exist, the requisites for exemption are stringent. Thus, it is probable that many state and local actions, which are often more aggressive in seeking improvements in energy efficiency and building codes, will be impeded by EPCA’s broad preemption provision.

E. Why Does Federal Preemption of State and Local Building Codes Matter?

The federal preemption of state and local building codes has considerable implications on the scope of state and local authority to

95. Id. at *2 (citing RCW 19.27A.130).
99. Bldg. Indus. Ass’n of Wash., 2011 WL 485895, at *8 (stating that under EPCA, there was an exception to preemption which provided that “‘a regulation or other requirement contained in a State or local building code for new construction concerning the energy efficiency of energy use of such covered product is not superseded’” if it complies with the statute’s subsequent requirements).
regulate building code standards. Consequently, such preemption also has a substantial effect on the environmental impacts of American buildings and their role as a major contributor to global climate change. As noted previously, buildings account for over forty percent of U.S. energy consumption, seventy-three percent of electricity consumption, and are responsible for approximately forty percent of U.S. greenhouse gas emissions. Appliances within buildings, including heating and cooling systems, washing machines and dryers, and refrigerators, account for seventy percent of a building’s total greenhouse gas emissions. Therefore, improvements in appliance energy efficiency would result in significant reductions in greenhouse gas emissions. Furthermore, because these reductions are technologically and economically feasible—the so-called “low-hanging fruit” of efficiency measures—the opportunity to regulate and facilitate their adoption is even more pressing.

The federal government’s express preemption of energy efficiency appliance standards inhibits state and local initiatives from achieving maximum energy efficiency in residential, industrial, and commercial buildings. Since appliances constitute such a significant portion of a building’s energy use, and therefore its greenhouse gas emissions, preemption undermines state and local efforts to actualize energy savings through building codes. Additionally, states have traditionally served as laboratories for experimental policies. Preventing states from enacting energy efficiency standards could thwart policy innovations and inhibit the ultimate adoption of successful policy by the federal government. Consequently, whereas federal preemption is often viewed as a positive force to advance social policy, in this narrow context of standards for appliance energy efficiency, federal preemption impedes the advancement of greater energy efficiency standards.

Although the legislative purpose of the preempting legislation was to reduce “domestic energy consumption through the operation of specific voluntary and mandatory energy conservation programs,” the Act’s express preemption provisions have a seemingly contradictory effect. In

101. Klass, supra note 48, at 340–41. The total GHG emissions resulting from appliances pertain to the emissions from the electricity generation needed to power the appliances within the building. These emissions, although technically emitted at generation facilities miles away, can be attributed to the appliances because of the appliances’ demand for electricity generation, which results in GHG emissions.


order to achieve Congress’s goals, EPCA must be revisited to account for the advantages of state and local legislative initiatives and enact legislation which both furthers green building development, while maintaining minimum federal standards. Congress’s concern about inconsistent appliance standards will effectively pressure manufacturers to achieve the greatest efficiency rates in order to remain competitive in the market.

III. INTELLECTUAL PROPERTY RIGHTS AND SUSTAINABLE ARCHITECTURE

In addition to the federal preemption of energy efficiency standards, copyright protection for architectural building design presents another potential barrier to the widespread implementation of sustainable architecture in the United States. The design of a building not only determines the resources required for construction, the building’s physical location, and its environmental and human health impacts, but it also dictates the energy intensity of the building. For example, the natural light available in a room throughout the day directly influences the amount of electrically generated lighting required and the specific hours the lighting is in demand. The thermal mass of a building determines how well a building retains heat; thereby affecting how much energy is required for temperature control. Thus, a building’s design directly impacts its energy demands, resource intensity, and aggregate environmental impacts.

A. Purpose of Copyright Law

Intellectual property is the general body of law that governs the “intangible rights protecting commercially valuable products of the human intellect.”\textsuperscript{105} Intellectual property law includes copyright law, patent law, and trademark law.\textsuperscript{106} In particular, copyright law concerns the protection, ownership, and use of literature, music, and art.\textsuperscript{107} Congress derives the power to enact copyright laws and regulate artistic works from the Constitution. Specifically, Article I, section 8, clause 8, known as the Patent and Copyright Clause, states that “Congress shall have the power . . . [t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”\textsuperscript{108}

\begin{thebibliography}{99}
\bibitem{105} BLACK’S LAW DICTIONARY 881 (9th ed. 2009).
\bibitem{106} \textit{id}.
\bibitem{107} ROBERT A. GORMAN, FED. JUDICIAL CTR., COPYRIGHT LAW 1 (2d ed. 2006).
\bibitem{108} U.S. CONST. art. I, § 8, cl. 8.
\end{thebibliography}
The Framers of the Constitution intended to incentivize the development and dissemination of socially useful works by providing a limited monopoly to the creators of such work.\(^{109}\) Copyright protections in the United States are considered statutory rights—rights granted to promote the public welfare and the “progress of science and the useful arts.”\(^{110}\)

B. Evolution of Copyright Law

The first federal copyright protection was enacted in the Copyright Act of 1790.\(^{111}\) In 1909, the 1790 Act was revised into the Copyright Act of 1909.\(^{112}\) The 1909 Act extended copyright protections to “all the writings of an author” and included a bifurcated protection period of an initial twenty-eight year term with a second twenty-eight year renewal term.\(^{113}\) Additionally, the 1909 Act provided copyright protection from the moment of publication, rather than at the time of copyright registration as the 1790 Act previously had.\(^{114}\)

With the advent of modern technologies, like the photograph and the motion picture, it became evident that the 1909 Act needed to be replaced by new legislation.\(^{115}\) As a result, modern copyright law was enacted in 1976.\(^{116}\) Although subsequently amended to afford broader protections, copyright law protects “original works of authorship fixed in any tangible medium of expression.”\(^{117}\) The Act provides protection for works for fifty years after the death of the author and protection for corporate works that extends seventy-five years after publication.\(^{118}\)

\(^{110}\) U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, INTELLECTUAL PROPERTY RIGHTS IN AN AGE OF ELECTRONICS AND INFORMATION 38 (1986) (citing the legislative committee report on the 1909 Copyright Act).  
\(^{111}\) Copyright Act of 1790, 1 Stat. 124 (1790).  
\(^{113}\) Id. §§ 4, 24.  
\(^{114}\) Id. § 10.  
\(^{115}\) MARSHALL LEAFFER, UNDERSTANDING COPYRIGHT LAW 9 (4th ed. 2005).  
\(^{116}\) 17 U.S.C. § 102 (2006). The predecessor to the 1976 Act was the Copyright Act of 1909, which provided a system of copyright protection based on state common law. See GORMAN, supra note 107, at 2 (discussing the inadequacies and the importance of the 1909 Act).  
\(^{118}\) GORMAN, supra note 107, at 3.
1. Architecture and Copyright Law

Under the 1909 Act, architectural works did not receive any protection under copyright law.\(^\text{119}\) The 1976 Act extended protection to “pictorial, graphic, and sculptural works,” which are defined to include “diagrams, models, and technical drawings.”\(^\text{120}\) Though the 1976 Act did not contain an explicit protection for architectural works, courts interpreted it to include architectural drawings as protected works.\(^\text{121}\) However, copyright protection under the 1976 Act did not extend to three-dimensional or completed architectural works. Thus, constructed architectural works were not afforded any copyright protection under the 1976 Act. In pertinent part, Section 101 of the 1976 Act states that:

[T]he design of a useful article, as defined in this section, shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.\(^\text{122}\)

Furthermore, a “useful article” is defined as “an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information.”\(^\text{123}\) Therefore, due to the utilitarian exception in the 1976 Act, copyright protection did not extend to any component that served a functional purpose. Since the design of a building has an inherently utilitarian purpose and its components serve structural, as well as aesthetic functions, architectural works were exempted from copyright protection. However, in 1990 Congress passed the Architectural Works Copyright Protection Act of 1990 (AWCPA),\(^\text{124}\) which amended the Copyright Act to include “architectural works” as an enumerated protected authorship.\(^\text{125}\) Congress passed the AWCPA to come into compliance with


\(^{120}\) 17 U.S.C. §§ 101, 102(a)(5); Robert R. Jones Assoc., Inc. v. Nino Homes, 858 F.2d 274, 278 (1988).

\(^{121}\) Robert R. Jones Assoc., Inc., 858 F.2d at 278 (citing Demetriades v. Kaufmann, 680 F. Supp. 658, 663 n. 6 (1988) (“Consistent with explicit congressional intent, these sections have been interpreted to include architectural drawings.”)).


\(^{123}\) Id.


\(^{125}\) Id. § 102(a)(8).
the Berne Convention for the Protection of Literary and Artistic Works, which required protection for architectural plans and drawings in addition to the built structures.  

2. Extended Architectural Protection under Copyright Law

The AWCPA defines “architectural works” as “the design of a building embodied in any tangible medium of expression, including a building, architectural plans, or drawings.” Consequently, the Act provides protection for two-dimensional designs of unconstructed works, as well as three-dimensional or constructed works. However, the Act also provides that architectural work “includes overall form as well as the arrangement and composition of spaces and elements in the design, but does not include individual standard features.” Thus, copyright protection for architecture has utilitarian exceptions and limitations for structural or functional elements. In a 1961 report, the Register of Copyrights noted:

While we are inclined to the view that a limited measure of protection should be afforded to the designs of functional structures, we do not believe that the copyright statute provides the appropriate framework for their protection.

Functional elements in architectural works include structural members, spatial volumes, circulation, mechanical and electric systems, and construction methods. Function also includes “building identity, clarity of form, views, natural light, accessibility, and life safety.”

To determine whether an architectural work is copyrightable, Congress, in enacting the AWCPA, suggested a two-prong test. First, an architectural work should be examined to determine whether there are original design elements present, including overall shape and interior architecture. If such design elements are present, the second step examines whether the design elements are functionally required. If the design elements are not

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131. Id.
functionally required, the work is protectable without regard to physical or conceptual separability.132

In creating this “functionality test,” Congress explicitly intended to provide a specific test to determine whether an architectural work qualified for protection under copyright law. Traditionally, courts used a “separability test” to determine the scope of copyright protection for “pictorial, graphic, or sculptural” work.133 Under the separability test, if an article’s intrinsic function is its utility, then it is not protectable under copyright law. Conversely, if an article incorporates elements that can be identified separately from its utility, then these elements are protectable. Thus, although intended to create a different standard to determine the scope of protection for architectural works, the functionality and separability tests are effectively indistinguishable.

Therefore, similar to other works, architectural works only qualify for copyright protection when their design elements are not functionally required. This functionality limitation presents a significant problem in protecting architectural works. Functional considerations and requirements are a substantial part of a building’s design. Many architects expressly acknowledge the intrinsic importance of function in their work.134 Furthermore, architectural design is always limited by functional requirements: structural necessities, building codes, technologies, and construction techniques.135 Thus, an architect’s creativity is necessarily restrained by the fundamental need to accommodate and incorporate functional requirements.136

132. H.R. REP. NO. 101-735, at 18, 20–21 (1990), reprinted in 1990 U.S.C.C.A.N. 6935, 6951–52. Under this two-prong test, if it is found that the original design elements are not required for functionality of the architectural work, then the work is protectable without regard to physical or conceptual separability of the elements. Under copyright law, in order for a “pictorial, graphic, or sculptural work[]” to qualify for protection, the design must be able to be identified independently from any utilitarian aspects. 17 U.S.C. § 101 (2006).


134. See Vanessa N. Scaglione, Building Upon the Architectural Works Protection Copyright Act of 1990, 61 FORDHAM L. REV. 193, 209 (1992) (describing how Le Corbusier’s characterized his freedom of expression in his Dom-ino Houses by an underlying functional requirement; how Ludwig Mies van der Roche’s lesson to his students was that “[w]e shall examine one by one every function of a building and use it as a basis for form;” and how many architects subscribe to the credo “form follows function”).


136. Id.
C. Copyright Protection and Sustainable Architecture

Sustainable architecture exemplifies the ambiguity of the functionality requirement. As previously discussed, all architectural works have an elemental functional quality. However, given that the inherent objective of sustainable architecture is function, sustainable architecture’s protection under contemporary copyright law is equivocal. Green buildings are designed to maximize efficiency, reduce waste, improve indoor air quality, and reduce land use impacts. Accordingly, green buildings are purposefully designed to incorporate functionality in their design elements. Therefore, under the functionality test articulated by Congress, green buildings are unlikely to qualify for any effective copyright protection.

D. Implications for Growth of Sustainable Architecture

The uncertainty of copyright protection for sustainable architecture and green building design creates a significant deterrent in encouraging the development of green buildings. First, the ambiguity and likely preclusion of protection under copyright law removes the creative incentive established in the Constitution. Since its inception, the United States has considered it imperative to incentivize work that encourages progress in science, useful arts, and original works. Furthermore, the history of U.S. copyright law and the subsequent amendments to the Copyright Act evince the continuous affirmation by Congress of the significance of fostering such progress. Granting limited monopolies to the creators of artistic works promotes the public welfare and promulgates innovation. Removing the pecuniary incentive of copyright protection reduces the likelihood an architect would pursue such innovative avenues of architectural design.

Furthermore, given a building’s deleterious environmental impacts, the need to develop innovative designs and encourage green buildings is vital. The development of sustainable architectural designs is precisely the type of innovation that copyright law was intended to incentivize. Green building design offers the opportunity to minimize the adverse environmental effects that conventional buildings produce. Green buildings use natural resources more efficiently, consume less energy and electricity, emit less GHGs, use land more productively, and create healthier indoor environments. With respect to climate change, green buildings’ decreased energy demand will correlate to fewer GHG emissions. Consequently, the general welfare benefits of sustainable architecture are significant. Accordingly, American copyright law needs to evolve to provide the necessary incentives and protections to encourage the development of a socially and environmentally sustainable building infrastructure.
The benefits of sustainable architecture and green building design are indisputable. In addition to reducing resource intensity, improving indoor health, creating more efficient land use plans, and increasing property values, green building design reduces a building’s energy consumption and overall GHG emissions. Despite the widespread initiatives to implement green building programs, however, certain legal impediments disincentivize the robust development of sustainable architecture in the United States.

In particular, federal legislation regulating energy efficiency appliance standards for residential, commercial, and industrial buildings has been held to preempt state laws seeking to achieve greater energy efficiency in buildings. 137 Further, federal legislation also preemptively deters the development of progressive state and local policies due to concern regarding the broad application of the federal preemption doctrine. Accordingly, the doctrine of federal preemption—though often an effective doctrine to advance innovative policies—impedes the states’ ability to enact more stringent energy efficiency appliance standards. Consequently, in this narrow context, states may be prevented from mandating stricter building codes, inhibiting the implementation of green building designs.

Additionally, the ambiguity of copyright protection for sustainable architecture eliminates the constitutional incentive to propagate socially useful works by providing limited monopolies to such creations. 138 Under current copyright law, copyright protection is only afforded to architectural designs that do not exceed a particular functionality threshold. Given the inherent functionality of green building design, it is unlikely that green buildings will meet this statutory standard, thereby excluding green buildings from copyright protection and removing the incentive for architects to pursue innovative sustainable architectural design.

Green buildings provide an opportunity to improve the environmental, health, social, and financial impacts of the American building infrastructure. As resource-intensive and energy-demanding structures, buildings account for a significant portion of global GHG emissions and substantially affect the quality of human health. Green buildings seek to minimize the adverse environmental and human health effects of conventional building design. Accordingly, it is imperative to foster a legal

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137. See Air Conditioning, Heating, and Refrigeration Institute, et al. v. City of Albuquerque, 835 F. Supp. 2d 1133, 1136 (D. N.M. 2010) (holding that the city’s provision requiring “energy efficiency standards more stringent than federal standards are regulations that concern the energy efficiency of covered products and, therefore, are preempted as a matter of law”).

environment that encourages the development and implementation of sustainable architecture and green building design.
Finding a Dog That Will Hunt: Solutions for Interagency Permit Consultation Delays Related to Prevention of Significant Deterioration Permits in the Wake of Avenal Power Center v. EPA

Jameson Pierce Marlborough Wiegard

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Introduction

The Clean Air Act (CAA) contains numerous requirements and permitting procedures to protect the nation’s ambient air. The Prevention

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The goals of the PSD program include promoting and insuring that economic growth through industrial and energy development in such areas is consistent with good air quality through careful evaluation and review of any increased emissions. This note will argue that the current procedures and practices under the CAA, Endangered Species Act (ESA), and Administrative Procedure Act (APA) have resulted in permitting and economic inefficiency; Congress, the President, the Environmental Protection Agency (EPA), the Department of Interior (DOI), and the United States Fish and Wildlife Service (USFWS) must quickly move to enter into legislation, an order or agreement that obligates compliance with the PSD statutory deadlines in the CAA.

The International Energy Agency (IEA) has projected a forty percent increase in global electricity demand “between 2009 and 2035.” The IEA also found that “fossil fuels (oil, coal and natural gas) remain the dominant sources of energy in 2035” under all projections. Particularly, “[n]atural gas is projected to play an increasingly important role in the global energy economy. It is the only fossil fuel for which demand rises” in every scenario studied by the IEA. Demand for natural gas from the power sector will make up the “largest share of global gas demand” in 2035. While renewable energy sources are projected to expand rapidly from now until 2035, “in absolute terms total demand is still not close to the level of any single fossil fuel in 2035.” Thus, natural gas generation, and expansion of current infrastructure and capacity will need to grow rapidly in the next
twenty years to effectively and responsibly meet the consumption demand needs of the future.

In the United States, natural gas consumption is projected to grow “by about 0.6 percent per year from 2009 to 2035, as the large amount of shale gas resources . . . keeps natural gas prices from 2009 through 2035 below the levels seen from 2005 to 2008.” Additional new electric generating capacity in the United States through 2035 will be predominately from natural gas and renewable energy sources. Natural gas fired power plants will account for approximately sixty percent of capacity additions between 2010 and 2035 . . . compared with 25 percent for renewables, 11 percent for coal-fired plants, and 3 percent for nuclear." Further, concern about greenhouse gases (GHGs) affects the addition of new natural gas and coal capacity. If GHG emissions are subject to limitations, natural gas along with renewables will become the dominant sources of new capacity in the United States between 2011 to 2035. Thus, natural gas is projected to be one of the most important sources of fossil fuel electric generation before renewable energy becomes market viable or captures a large percentage of the electric resource mix. To meet the rise in demand globally, and in the United States, developers, EPA, federal resource agencies, and environmental advocates will have accept the reality that new fossil fuel generation, mainly natural gas, must be permitted and brought online in the next twenty five years to meet projected energy demand and promote cleaner air quality.

In the past, EPA has failed to issue PSD permits within its one-year statutory deadline—as defined in Avenal Power Center v. EPA—on several occasions. In 2011 developers of the Avenal Power Center, a proposed natural gas fired power plant located in California, sued EPA for failing to issue a PSD permit within two years of the agency determining that the Center’s application was complete. EPA argued at trial before the United States District Court for the District of Columba that part of its delay in issuing a final decision on the permit was due to a failure to receive a final

10. Id. at 74.
11. Id.
12. Id. at 87.
13. Id.
14. See U.S. ENVTL. PROT. AGENCY, NSR 90-DAY REVIEW BACKGROUND PAPER 7 (2001), available at http://www.epa.gov/NSR/documents/nsr-review.pdf (showing that while the average timeframe for a decision from EPA, not including reviews before the EAB, have averaged between seven and nine months in the past, the range varied as much as 1.5–35 months, but more recently cut to between three and twelve months).
biological opinion under the Endangered Species Act regarding the proposed project from the USFWS.16 The district court held that EPA must comply with the statutory deadline set forth in section 165(c) of the CAA and that the one-year deadline included a final decision in any appeal of a permit before EPA’s Environmental Appeals Board (EAB).17

The Avenal case raises two issues regarding the efficiency and effectiveness of the PSD permitting program going forward. The first issue is whether greater interagency coordination is required to ensure that EPA complies with its statutory duties under the PSD provisions of the CAA. If true, the second issue is what mechanism can be used to address this deficiency in interagency cooperation, so that EPA can provide for efficient and comprehensive review of PSD permit applications, and fulfill its purpose to protect air quality while ensuring economic growth.

This note argues that while there are several possible mechanisms to solve these issues, a Memorandum of Understanding entered into by EPA and DOI is the most effective and efficient mechanism to ensure that EPA complies with the decision deadline set forth in section 165(c). Part I of the note outlines the relevant sections of the PSD permitting program. Part II discusses the background and holding of Avenal Power Center v. EPA. Part III of the article discusses the implications of the Avenal decision and reviews possible solutions for the lack of agency coordination in the PSD permitting process. Part IV discusses the various types of solutions the different branches of government can implement to address the interagency issues raised by the Avenal case. This note concludes Congress or the President should require, or the executive agencies should agree independently to a Memorandum of Understanding that requires EPA, DOI and USFWS to coordinate and ensure that resource management reviews of PSD permit applications are completed within the statutory deadline of section 165(c) of the CAA

I. PSD PERMITTING PROCEDURES

Sections 160 through 169 of the CAA set forth a comprehensive scheme for review and permitting of air pollution sources in areas that meet NAAQS.18 Section 165 outlines the preconstruction requirements that the developer of a major emitting facility must fulfill before they can break ground on a project.19 Before construction of a “major” new source or

16. Id.
17. Id. at 4.
18. 42 U.S.C §§ 7470–7479.
19. Id. § 7475.
“major modification” of a major existing source in a NAAQS attainment area, a developer must obtain a PSD permit.\textsuperscript{20}

The CAA defines a major emitting source as:

Any of the following stationary sources of air pollutants which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant from the following types of stationary sources: fossil-fuel fired steam electric plants of more than two hundred and fifty million British thermal units per hour heat input, coal cleaning plants (thermal dryers), kraft pulp mills, Portland Cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than fifty tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production facilities, chemical process plants, fossil-fuel boilers of more than two hundred and fifty million British thermal units per hour heat input, petroleum storage and transfer facilities with a capacity exceeding three hundred thousand barrels, taconite ore processing facilities, glass fiber processing plants, charcoal production facilities. Such term also includes any other source with the potential to emit two hundred and fifty tons per year or more of any air pollutant.\textsuperscript{21}

It is clear that this definition encompasses most types of large industrial, and energy generation projects. Modification is defined as “any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”\textsuperscript{22}

\textsuperscript{20} Id. § 7470 (3)–(5); F. William Brownell, Hunton & Williams, Clean Air Act Handbook 147 (3d ed. 1998) (citing generally 40 C.F.R. § 52.21 (2012)).
\textsuperscript{22} Id. § 7411(a)(4).
A. Permit Applications

An applicant for a PSD permit must submit an assessment of the air quality impacts of the new or modified source. The assessment must demonstrate that emissions from the source will not result in a violation of the NAAQS increment or “any other applicable emission standard” and will not exceed the available PSD increment for the particular area. It must also show that the facility will employ the Best Available Control Technology (BACT), determined on a case-by-case basis for each source.

Once a company submits its application, EPA must determine, within 30 days, whether the application materials are sufficient and if so, it must issue a determination of completeness. The Administrator then must either notify the applicant that the application is complete, or “list the information necessary to make the application complete.” Once the Administrator sends notice to the applicant, the application is deemed effective. Under section 165(c) of the CAA, EPA must grant or deny the permit within one year of determining the application is complete or effective.

B. EPA’s Internal Review of Permit Applications

Once an application is complete, the appropriate EPA officer or state permitting authority will “develop a draft permit containing all necessary permit terms and conditions”; provide notice and a 30-day comment period to the general public; and mail specific notice to those who have asked to be on the “state mailing list.” The agency must also provide thirty-days notice before a public hearing.

If a state agency is the permitting authority, that agency reviews the public comments and drafts a proposed permit to submit to EPA. Under section 505(b) of the CAA, EPA may object to the proposed permit within forty-five days. EPA must, with any such objection, “include a statement

23. Id. § 7475(a)(2).
24. Id. § 7475(a)(3)(c); see also § 7473 (setting forth congressionally mandated increments and ceilings for sulfur oxide and particulate matter in attainment areas).
25. Id. § 7475(a)(2)–(4).
26. 40 C.F.R. § 124.3(c).
27. Id.
28. Id. § 124.3(f).
29. 42 U.S.C. § 7475(c).
30. DAVID R. WOOLEY & ELIZABETH MORSS, CLEAN AIR ACT HANDBOOK § 8.32 (21st ed. 2011) [hereinafter CLEAN AIR ACT HANDBOOK].
31. Id.
32. Id. § 8.34.
33. Id. (citing 42 U.S.C. § 7664(b)).
of the Administrator's reasons for objection and a description of the terms and conditions that the permit must include to respond to the objections.\footnote{34} The permitting authority then has ninety days from receipt of the objection to submit a revised proposed permit to EPA.\footnote{35} If EPA has no objections, “any person may petition the Administrator within 60 days after the expiration of the 45-day review period” to raise objections to the proposed permit.\footnote{36} EPA must grant or deny the petition within sixty days.\footnote{37} Once all objections have been reviewed, dispensed of, or incorporated into the permit, EPA must issue a permit decision within one year of the permitting authority determining the permit application is complete.\footnote{38}

EPA is required to “consult with the Secretary [of Interior] on any prospective agency action . . . if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species.”\footnote{39} Further, EPA must confer with DOI on “any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 1533 of . . . title [sixteen] or result in the destruction or adverse modification of critical habitat proposed to be designated for such species.”\footnote{40} DOI and USFWS have defined agency action to include “the granting of licenses, contracts, leases, easements, rights-of-way, [and] permits.”\footnote{41} By statute the consultation period must conclude in ninety days or within a “mutually agreed upon” time frame.\footnote{42} In the case of PSD permits, EPA and DOI may not agree upon a consideration period beyond ninety days unless the consultation will take less than 150 days, and the Secretary sets out in writing, the reason for delay, the further information needed, and an estimated date of completion.\footnote{43}

After the consultation is completed, the Secretary is required to “promptly” set out his opinion on how the permit will affect endangered species and their critical habitat.\footnote{44} If the Secretary believes that the permitted project will have serious adverse affects he is required to suggest

\begin{itemize}
\item \footnote{34} 40 C.F.R. § 70.8.
\item \footnote{35} CLEAN AIR ACT HANDBOOK, supra note 30, § 8.34.
\item \footnote{36} 42 U.S.C. § 7661d(b)(2) (2006).
\item \footnote{37} Id.
\item \footnote{38} Id. § 7475(c).
\item \footnote{40} Id. § 1536(a)(4).
\item \footnote{41} Interagency Cooperation-Endangered Species Act of 1973, 50 C.F.R. § 402.02 (emphasis added).
\item \footnote{42} 16 U.S.C. § 1536(b)(1)(A).
\item \footnote{43} Id. § 1536(b)(1)(B).
\item \footnote{44} Id. § 1536(b)(3)(A).
\end{itemize}
“reasonable and prudent alternatives.”  EPA is forbidden from making any “irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2)” of the ESA. Thus, should EPA issue a PSD permit before it has completed an endangered species consultation with the DOI and received an opinion from the Secretary, it takes the risk that the opinion, once issued, may require it to reconsider and ultimately rescind or modify the permit. Further, the penalties or liability on the applicant for violating the ESA by beginning construction could be severe.

However, the statutory provisions for an Endangered Species consultation do not set a definitive deadline for the issuance of an opinion by the Secretary other than that it must be issued “promptly.” Further, without such a deadline, DOI has in some cases delayed issuing an opinion to the extent that EPA has not been able to approve or deny a PSD permit within the one-year deadline specified under section 165(c). It seems plain that EPA is subject to potentially conflicting obligations in the absence of a requirement or duty for DOI to issue an endangered species opinion so as to facilitate EPA’s compliance with section 165(c).

C. The Environmental Appeals Board and Permit Appeals

In 1992 the EPA Administrator created the EAB to exercise the Administrator’s authority to “decide appeals of permit decisions.” The Administrator created the EAB in the interest of efficiently using the Agency’s scarce resources. He set up the EAB as a quasi-judicial body, originally with three Environmental Appeals Judges. The EAB specifically has the authority to hear “[a]ppeals from permit decisions made by Regional Administrators and delegated States under the Clean Air Act (PSD permits).”
In some ways the EAB is similar to the Interior Board of Land Appeals and the Board of Indian Appeals, and sits as the final agency decision maker on agency administrative permit appeals. The EAB has discretion to accept appeals and will do so only when the petitioner asserts that the decision in question: (1) contains an erroneous interpretation of the law, or (2) implicates important policy considerations. Petitioners may only raise issues presented in the comments during the permit proceedings. Once the EAB accepts an appeal, the regional office that makes the permit decision, "assembles all documents relevant to the disputed decision and makes a determination whether the appeal petition meets the requirements for EAB review." The EAB then decides "whether to accept the appeal." If the Board accepts the appeal, the petitioners must file a brief, and at the discretion of the Board, may be granted a hearing. The EAB does not have any deadline set by regulation for completion of an appeal. Since its creation, the Administrator has at times expanded the membership of the EAB to include five Environmental Appeals Judges. Currently the Board "consists of four Environmental Appeals Judges."

II. AVENAL POWER CENTER v. EPA

One of the more recent court decisions involving section 165(c) suggests that applicants may sue EPA to force the Agency and the EAB to act within one year on PSD permits. In Avenal Power v. EPA, the Federal District Court for the District of Columbia held that EPA must act on PSD permits within the statutory deadline of section 165(c) and that the creation of the Environmental Appeals Board did not relieve the Administrator of

54. See Establishing the DOI Office of Hearings and Appeals, 40 C.F.R. § 4.1 (outlining the scope of authority for the Board of Indian Appeals and Board of Land Appeals that—organs of the DOI Office of Hearings and Appeals, may "hear[,] consider[,] and decide[,] matters within the jurisdiction of the Department involving hearings, appeals, and other review functions of the Secretary . . . [and] may hear, consider, and decide those matters as fully and finally as might the Secretary, subject to any limitations on its authority imposed by the Secretary").
55. CLEAN AIR ACT HANDBOOK, supra note 30, at 8.37.
56. Id.
57. Id.
58. Id.
59. Id.
60. 40 C.F.R. § 124.19.
62. Id.
her duty under section 165(c) to take final action on such permits within one year.64

In that case, the plaintiff, Avenal Power Center, LLC (Avenal), sought to build a 600-megawatt natural gas fired power plant in California.65 Avenal submitted an application for a PSD permit in February of 2008.66 EPA determined that Avenal’s application was complete on March 19, 2008.67 However, EPA, after exhaustive notice and comment procedures, did not act to grant or deny Avenal’s application for nearly two years.68 In response to EPA’s inaction, Avenal filed suit on March 9, 2010 claiming that EPA had violated its statutory duty under section 165(c) of the CAA.69

EPA presented two defenses for its failure to act on the permit within one year.70 First, the agency claimed that it needed “continued consultation with the U.S. Fish and Wildlife Service (“USFWS”) to ensure compliance with the Endangered Species Act.”71 Second, EPA claimed that the plaintiff still needed to prove that the project would comply with EPA’s new nitrogen oxide standards.72

However, later in 2010 the USFWS issued a biological opinion regarding the project that made EPA’s first defense moot.73 Further, EPA later conceded its second defense by issuing a statement that the Avenal project would be “grandfathered” under the old nitrogen oxide standard.74 EPA’s statement and the USFWS opinion, thus, left no further issues with Avenal’s permit application and EPA announced that it would be able to issue a final decision on it.75 However, EPA maintained that this final decision was appealable to the EAB and that the EAB process was not subject to the deadline outlined in section 165(c).76

In response to EPA’s position, Avenal argued that EPA would in effect be issuing an “‘interim decision’ subject to appeal before the EAB.”77 Avenal further argued that if a permit decision appealable before the EAB would not constitute final action, it had no choice but to seek a judicial order to force EPA to issue a final permit decision within a reasonable

64.  Id. at 2.
65.  Id.
66.  Id.
67.  Id.
68.  Id.
69.  Id.
70.  Id.
71.  Id.
72.  Id.
73.  Id. at 3.
74.  Id.
75.  Id.
76.  Id.
77.  Id.
time. EPA defended its position stating that a permit decision appealable to the EAB was “sufficient to satisfy the CAA’s one-year deadline” and the court lacked subject matter jurisdiction to issue the order sought by Avenal.

District Judge Richard Leon strongly disagreed with EPA’s position, which he characterized as “oh so clever, but unsupportable.” In his analysis Judge Leon noted that in 1977 Congress explicitly set out that the Administrator of EPA must grant or deny a PSD permit within one year. However, the Administrator retained discretion to delegate his permitting authority. In 1992 the Administrator created the EAB and “delegate[d] to it the final review of a grant or a denial” of a permit application by a delegated officer or employee, e.g., a regional administrator. Judge Leon noted that in creating the EAB the Administrator had not built in a “temporal requirement” to comply with section 165(c) of the CAA with respect to PSD permits. Thus, Judge Leon concluded the Administrator created a process that “can and has, in this case, rendered meaningless this Congressional one-year mandate.”

The district court, therefore, found that under Chevron, USA, Inc. v. Natural Resources Defense Council, Inc. a clear and unambiguous statement of Congressional intent cannot be overridden by a regulatory process. The court strongly chided EPA regarding its interpretation that section 165(c) was in some way ambiguous. Further, Judge Leon found that the regulations, here the EAB enabling provisions, must yield to express Congressional will if the regulatory provisions served to frustrate the statutory mandate. Thus, the court held that while the Administrator

78. Id.
79. Id.
80. Id.
81. Id. (citing 42 U.S.C. § 7475 (2006)).
82. Id. (clarifying that section 7601(a) states that the Administrator is authorized to make regulations necessary for him to carry out his duties and he may delegate his authority to grant or deny permits to “any officer or employee of the Environmental Protection Agency”).
83. Id. (citing Changes to Regulations to Reflect the Role of the New Environmental Appeals Board in Agency Adjudications, 57 Fed. Reg. 5320 (Feb. 13, 1992)).
84. Id. (citing 40 C.F.R. § 124.19).
85. Id. at 3–4.
88. See id., n.2 (“The EPA has labored mightily to convince this Court that the temporal requirement enacted by Congress is somehow ambiguous and, therefore, this Court should defer to its interpretation under Chevron. Horsefeathers! The EPA’s self-serving misinterpretation of Congress’s mandate is too clever by half and an obvious effort to protect its regulatory process at the expense of Congress’s clear intention. Put simply, that dog won’t hunt.”) (emphasis added) (internal citations omitted).
89. Id.
may “avail herself of whatever assistance the EAB can provide her within the one-year statutory period, she cannot use that process as an excuse, or haven, to avoid statutory compliance.” The Court then ordered EPA to immediately issue a final permit decision by May 27, 2011—one day after the decision—and granted a ninety-day extension for the Agency or EAB to review the permit. EPA did not appeal the district court decision, and it issued a PSD permit to Avenal on March 27, 2011.

Within thirty days the EAB received four petitions for review of the permit. The EAB denied these petitions for review on August 11, 2011. EPA issued a final PSD permit to Avenal on September 9, 2011. EPA’s final permit action was reviewable before the 9th Circuit Court of Appeals within sixty days of the final action’s publication. The four petitioners denied review of the permit by the EAB filed a petition for review in the Ninth Circuit on Nov. 3, 2011, five days before the deadline for review; the case is now pending before the Ninth Circuit.

III. IMPLICATIONS OF AVENAL POWER CENTER v. EPA

The District Court’s decision in Avenal Power Center v. U.S. E.P.A. creates several issues that need to be resolved at the agency and statutory levels to provide for efficient and effective review of PSD permits that complies with the mandate of section 165(c) and goals of the CAA. First, EPA will need greater interagency coordination in receiving environmental or endangered species assessments from other agencies well within the one-year statutory deadline. Second, the role of the EAB in future PSD permit gooregulations set out by the Administrator of EPA. Third, a strictly

90. Id.
91. Id.
92. Final Action, 76 Fed. Reg. 55,799 (Sept. 9, 2011) (The four petitioners were (1) El Pueblo Para El Aire y Agua Limpio; (2) Greenaction for Health & Environmental Justice; (3) Sierra Club and Center for Biological Diversity; and (4) Mr. Rob Simpson.).
96. See generally Sierra Club v. U.S. Envtl. Prot. Agency, No. 11-73342 (9th Cir. filed Nov. 3, 2011) (as of March 5, 2012 the petitioners have filed their opening brief in the case and Avenal Power Center, LLC has successfully moved to intervene as a respondent in support of EPA and their permit).
98. See generally Environmental Appeal Board Docket of Completed Cases (The average length of EAB proceeding on PSD reviews since 2007 has been approximately seven months, with several
enforced one-year agency review process of PSD permits may limit comprehensive environmental and resource management review if provisions are not adopted to provide for a more efficient and effective agency and interagency review process. Lastly, a strictly enforceable section 165(c) may create more certainty regarding timely PSD permitting decisions for potential developers of industrial and energy projects in National Ambient Air Quality Standard (NAAQS) attainment areas. Legislative, executive, or administrative measures are necessary to address the issues raised by the Avenal decision and ensure an efficient and effective agency review process for PSD permits.

A. Interagency Coordination

The PSD permit application process may, in many cases, require other agencies to undertake and complete environmental and resource management assessments before EPA can render a decision on a permit application. As was the case in Avenal, these assessments can cause a significant delay in the permitting process and possibly force EPA to breach its statutory duty to render a permit decision within one year. The risk of delay to a permitting decision stems from the fact that other agencies have no explicit statutory or regulatory duty to facilitate EPA’s compliance with the statutory deadline under section 165(c) of the CAA. Therefore, after the Avenal decision clarified that the one-year deadline cannot legally be missed, steps need to be taken to address the interagency inefficiency related to environmental and resource management reviews of PSD permits. The key question is whether a mechanism can be created by which all agencies involved in the PSD permitting process are required to facilitate EPA compliance with the one-year statutory deadline in section 165(c).

The CAA and other federal statutes impose duties on the EPA Administrator and other agency executives to cooperate in implementing
and enforcing air pollution prevention and control programs. Further, Congress has set up interagency committees to coordinate efficient environmental reviews in the context of cross-jurisdictional permitting decisions for natural gas pipelines. The President has also used his executive authority to establish an interagency taskforce to expedite review of energy project permits. The taskforce includes the Administrator of EPA, the Secretary of Interior and the Chairman of the Council on Environmental Quality. EPA has also used memoranda of understanding with other agencies and state governments to ensure interagency cooperation in implementing permitting and enforcement programs under various environmental statutes. The Supreme Court has recognized that federal agencies may enter into memoranda of understanding to address jurisdictional issues between the agencies. Thus, each branch of government has both the authority and the experience to establish a mechanism to provide for interagency cooperation between EPA and other agencies to ensure compliance with section 165(c). The next question that must be addressed is: Which mechanism will be the most efficient and effective measure to ensure EPA complies with section 165(c) and fulfills the purposes of the CAA?

1. A Legislative Fix

Congress could amend either the CAA or the ESA to require USFWS and DOI to make reasonable efforts to facilitate EPA compliance with

102. 42 U.S.C. § 7402(b) (2006); see also 16 U.S.C. § 1536 (requiring all federal agencies to cooperate with Secretary of Interior in furthering programs that protect endangered species).
105. Id. § 3(b)(i)(A).
106. See Memorandum of Agreement Between the Environmental Protection Agency and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act, 66 Fed. Reg. 11,202 (Feb. 22, 2001) (providing an agreement between the agencies “to enhance coordination” and obligate the USFWS to promptly issue biological evaluations under the ESA “to enable EPA to meet statutory and regulatory deadlines under the CWA”) [hereinafter Memo of Agreement]; see also Memorandum of Understanding for the Prevention of Significant Deterioration of Air Quality, EPA Region III and Philadelphia, 46 Fed. Reg. 31258-02 (June 15, 1981) (outlining PSD program in Philadelphia, PA which divides the responsibilities for review and decision-making on PSD permit applications between the City of Philadelphia and Region III of EPA) [hereinafter Memo of Understanding]; see also L. Poe Leggette & Demitri L. Seletzky, The Outer Continental Shelf Lands Act Turns Fifty—A Premature Look at the First Half-Century of the OCSLA, ROCKY Mtn. MIN. L. INST. (2002) (Appendix E shows the text of MOU establishing that both EPA and DOI will coordinate studies and related regulatory responsibilities and cooperate to ensure that EPA can issue NPDES permits at the time of the Final Notice of Offering by DOI).
section 165(c) of the CAA. The ESA allows the Secretary of the Interior and the Administrator of EPA to negotiate a reasonable time frame for the conclusion of a consultation under the ESA. However, the Secretary is only required to “promptly” issue an opinion on the project. Congress could fix this gap in legislation by adding language in the ESA that requires the Secretary to issue opinions promptly and within the time period required by statute for the other federal agency to render a decision on the proposed agency action. This language would impose an express duty upon the DOI and USFWS to consider and issue opinions in cooperation with all other agencies so these agencies can meet their statutory duties in deciding on licenses and permits.

It may be argued that inclusion of such broad language would severely limit the DOI and the USFWS’s discretion in how to allocate the use of their scarce resources. Further, such a requirement could limit the quality of biological assessments or opinions and thereby potentially frustrate the very purpose of the ESA. These objections have merit and show the drawbacks of a broad legislative fix to the interagency coordination issues raised by section 165(c) of the CAA. While imposing a statutory duty on DOI and USFWS to issue an opinion in compliance with the deadline of section 165(c) would help EPA to comply with its duties, many other agency actions are also subject to Endangered Species consultations, assessments, and opinions, and must be considered to determine whether USFWS has the resources to comply with such a broad requirement. A blanket rule would assist agencies in fulfilling their statutory duties, however, it could serve to overwhelm DOI given the broad scope of agency actions that must be reviewed under the ESA.

Congress could alternatively pass legislation that changes the deadline set forth in section 165(c). It could extend the new deadline to require EPA

110. Id. § 1536(b)(3)(A).
111. See 16 U.S.C. § 1531(b) (“The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species . . . .”).
112. See 50 C.F.R. § 402.02 (2009). Action under the ESA is defined as:

[Activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: (a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air.

Id.
to act on a PSD permit within eighteen or twenty-four months. 113 It may be argued that meaningful review of PSD permits is an essential aspect of the CAA and an extension of the deadline in section 165(c) would provide for an enhanced opportunity for qualitative review of permits by both EPA and other cooperating agencies. It could also allow EPA greater flexibility when allocating its funds and scarce labor resources to review permit applications.

Yet, these arguments may prove too much in that they add no additional duty or requirement for EPA to comply with the CAA beyond the current 165(c) deadline they have failed to comply with. They simply suggest that an extension of the deadline to two or three years would provide that much more time for agency review and interagency consultation and even greater flexibility in agency resource allocation. However, there is no assurance that what would remain an essentially inefficient interagency review process would not simply expand to fill the additional time made available. Further, the cooperative federalism provisions of the CAA allow for the Administrator to delegate portions of permitting review responsibilities to state and local permit authorities. 114 Thus, states and local government share in the permitting responsibilities. Therefore, increased work under an effective one-year deadline is not directly proportional to increased stress on EPA’s scarce resources. In short, while an expanded deadline would reduce the risk that EPA would violate the section 165(c) deadline, without further procedural safeguards, there is nothing to ensure the effectiveness or efficiency of environmental or resource management reviews of PSD permit applications under an expanded deadline.

More importantly, extending the deadline ignores the linkage between private investment considerations and the Agency’s decision-making time frame. Utilities and private investors need the certainty of a timely and effective process for obtaining final decisions on PSD permit applications to incentivize investment in new or updated industrial and electric generating facilities. 115 Given the complex and multi-tiered review that proposed new electric generating units must pass to begin construction on a power plant, a short and discernible timeline regarding PSD permit review is essential to provide developers with a benchmark as to the progress of the project to ensure that financers and insurers will back the project to its

113. See 42 U.S.C. § 7661b(c) (2006) (setting out an eighteen month deadline for the delegated permitting authority to either approve or deny a permit application submitted under the New Source Performance Standards set out in sections 7411 and 7412 of the Clean Air Act).

114. See 42 U.S.C. § 7661a(b) (outlining the requirements for state permit programs under Title V of the Clean Air Act).

completion. Additionally, a certain and enforceable deadline for a final permit decision gives investors and project developers clear guidance and expectations through which they can manage and plan for risk and uncertainty. Further, after Avenal, developers are given greater certainty that their investment will not languish only to finally fail through drawn out regulatory delay. Uncertainty can also be created by market volatility, which can create further disincentives to investment in development if the regulations provide for a long-term preconstruction review process. EPA has already delayed some PSD permit decisions well beyond even a two-year time frame. Thus, it is likely that lengthening the 165(c) deadline would not necessarily improve the quality of EPA’s review and action regarding PSD permits and could materially discourage development of industrial and energy facilities in large areas of the United States. Therefore, a legislative fix is not the preferred mechanism to strengthen compliance with section 165(c) of the CAA.

2. An Executive Order Fix

The President has the authority to establish interagency taskforces to provide for coordinated and efficient action by federal administrative agencies. Interagency taskforces have been established to promote expedited permitting of energy projects. Executive Order 13212, issued by President George W. Bush, set up a taskforce chaired by the Secretary of Energy, which included the Administrator of EPA and the Secretary of Interior, with the overarching policy goal that “increase[ing] production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people.” The Order directed, “that executive departments and agencies (agencies) shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.” The taskforce had two charges. First, the taskforce was created

116. See, e.g., In re Desert Rock Energy Corp., LLC, PSD Appeal Nos. 08-03, 08-04, 08-05 & 08-06, 8–10 (EAB Sept. 24, 2009) (describing a proposed coal-fired power plant that took nearly five years from initial application to have the EAB remand the permit for further considers, after which the financiers of the project canceled the proposed plant).
117. See id. (describing the Desert Rock Coal plant, which took five years 2004-2009, for a resolution of their PSD permit); see also In re Deseret Power Electric Coop. (Bonanza), 14 E.A.D. 1, 1 (EAB 2008).
118. See Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579, 587–88 (1952) (holding that an executive order must be based on a constitutional grant of power or execution of congressional policy).
121. Id. (emphasis added).
“to monitor and assist the agencies in their efforts to expedite their review of permits or similar actions, as necessary, to accelerate the completion of energy-related projects, increase energy production and conservation, and improve transmission of energy.”

Second, the taskforce was to “monitor and assist agencies in setting up appropriate mechanisms to coordinate Federal, State, tribal, and local permitting in geographic areas where increased permitting activity is expected.” The Obama administration has also set up interagency taskforces focused on energy development issues.

The President, therefore, has two options. First, he could set up an interagency taskforce chaired by EPA to monitor and ensure timely completion of interagency review and consultation regarding PSD permit applications. Second, he could issue an executive order requiring the DOI and USFWS to comply with statutory deadlines of the CAA when preparing and issuing a Biological Assessment under the ESA. Either approach could serve to facilitate EPA compliance with section 165(c). Further, an executive order would require limited review and formality and thus could quickly address the permitting issues under section 165(c). However, these taskforces are creatures of agency and executive policy through the use of executive order. Presidents retain the power to extend or disband these taskforces. Therefore, the taskforce could be a mechanism to resolve the interagency issues related to PSD permits only so far as a binding or procedural regulatory rule could be promulgated by either agency before a change in administration. Thus, an executive order where the President can effectuate an agreement between the agencies is a more direct and efficient mechanism than legislation.

3. An Interagency Memorandum of Understanding Fix

In the event that such an Executive Order, interagency taskforce, or legislative fix is not forthcoming, a memorandum of understanding binding EPA, DOI, and USFWS to strive to complete permit and environmental or resource management reviews within one year is the more effective and efficient mechanism to ensure that EPA complies with section 165(c). A

122. Id. § 3.
123. Id.
memorandum of understanding (MOU) “is a signed agreement between two administrative agencies that establishes a procedural protocol relative to, for example, exchanges of information and consultations on issues of common interest, which issues, to be sure, could precipitate conflicts in jurisdiction between the two agencies.” An MOU is a procedural mechanism and thus is exempt under the APA “from the notice and comment requirements applicable to the promulgation of substantive regulations.” Because it is a procedural regulation, it is subject to few restrictions on form and content. Further, the Supreme Court has recognized that “[a]bsent constitutional constraints or extremely compelling circumstances the administrative agencies should be free to fashion their own rules of procedure and to pursue methods of inquiry capable of permitting them to discharge their multitudinous duties.” Thus, an MOU is a flexible mechanism that can be agreed upon without excessive delay, procedure, and review. However, MOUs are more akin to a letter of intent rather than a contract and are not enforceable in the courts or as inflexible as the strict terms of a contract.

The ESA allows the Secretary of Interior and other Agency administrators to mutually agree on the time frame within which to conclude an ESA consultation. However, in the contexts of consultations regarding licenses or permits, the Secretary and Administrator generally may not agree to a consultation period that exceeds ninety days. The Secretary and Administrator may agree on a longer consultation period only if: (1) The new period does not exceed 150 days and the agency heads provide a written statement setting out the reasons for the delay; (2) the information is needed “to complete the consultation”; and (3) the estimated date the consultation will be completed. Thus an MOU between EPA, DOI, and USFWS can be based on the interagency cooperation provisions of the ESA and is not inconsistent with the current statutory framework for

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128. Id. at 58 (citing 5 U.S.C. § 553(a)(2)) (exempting matters “relating to agency management or personnel or to public property, loans, grants, benefits, or contracts” from notice and comment rulemaking procedures).
129. Moeller, supra note 127, at 58.
131. BLACK’S LAW DICTIONARY 988, 1074 (9th ed. 2009).
133. Id. § 1536(b)(1)(B).
134. Id. § 1536(b)(1)(B)(i).
consultations between EPA and DOI. But, the agencies, especially EPA, must be mindful that while the consultation period is limited by statute, the MOU must address the loose timeframe in which the Secretary or his delegated representative must issue his final biological opinion on the proposed permit. The essential issue that the MOU must address is what the term “prompt” means within the context of endangered species consultations regarding PSD permits.

EPA, DOI, and USFWS have some experience with consultation procedural deadline agreements in the form of an MOU. EPA and USFWS specifically entered into a Memorandum of Agreement in 2001 regarding ESA consultations related to, among other programs, “approval of State National Pollution Discharge Elimination System (NPDES) permitting programs” under the Clean Water Act (CWA). The agreement was made with the specific purpose to “enhance the efficiency and effectiveness of [ESA] consultations on these actions in the future.” The agencies agreed that the goal of the MOA was to make the consultation process “more productive and timely, to the benefit of endangered and threatened species and the aquatic environment generally.” To achieve these goals the agencies provided for: local and regional “coordinating teams”; an “interagency elevation process”; the ability for the lower level permitting and review offices to enter into sub agreements; and “timeliness of actions” regarding ESA consultations. The most important provision of the MOA is outlined under the subheading “Timeliness of Actions.” The EPA and USFWS “agree to adhere to time frames set for in [the ESA interagency cooperation implementing regulations] and supplemental guidance provided in this Agreement, in order to enable EPA to meet statutory and regulatory deadlines under the CWA.” The Agreement further obligates EPA to “strive to provide advance notice to [USFWS] concerning anticipated consultations, to provide thorough consultation.”

135. See id. (setting forth the consultation guidelines that a DOI and other federal agencies will follow when a “prospective permit” reasonably may affect the habitat of an animal protected under the Endangered Species Act).
136. See id. § 1536(b)(3)(A) (requiring the Secretary of Interior to “promptly after the conclusion of consultation” issue his opinion of the effects of the proposed agency action on “the species or critical habitat” (emphasis added)).
137. See Memo of Understanding, supra note 106; see also Leggette, supra note 106, at appendix E.
138. See Memo of Agreement, supra note 106
139. Id.
140. Id.
141. Id. at 11,208–11,210.
142. Id. at 11,210.
143. Id.
144. Id.
Additionally, USFWS agreed “to make every effort to provide prompt and responsive communications to ensure . . . permit applicants do not suffer undue procedural delays.” 145 The agreement is a good example of the language that can and has been used to facilitate interagency coordination under the ESA and environmental statutes. This Agreement therefore provides a good metric for creating effective guidelines to push the USFWS to complete all consultation procedures necessary under the ESA in order to facilitate EPA’s compliance with the statutory deadline in section 165(c) of the CAA.

EPA and DOI have also entered into a MOU agreement in the past regarding permitting on the outer continental shelf (OCS) under the CWA. 146 That agreement’s general purpose was to “improve cooperation and coordination” between the agencies regarding “oil and gas lease activities” on the OCS “terms and conditions of NPDES permits and ensure NPDES permit compliance.” 147 The MOU explicitly established that its specific purpose was “that each Agency will coordinate studies and related regulatory responsibilities and cooperate to ensure that EPA can issue NPDES permits at the time of the Final Notice of Offering by DOI.” 148 To achieve this purpose the MOU set out timing requirements for EPA to issue final NPDES permits “no later than the Final Notice of Offering for the lease offering as projected by DOI.” 149 Thus, EPA was obligated by the MOU to make its permit decision within the deadline set by DOI.

Provisions similar to those from both agreements outlined above should be employed in the context of section 165(c). EPA, DOI, and USFWS could enter into a memorandum of understanding with the agreement that the agencies will make all reasonable efforts to facilitate compliance with the deadlines set out in the ESA and section 165(c) of the CAA. Further, EPA must agree to seek ESA consultation at the earliest possible moment and USFWS must agree to quickly provide all information needed for revision or final consideration and drafting of a biological opinion. The agreement should also state that, DOI or USFWS upon receiving a request for an ESA determination, absent extraordinary circumstances, review and issue a biological opinion on the proposed project no later than the expiration of the one year deadline set forth in section 165(c) for the specific project. This timing requirement should be drafted to recognize the consultation timing restriction in section 1536 of the ESA and provide for

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145. Id.
146. See Leggette, supra note 106, at appendix E.
147. Id.
148. Id.
149. Id.
mutual agreement by both agencies that the term “promptly” in section 1536(b)(3)(A) will be understood to require DOI or USFWS to issue its biological opinion within the one year statutory deadline of section 165(c) of the CAA. The MOU should also incorporate a section providing for the “development and exchange of information” to improve cooperation and coordination between the agencies and prevent undue procedural delay as they implement the terms of the MOU.

An MOU is the most effective method, in the short term, to ensure that EPA and the EAB comply with section 165(c) after the Avenal decision. The MOU is consistent with the interagency coordination provisions of the ESA and the CAA. Further, the MOU will be more flexible than the legislative or executive actions discussed above, and EPA, DOI, and USFWS (the agencies closest to the pragmatic realities surrounding consultations and permitting procedures) will be able to craft the most effective mechanism to suit the realities of their interagency cooperation.

Lastly, the MOU is the quickest mechanism that can be promulgated or enacted to address EPA’s obligations under section 165(c). A comprehensive legislative fix regarding section 165(c) will have to pass through an increasingly hyper-partisan Congress; and may be high jacked by the extreme wings of either party to be used as a tool to attack EPA or limit all energy development through drawn out permitting requirements. Thus, an MOU will sidestep many of the political hurdles that would be faced by a comprehensive legislative fix, and it will allow for the most pragmatic solution to provide for efficient and effective environmental and resource management review of proposed PSD permits under the CAA.

4. The Role of the Judiciary Going Forward

The final issue is: What is the role of the courts in the wake of the Avenal decision? District Judge Leon’s decision, discussed above, is a reasonable and pragmatic interpretation of EPA’s obligations and required process, i.e., including an EAB final decision in the one year review

150. See 16 U.S.C. § 1536(b)(3)(A) (2006) (requiring endangered species determination to be completed within ninety days); Leggette, supra note 106, at appendix E.
151. See 16 U.S.C. § 1536(b)(3)(A) (providing for cooperation between agencies); see also 42 U.S.C. § 7402(b) (2006) (“The Administrator of the EPA shall cooperate with and encourage cooperative activities by all Federal departments and agencies having functions relating to the prevention and control of air pollution, so as to assure the utilization in the Federal air pollution control program of all appropriate and available facilities and resources within the Federal Government.”).
deadline under section 165(c) of the CWA.\textsuperscript{153} EPA did not file an appeal or seek review of the D.C. District Court’s decision. Future courts hearing challenges by PSD applicants to violations of section 165(c) by EPA should draw upon Judge Leon’s reasoning and decision to enforce the one year permit decision deadline on both EPA and the EAB.

Since EPA issued Avenal its final PSD permit in 2011, several environmental groups, including the Sierra Club and the Center for Biological Diversity, have filed a petition for review of the permit decision before the United States Court of Appeals for the Ninth Circuit.\textsuperscript{154} The petition for review alleges that, “the PSD permit impermissibly fails to address the recently adopted PSD requirements for greenhouse gas emissions.”\textsuperscript{155} While the Ninth Circuit could theoretically issue an opinion that could call into question Judge Leon’s opinion, the case before the circuit is a review of the qualitative, not procedural, determination made by EPA in issuing the permit.\textsuperscript{156} Thus, the procedural determinations regarding the requirements of section 165(c) in Judge Leon’s opinion are not technically at issue before the Ninth Circuit.

In short, federal district courts and circuit courts of appeals should follow the reasoning and holding of the D.C. District Court’s holding in Avenal. Federal courts should not misinterpret the clear and unambiguous language of the CAA and the Regulations implementing the EAB to mean anything other than that EPA and the EAB must comply with the one-year deadline that Congress mandated.\textsuperscript{157} If the courts do not rigorously uphold the statutory deadlines set by the CAA and push federal agencies to coordinate and comply with their statutory mandates, then the courts would fail in their duties to uphold the plain language of federal law. Further, precedents that allow EPA and USFWS to circumvent their duties would likely harm investment in and the development of new energy projects to meet the rising demand of energy consumptions. Companies will be less likely to invest because of the longer-term development process and likelihood that their investment may be finally permitted under different rules and regulations, given the delay, and possibly add new compliance

\textsuperscript{154} Petition for Review Sierra Club v. Jackson, No. 11-73342 (9th Cir. Nov. 3, 2011).
\textsuperscript{156} See id. (discussing the background and implications of the 9th circuit challenge to the Avenal permit).
\textsuperscript{157} See Chevron, USA, Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 842–43 (1984) (“If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.”).
and construction cost not originally contemplated or budgeted by the companies. In sum, the courts must uphold the explicit statutory mandates set by Congress in the CAA. Only a new law passed by Congress amending the CAA or a modification of the EAB’s enabling regulations should change the courts’ analysis of EPA’s duties under section 165(c) of the CAA.

CONCLUSION: A PATH FORWARD

EPA and DOI should enter into a MOU that requires all environmental and resource assessments between the agencies be provided to EPA before the statutory deadline for a permit decision as encapsulated in section 165(c) of the CAA. There are several mechanisms through which the different branches of government can force the agencies to enter into an agreement. First, Congress could pass legislation that requires both DOI and EPA to formulate an MOU. Second, the President could either establish an interagency task force with the goal of improving interagency cooperation regarding environmental review of CAA permits; or the President could issue an executive order to compel the agencies to negotiate an MOU. Finally, the agencies could seek an agreement on their own initiatives and terms. The last option is likely the most realistic. However, should the agencies run into disagreement, then either Congress or the President could and should step in to create an obligation to reach an agreement.

Energy development and planning is a key policy concern in the United States. With capacity demand increases and potential cuts in carbon dioxide emissions, natural gas fired power plants will be the key fossil fuel to maintain base load and help the nation bridge the gap to realize a cleaner energy future. The EPA, in administering the CAA, must move toward a more efficient and qualitatively sufficient process to review and render decisions on PSD permit applications for electric generating units. The statutory requirements of the CAA show Congress’ intent to create an efficient and certain period for agency review of PSD permit applications. The Avenal decision reaffirms Congress’ goals in enacting the PSD permit section of the CAA to both promote economic efficiency and environmental

158. See Gary McCutchen & Colin Campbell, “Horsefeathers!”: Landmark Court Decision Directs EPA to Address Grandfathering, CAA One-Year Permit Processing Mandate, 21 Air Pollution Consultant 5.1 (2011) (discussing EPA’s original stance that the Avenal permit should be included under new NOx standards to be promulgated after the finalization of the company’s permit application).

159. See Chevron, USA, Inc., 467 U.S. at 842–43 (mandating that the courts must follow the clear and unambiguous intent of Congress regarding statutory duties for executive agencies).

160. See supra pp. 641–43.
To ensure these goals are met in the future, EPA must enter into agreements with other agencies to ensure the bureaucratic inefficiencies of the past do not delay energy projects in the future. Further, the EPA must be careful to comply with their statutory deadlines while ensuring that environmental and natural resource reviews of projects maintain their quality while also providing compliance with statutory mandates and certainty for investors, utilities, developers, regulators, and environmental NGOs.

161. See 42 U.S.C. § 7470(1)–(5) (including protecting public health and welfare, economic growth, preserve air quality in parks and reserves, and ensure prevention of significant deterioration within attainment zones).