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VOLUME 43 NUMBER 3 SPRING 2019

FROM ENVIRONMENTAL TO ECOLOGICAL LAW: THE FUTURE LIES AHEAD

Papers Presented at a Workshop
McGill University Faculty of Law
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INTRODUCTION

L. Kinvin Wroth*

The essays that follow articulate in various ways the proposition that environmental law as we know it must give way to a new regime—ecological law—that will enable Earth and the many species that inhabit it to survive the rapidly increasing deterioration of the natural environment that is the culmination of centuries of human domination.

Beginnings. Environmental law emerged in the late 1960s as a focus of legislative and regulatory activity and academic interest in response to growing public concern for the threat that unchecked growth and development posed to the natural environment of the nation and the world. In the U.S., this phenomenon was manifested in a series of major federal enactments designed to support regulation of both federal and private activity that threatened the environment, along with a variety of state laws that supplemented and extended the federal regime. Many academic institutions established environmental studies programs that focused on both the science and the policy of environmental protection. Law schools in particular brought the scholarship and activism of their faculties and students to bear in assisting—and perhaps more often prodding—governments to identify and rectify specific environmental harms. Vermont's pioneering Act 250, enacted in 1970, and Vermont Law School's Environmental Law Center, established in 1978, are early and outstanding examples of both dimensions of the environmental movement.[1]

The command and control regulatory regime of environmental law has achieved notable successes on a case-by-case basis since the early 1970s. Yet that success may have lulled the public consciousness into thinking that threats to the environment are under control. Moreover, efforts of the present federal administration to limit the reach of existing regulatory agencies illustrate the political vulnerability threatening the future of that success. Most important, case-by-case success has not halted the continuing degradation of a natural environment beset by global warming, sea level

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* Professor of Law Emeritus and former President and Dean, Vermont Law School; member, E4A Law and Governance Steering Committee. This Introduction is an elaboration of remarks made by the author on February 26, 2019, to introduce: *Ecological Law and Governance: Introduction and Overview*, the opening session of a 2019 webinar series on Ecological Law and Governance sponsored by the E4A Law and Governance Initiative and other organizations. *Video: Ecological Law and Governance: An Introduction and Overview Webinar*, ECON. FOR THE ANTHROPOCENE (MAR. 13, 2019), https://e4a-net.org/2019/03/13/video-ecological-law-and-governance-an-introduction-and-overview-webinar/.

1. Act 250 of 1969, 10 VT. STAT. ANN. tit. 10, §§ 6001–6093; *Environmental Law Center*, VT. L. SCH., https://www.vermontlaw.edu/academics/centers-and-programs/environmental-law-center (last visited Apr. 14, 2019).

rise, extraction of nonrenewable resources, permissive regulators, and development growth driven by increasing economic and demographic pressures.

The emerging recognition of the limits of environmental law as presently understood and applied has led to a call for a seismic shift in the means for addressing the continuing and increasing threats faced by the natural environment—a shift from environmental to ecological law. The scope and significance of that shift are summed up in these words from the introduction to a collection of articles intended to illustrate the current state of articulation and analysis of the concepts of ecological law:

> [E]nvironmental law . . . allows human activities and aspirations to determine whether or not the integrity of ecological systems should be protected. [Ecological law] requires human activities and aspirations to be determined by the need to protect (and increasingly restore), the integrity of ecological systems. Ecological integrity becomes a precondition for human aspirations and a fundamental principle of law.[2]

The present group of essays includes papers originally presented in a workshop entitled *From Environmental to Ecological Law* at the McGill University Faculty of Law on October 17–18, 2017, sponsored by the Economics for the Anthropocene (E4A) Law and Governance Initiative and the Ecological Law and Governance Association (ELGA). E4A is a graduate study and research program jointly conducted by McGill University, the University of Vermont, and York University (Toronto).[3] Vermont Law School, as part of its longstanding relationship with McGill University, has been a partner in the E4A program since the program's inception in 2013.[4] ELGA is a network of academics, professionals, and organizations committed to tackling the causes, and not just the symptoms, of global environmental degradation, founded in October 2017 in response to the 2016 Oslo Manifesto.[5]

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2. Klaus Bosselmann & Prue Taylor, *Introduction* to ECOLOGICAL APPROACHES TO ENVIRONMENTAL LAW xv–xvi (Klaus Bosselmann & Prue Taylor, eds., 2017).

3. *See What is E4A?*, ECON. FOR THE ANTHROPOCENE, https://e4a-net.org/what-is-e4a/ (last visited Apr. 14, 2019) (providing the rationale and funding support for the E4A partnership).

4. *Partners*, ECON. FOR THE ANTHROPOCENE, https://e4a-net.org/steering-committee-2/about/partners/ (last visited Apr. 14, 2019). For a summary of the broader Vermont Law School–McGill connection, see HOI L. KONG & L. KINVIN WROTH, NAFTA AND SUSTAINABLE DEVELOPMENT: HISTORY, EXPERIENCE AND PROSPECTS FOR REFORM 6 n.20 (2015).

5. *See* Ecological Law and Governance Association, *Oslo Manifesto for Ecological Law & Governance* (June 21, 2016) [hereinafter *Oslo Manifesto*], https://www.elga.world/wp-content/uploads/2018/02/Oslo-Manifesto-final.pdf.

E4A is an active participant in the development of ecological law through its Law and Governance Research Initiative, the premise of which is that "[t]he Anthropocene imposes a pressing need to reframe law and governance so as above all to advance toward a mutually enhancing human-Earth relationship, with rigorous reliance on contemporary science and traditional knowledge systems."[6] E4A's goal can be achieved in part by assessing the current legal system with its property-based definition of the human-Earth relationship and by creating "new substantive concepts and institutional frameworks that embody a more hopeful vision of the human-Earth relationship demanded for life's flourishing in the Anthropocene."[7]

The October 2017 workshop had three themes that considered these issues: (1) the shortcomings of environmental law—the need to move from environmental to ecological law; (2) the promises and specifics of ecological law—a deep dive into the meaning of ecological law; and (3) how do we get there?—the challenge of the transition from environmental to ecological law. An international group of twenty-four lawyers and academics participated in six panels covering those themes and in a final discussion intended to provide a basis for ongoing discussions on bringing ecological law into practice on such land use issues as urban agriculture, mining, wilderness, and infrastructure.[8] The essays that follow address those themes in a variety of ways.

Geoffrey Garver, who holds a J.D. *cum laude* from Michigan Law School, and an LL.M. and Ph.D. from McGill University, is both

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6. *See Research Groups: Law and Governance Research Group*, ECON. FOR THE ANTHROPOCENE, https://e4a-net.org/wp-content/uploads/2018/06/LG.pdf (last visited Apr. 14, 2019). *Anthropocene* has become a common, though not officially recognized, term to describe the current geological epoch in which human activity has had a significant impact on the Earth's natural environment. Opinions as to its beginning date range from the beginning of successful agriculture 8,000 years ago to the 19th century beginnings of the industrial revolution to the first atomic bomb test in 1945. *See, e.g.*, Colin N. Waters et al., *Can Nuclear Weapons Fallout Mark the Beginning of the Anthropocene Epoch?*, 71 BULL. OF ATOMIC SCIENTISTS 46, 49 (2015) (debating between the "Trinity Test" 1945 detonation and subsequent thermonuclear weapons tests as the "global signal that marks the beginning of the Anthropocene"); Will Steffen, Paul J. Crutzen & John R. McNeill, *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?*, 36 AMBIO 614, 616 (2007) (calling the Industrial Era "Stage 1 of the Anthropocene"); *This is the Dawning of the Age of the Anthropocene*, UCSB: GEOGRAPHY, https://geog.ucsb.edu/this-is-the-dawning-of-the-age-of-the-anthropocene/ (last visited Apr. 14, 2019) ("[S]ome geologists argue that the Anthropocene epoch literally began 8,000 years ago when ancient farmers cleared forests to grow crops . . . ."). For additional discussion on the dating of the Anthropocene, see *Anthropocene*, WIKIPEDIA, https://en.wikipedia.org/wiki/Anthropocene (last visited Apr. 14, 2019) (providing further resources and references).

7. LAW AND GOVERNANCE FOR THE ANTHROPOCENE: A RESEARCH PROJECT OF THE ECONOMICS FOR THE ANTHROPOCENE (E4A) PARTNERSHIP 2 (Sept. 26, 2016) (on file with author).

8. *From Environmental to Ecological Law (E4A-ELGA Workshop, Oct. 2017)*, YOUTUBE, https://www.youtube.com/playlist?list=PLf37F7xx0zo_kpDDH16p1mIBP2J5lGk2U (last updated Jan. 17, 2018).

Coordinator of the E4A Law and Governance Research Initiative and a member of ELGA's Steering Committee. He is also an Adjunct Professor at McGill and Concordia Universities, has worked for the North American Commission for Environmental Cooperation (NACEC), the U.S. Department of Justice and Environmental Protection Agency, and was a law clerk for the late Conrad Cyr, U.S. District Judge for the District of Maine.

Dr. Garver's work is a fitting introduction to the remainder of the essays.[9] Initially, building on Thomas Berry's concept of a mutually enhancing human-Earth relationship in which "law is an extension of ecology,"[10] he develops a broad definition of ecological law and its components, contrasting them in tabular form with the scope and reach of contemporary environmental law, which supports remote private ownership of land and other resources and is historically engrained in the common law of property. Noting the over-general scope of contemporary rights of nature theory, he concludes that, to obtain the status of law, those rights and other general concepts must be defined as they have evolved in intentional human acts of ecological, eco-cultural, and reciprocal (i.e., between ecology and culture) restoration in specific ecosystems. These factors appear in examples of successful sustainable use of common pooled resources, epitomized in the concept of the commons.

Having previously identified remote private ownership as the chief obstacle to a transition to a regime of ecological law, Dr. Garver then describes in detail its elements that have led to significant ecological disruptions of agricultural land through the rise of global trade and investment supported by liberalizing international trade agreements such as the North American Free Trade Agreement (NAFTA)[11] and others implemented through the World Trade Organization (WTO).[12] He concludes that ecological law, though still largely conceptual, is an emerging response to the increasing understanding that the potential for economic growth is finite. Locally based rules that would impose ecological limits on growth would be extended to global principles tailored

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9. Geoffrey Garver, *Confronting Remote Ownership Problems with Ecological Law*, 43 VT. L. REV. 425, 425–54 (2019).

10. *Id.* at 429 (quoting THOMAS BERRY, THE GREAT WORK: OUR WAY INTO THE FUTURE 84 (1999)).

11. North American Free Trade Agreement, U.S.-Can,-.Mex., Dec. 17, 1992, 32 I.L.M. 289 (1993).

12. *See, e.g.*, Agreement on Trade-Related Aspects of Intellectual Property Rights art. 16, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, https://www.wto.org/english/docs_e/legal_e/04-wto_e.htm (establishing guidelines for intellectual property rights, including those to medicines).

to the different needs and requirements of widely varying complexity and scale. Yet the entrenched economic, cultural, and social orders based on our historic growth-insistent model require significant changes in the globally diverse power structures and political systems that sustain them. The ideas to create and sustain a structure for those changes are only now being formulated in developments like the 2016 Oslo Manifesto.[13]

Heather McLeod-Kilmurray, LL.B. University of Western Ontario, LL.M. University of Cambridge, S.J.D. University of Toronto, is an Associate Professor on the University of Ottawa Faculty of Law—Common Law Section. Her research interests include environmental law, environmental ethics, and ecofeminism.

Professor McLeod-Kilmurray's Essay analyzes the application of ecological law to food animals in the global industrial food system, initially from the perspective of Professor Klaus Bosselmann's three-part concept of ecological justice as including intragenerational, intergenerational, and interspecies justice.[14] She then sets forth the ten features of ecological law identified by Dr. Garver[15] and applies them in her analysis. After discussing the arguments supporting maintenance of the global industrial food system, she argues that ecological law must include interspecies justice, citing Bosselman, Garver, and other authorities, and then she explores the question of whether interspecies justice demands veganism. She concludes that the answer depends on resolving questions raised by the complex balance between interspecies justice and intragenerational and intergenerational justice in specific instances of animal products consumption within varying contexts of place, culture, and ethical concerns.

She then applies Dr. Garver's ten features in a detailed assessment of the question in the context of industrial production of food animals. She concludes that the features that primarily address ecological justice issues raise a serious question as to the origin of the food animal production system, as well as its justice. She emphasizes that the remaining features call for recognition of ecological principles in all areas of a legal order that is applicable and enforceable both globally and locally and is adaptable to

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13. *Oslo Manifesto*, *supra* note 5.

14. Heather McLeod-Kilmurray, *Does the Rule of Ecological Law Demand Veganism?: Ecological Law, Interspecies Justice, and the Global Food System*, 43 VT. L. REV. 455, 456 n.5 (citing Klaus Bosselmann, *Ecological Justice and Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER (Benjamin J. Richardson & Stepan Wood, eds., 2006)). *See* Bosselmann & Taylor, *supra* note 2, at xv (providing the three-part concept of ecological justice).

15. McLeod-Kilmurray, *supra* note 14, at 457–58 (citing Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316 (2013), *reprinted in* Bosselmann & Taylor, *supra* note 2, at 953). The features are set forth in slightly different tabular form in Garver, *supra* note 9, at 428–31.

both changing circumstances and the needs of particular places and peoples, including those where meat production and consumption is both necessary and sustainable. In conclusion, Professor McLeod-Kilmurray briefly identifies other ways of mitigating the ecological harms of the industrial production of food animals that ecological law might provide, including rights for food animals and duties for humans dealing with them, regulation and education to support such measures, and empowerment of local endeavors.

Stéphanie Roy, LL.B. Université Laval, LL.M. McGill University, practiced insurance law and civil responsibility as a member of the Québec Bar, and is a doctoral candidate in administrative and environmental law at Université Laval.

Ms. Roy's Essay considers the concept of trusteeship as a basis for framing a transition from environmental to ecological law.[16] She summarizes the duties of a fiduciary that her theory would impose on government—loyalty, personal performance, investment of trust assets, impartiality, accounting, and providing information. She notes the origin of the idea of a public trusteeship for the environment in Professor Joseph Sax's ground-breaking article on the public trust.[17] After cataloguing the inadequacies of the public trust doctrine as an instrument of environmental protection, she describes at length recent work that built upon it: Professor Mary C. Wood's call for the imposition of fiduciary obligations for the environment on the government and Professor Bosselmann's proposal for a World Environmental Organization to serve as a global trustee for the environment—both sustained by citizen realization of the need for a more ecologically centered regime of environmental law and governance.[18]

Recognizing that these proposals would facilitate the shift from environmental to ecological law but are not immediately realizable, Ms. Roy notes a number of other shorter term benefits from more gradual changes in the context of trusteeship as an overarching framework: One that embraces state duties and responsibilities and a public ethical duty toward the environment, the integration of other legal disciplines and science as

16. Stéphanie Roy, *Fiduciary Duties Under the Trusteeship Theory: The Contribution of Canadian Case Law in Judicial Review of Environmental Matters*, 43 VT. L. REV. 485–516 (2019).

17. *See generally* Joseph I. Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 473 (1970) (reframing the debate regarding the public trust doctrine).

18. Roy, *supra* note 16, at 486–91 (first citing Mary Christina Wood, NATURE'S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE 17 (2013); then citing KLAUS BOSSELMANN, EARTH GOVERNANCE TRUSTEESHIP OF THE GLOBAL COMMONS 116 (2015)).

suggested by Dr. Garver,[19] the recognition of rights to nature, and a stronger rule of law.

Ms. Roy then analyzes selected Canadian environmental case law to provide examples of the practical content of the executive's fiduciary duties, identified by Professor Wood, imposed by realizing these benefits. The few Canadian cases recognizing the general concept of government as trustee for the environment did not embody the public trust doctrine, much less a developed idea of governmental trusteeship, but Ms. Roy finds duties of accountability, public interest, and loyalty similar to those of a trustee in doctrines of Canadian administrative and constitutional law. She reviews two Supreme Court and two provincial court of appeal environmental decisions that invoke and apply various aspects of the duty of loyalty required of provincial and local governments to sustain decisions protective of the environment. Ms. Roy concludes that, although a broader reconsideration of property rights will be necessary to fully realize state environmental trusteeship as an instrument in the transition to a regime of ecological law, the cases reviewed show that existing legal concepts provide a basis for the continuing development of the trusteeship theory.

Carla Sbert, L.E.D. Intituto Tecnólogico Autónomo de México (ITAM), LL.M. Harvard Law School, is a doctoral candidate at the University of Ottawa Faculty of Law and has worked in diverse settings with a focus on sustainable development and environmental law and policy.

Ms. Sberts's Essay[20] sets forth a "lens of ecological law" with three principles: *ecocentrism*, that the interconnectedness and value of all beings is recognized; *ecological primacy*, that human activity is limited by the need to maintain or restore the ecological integrity of ecosystems; and *ecological justice*, that embodies Professor Bosselmann's three-part concept of intragenerational, intergenerational, and interspecies justice.[21] In two case studies, after a careful summary of the demographic, political, and legal context, she uses the "lens" to analyze and critique the ecological law components of El Salvador's pioneering legislation banning all metal mining and Ontario's legal regime to govern proposed mineral extraction in its ecologically intact "Ring of Fire"[22] region. El Salvador's Law

19. Garver, *The Rule of Ecological Law*, *supra* note 15.

20. Carla Sbert, *El Salvador's Mining Ban and Mining in Ontario's Ring of Fire from the Lens of Ecological Law*, 43 VT. L. REV. 517–47 (2019).

21. Bosselmann & Taylor, *supra* note 2, at xv.

22. With apologies to Johnny Cash. *Ring of Fire Lights up Northern Ontario's Mining Industry*, ONTARIO BUS. REP. (Aug. 10, 2013), https://web.archive.org/web/20130810073739/http://www.mri.gov.on.ca/obr/?p=1529.

Prohibiting Metal Mining,[23] though containing no element of ecocentrism, partially satisfies the tests of ecological primacy and ecological justice. Ms. Sbert considers it "an important step" toward a regime of ecological law but politically vulnerable in the absence of a foundation in ecocentrism.[24] After reviewing the complex framework of Ontario's mining, land use, and environmental statutes, and its conflict with ecocentric indigeneous legal tradition and claims, she argues that, as interpreted and applied by the province, it is not ecocentric. Opportunities for ecological primacy are weakened by provisions that allow the province to override or amend local land use plans or protected areas in which mining is prohibited and by obstacles to post-mining restoration. Ecological justice is weakened by the barriers to community participation, the protection of existing mining claims, and the failure to limit mining to materials that are essential to satisfy human needs, rather than corporate economic interests. Ms. Sbert concludes that the basic ecological law questions remain concerning the framework of a needs-based extraction regime and its specific terms—questions that can only be resolved in the context of a more general shift to an ecological paradigm.

Courtney R. Hammond Wagner, a graduate of Dartmouth College, is a Ph.D. candidate in Natural Resources at the University of Vermont's Rubenstein School of Environment and Natural Resources, where she is a Graduate Fellow at the Gund Institute for the Environment's Economics for the Anthropocene Program. Her research focuses on decision making and policy governing water quality.

Ms. Hammond Wagner's Essay addresses riparian rights generally and in Vermont, and the need to restructure the doctrine with a basis in an environmental ethic.[25] After an initial description of changes in the global hydrologic cycle attributable both directly to human activity and to climate change, she postulates the need in the Anthropocene for legislation that will curtail environmental degradation, restore deteriorated ecosystems, and address increased climate-change-induced effects on water quality. She then provides a general historical survey of U.S. water law focused on the evolution in the eastern states from the "reasonable use" principle of common-law riparian rights doctrine to statutory riparian regulation

23. Decreto No. 639, art. 1, Abril 4, 2017, DIARIO OFICIAL [D.O.], at 6 (El Sal.), https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/.

24. Sbert, *supra* note 20, at 528.

25. Courtney R. Hammond Wagner, *U.S. Fresh Water Law & Governance in the Anthropocene: A Critique of the Riparian Rights Legal Framework as a Basis for Water Governance in Vermont*, 43 VT. L. REV. 549–74 (2019).

systems providing for state permits to be granted for "reasonable use."[26] Turning to Vermont, Ms. Hammond Wagner notes the role of an early 19th-century Vermont Supreme Court case in establishing economic value as a component of reasonable use.[27] She then describes the State's current statutory water rights policy as one that seeks to balance ecological and economic needs in the interest of maintaining and improving water quality.[28] Yet despite this statutory scheme and federal and interstate antipollution efforts, she finds that the problem of phosphorous and other pollution in Lake Champlain continues unabated. The regulators, abetted by the Legislature, continue to interpret and apply the policy of reasonable use to favor economic development in case-by-case implementation of the permitting process.

Ms. Hammond Wagner proposes a two-pronged solution to this problem. First is the development of an "environmental ethic," based on Aldo Leopold's concept of a "land ethic,"[29] which would give protection of ecological boundaries priority over economic values and provide a basis for legal sanctions against activity that runs counter to the three legislative goals previously laid out. The second prong, echoing an idea expressed by Professor Peter Brown and Dr. Garver,[30] would restore the duty of the water user to protect other riparian landowners and extend that duty to all life forms on Earth affected by the hydrologic cycle. With these steps, the current legal framework will serve to protect water quality in the age of the Anthropocene.

The Future Lies Ahead. The essays presented here illustrate both the current state, and the potential, of ecological law by examining a variety of ways in which the shift from environmental to ecological law may be characterized and accelerated. Geoffrey Garver emphasizes that the key components of ecological law as limits on growth-oriented behavior, such as remote ownership of land and other resources, must evolve over time from locally oriented rules, while overcoming broader social, economic, and political obstacles. Heather McLeod-Kilmurray, applies Professor Bosselman's concept of ecological justice and Dr. Garver's ten features of ecological law to an analysis of the industrial food animal system, also concluding that the change to an ecological basis will have to occur over

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26. *Id.* at 556–58.

27. Martin v. Bigelow, 2 Aik. 184 (Vt. 1827); *see also* Johns v. Stevens, 3 Vt. 308, 315–16 (1830) (establishing Vermont as a riparian state).

28. VT. STAT. ANN. tit. 10, §§ 1001, 1022, 1023, 1250, 1263–1265, 1267–1268, 7701.

29. ALDO LEOPOLD, A SAND COUNTY ALMANAC 239 (Oxford Univ. Press 1966).

30. PETER BROWN & GEOFFREY GARVER, RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY 6 (2009).

time. Stéphanie Roy sees principles of trusteeship as recognized in Canadian case law as potential forerunners in the evolution of a regime of ecological law. Carla Sbert develops a "lens of ecological law" based on Professor Bosselmann's concept of ecological justice to measure the degree to which mining law regimes are consistent with ecological law. Courtney Hammond Wagner focuses on the failures of current water quality regulation in a specific context and calls for development of an environmental ethic that will give ecological interests priority over economic values in the current legal system and extend the duty of the riparian land user to all life forms.

Publication of these essays by the *Vermont Law Review* will assist lawyers in developing an early awareness of the issues and a process for the transition to the new regime of ecological law—not only in environmental law, but in areas such as tort, contract, property, criminal, and corporate law, along with the law that defines constitutional and institutional structure.

The lawyers will be in the trenches, at the planning tables, and in the legal academy for that transition. In the trenches, they can analyze and critique current law and apply, interpret, challenge, and revise it on an ongoing basis in light of society's evolving ecological values. At the planning table, they can take responsibility for articulating the new ideas and designing and drafting the new structures that the ecological future demands. In the law schools, they can help to create a new generation of lawyers to carry them out. In the immortal words of Mort Sahl, "the future lies ahead."[31]

31. MORT SAHL, THE FUTURE LIES AHEAD (UMG Recordings 2017) (1958), https://www.pandora.com/artist/description/mort-sahl/the-future-lies-ahead/ALt9mnxmwc6h2ZV.

CONFRONTING REMOTE OWNERSHIP PROBLEMS WITH ECOLOGICAL LAW

Geoffrey Garver*

ABSTRACT

Thomas Berry's powerful appeal for a mutually enhancing human-Earth relationship faces many challenges due to the ecological crisis that is co-identified with dominant growth-insistent economic, political, and legal systems across the world. The domains of environmental history, ecological restoration, and eco-cultural restoration, as well as studies by Elinor Ostrom and others of sustainable use of common pool resources, provide insights on the necessary conditions for a mutually enhancing human-Earth relationship. A theme common to these domains is the need for intimate knowledge of and connection to place that requires a long-standing commitment of people to the ecosystems that sustain them. Remote private ownership—often by large and politically powerful multinational corporations financed by investors seeking the highest possible returns and lacking knowledge or interest in the places and people they harm—is deeply engrained in the global economic system. The historical roots of remote ownership and control go back to territorial extensification associated with the sharp rise of colonialism and long-distance trade in the early modern era. Yet remote owners' and investors' detachment from place poses an enormous challenge in the quest for a mutually enhancing human-Earth relationship. This Essay presents an analysis of how contemporary environmental law undergirds the remote ownership problem and of how limits-insistent ecological law could provide solutions.

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INTRODUCTION

The growing tension between the globally dominant socio-political narrative, based on insistence on economic growth, and the alternative limits-based narrative in which the emerging field of ecological law is grounded, creates an urgently needed opening for transformation of law.[1] Contemporary legal systems co-evolved with other socially constructed normative systems that characterize the growth-insistent narrative.[2] Therefore, the radical transformation that ecological law calls for necessarily involves concomitant transformation of the social, political, economic, and cultural systems with which law interacts across temporal and spatial scales.[3]

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1. Kathryn Gwiazdon, *We Cannot Fail: The Promise and Principles of Ecological Law and Governance*, 11 MINDING NATURE 36, 36 (2018) (highlighting the creation of the Ecological Law and Governance Association (ELGA) as one response to the need to structure principles of law and governance around the foundations of life).

2. PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS 5 (Lance H. Gunderson & C.S. Holling eds., 2002) (explaining that co-evolution involves a constant "interplay between change and persistence, between the predictable and unpredictable").

3. *See id.* ("The cross-scale, interdisciplinary, and dynamic nature of the theory has [led] us to coin the term *panarchy* for it."); RICHARD O. BROOKS ET AL., LAW AND ECOLOGY 36 (2002) (suggesting that "both ecology and environmental law are undergoing transformations to better adapt to each other and to the environmental problems they are seeking to resolve"); Donald T. Hornstein, *Complexity Theory, Adaptation, and Administrative Law*, 54 DUKE L. REV. 913, 932, 944 (2005) (demonstrating how transformations that transcend our routine political and social systems may come from a "republican moment[]"); J.B. Ruhl, *Law's Complexity: A Primer*, 24 GA. ST. U. L. REV. 885, 896–97, 901 (2008) ("[I]n social systems, change very often is the specific intent of human intervention, in which case knowing how the system responds to change should be an important factor in the design of the instrument of change."); J.B. Ruhl, *Panarchy and the Law*, 17 ECOLOGY & SOC'Y, no. 3, 2012, art. no. 31, https://www.ecologyandsociety.org/vol17/iss3/art31/ (demonstrating that adaptive systems theory has already spread to economics, ecology, and sociology); Robin Kundis Craig, *Learning to Think About Complex Environmental Systems in Environmental and Natural Resource Law and Legal Scholarship: A Twenty-Year Retrospective*, 24 FORDHAM ENVTL. L. REV. 87, 92 (2013) ("How do we transform environmental and natural resources law into governance systems that can cope with continual change, ever-present uncertainty, and the potential for catastrophic . . . threshold crossings in socio-ecological systems?"); Ahjond S. Garmestani & Melinda Harm Benson, *A Framework for Resilience-Based Governance of Social-Ecological Systems*, 18 ECOLOGY & SOC'Y, no. 1, 2013, art. no. 9, http://www.ecologyandsociety.org/vol18/iss1/art9/ ("The primary problems with our current framework for environmental law are that it does not often account for scale and tends to lock-in 'fixes'

Property regimes and state sovereignty are two of the main normative constructs that will need profound rethinking and regrounding in any transition from contemporary law to ecological law.[4] Deeply entrenched protections of private property rights and strong resistance to stringent supranational legal regimes for environmental protection and other matters act—often in concert—to impede meaningful, widespread achievement of an ecologically sustainable balance between societal development and ecological integrity.[5] In particular, remote private ownership and absentee landlords associated with land and resource grabbing often lodge prevailing power over land use decisions in decision makers who are geographically far removed from the effected ecological systems and lacking in the knowledge needed for managing them in an ecologically sustainable manner.[6]

Thomas Berry's conception of a mutually enhancing human-Earth relationship provides a compelling core objective for ecological law and the

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because of the need for certainty in the legal process."); Rakhyun E. Kim & Klaus Bosselmann, *International Environmental Law in the Anthropocene: Towards a Purposive System of Multilateral Environmental Agreements*, 2 TRANSNAT'L ENVTL. L. 285, 307 (2013) ("[T]he ultimate purpose of international environmental law should be about safeguarding the integrity of Earth's life-support system, or all identified and potential planetary boundaries, as the non-negotiable biophysical preconditions for human existence and development."); Olivia Odom Green et al., *Barriers and Bridges to the Integration of Social–Ecological Resilience and Law*, 13 FRONTIERS ECOLOGY & ENV'T 332, 332, 335 (2015) (demonstrating that adaptive governance may be a part of the transformation to ecological law).

4. *See* Geoffrey Garver, *A Systems-Based Tool for Transitioning to Law for a Mutually Enhancing Human-Earth Relationship*, 157 ECOLOGICAL ECON. 165, 166 [hereinafter Garver, *A Systems-Based Tool for Transitioning to Law*] (explaining that "the dominant anthropocentric narrative . . . [is] reinforced by legal systems built around strong notions of state sovereignty and private property rights"); Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316, 319, 321 (2013) [hereinafter Garver, *The Rule of Ecological Law*] (contending that a flaw of environmental law and economics is the favoring of monetization, leading to primary economic rather than ecological constraints on land).

5. *See* Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4 ("Prevailing legal systems . . . assume[] non-human nature is subject to human dominance . . . .").

6. *See* FRED PEARCE, THE LAND GRABBERS: THE NEW FIGHT OVER WHO OWNS THE EARTH viii, 5–6 (2012) (explaining the first example of the global "land grabs" he explored, including Al Amoudi, who recruited a former Zenawi minister—Hail Assegdie—who plans to dig a canal through villagers' land without their knowledge); Jampel Dell'Angelo et al., *The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush*, 92 WORLD DEV. 1, 9 (2017) (demonstrating that the "broader dynamics of land grabbing cannot be prevented by acting only on property regimes without addressing power dynamics and systems of production"); Marc Edelman, Carlos Oya & Saturnino M. Borras Jr., *Global Land Grabs: Historical Processes, Theoretical and Methodological Implication and Current Trajectories*, 34 THIRD WORLD Q., 1517, 1528 (2013) (connecting changes in agrarian economy, capitalism, and other drivers of development with solutions in environmental law).

related field of ecological economics.[7] This Essay is a systems-based examination of how ecological law that supports an ongoing quest for a mutually enhancing human-Earth relationship provides ecologically sound and socially just answers to problems of remote ownership as well as land and resource grabbing. Part I explains and justifies a mutually enhancing human-Earth relationship as a foundational goal of ecological law. Part II provides a more detailed description of remote ownership and absentee landlords and how they are intricately tied to a global economic system that gives hierarchical normative priority to: private property and wealth; strong state sovereignty; and commodification of non-market values for the sake of perpetual economic growth. Part III explains how the radical reordering of normative priorities inherent in ecological law would severely restrict or eliminate remote ownership or absentee landlordism that impedes progress toward a mutually enhancing human-Earth relationship. Although ecological law remains largely conceptual and socio-politically elusive, it warrants detailed development now in order to be ready when its time comes. Fortunately, ecological law is gaining ground with the emergence of rights of nature and other developments in law and related normative domains that will play a determinative role in the human prospect in these ecologically perilous times.[8]

I. A MUTUALLY ENHANCING HUMAN-EARTH RELATIONSHIP: A MORAL GROUNDING FOR ECOLOGICAL LAW

Berry described a mutually enhancing human-Earth relationship as one that reflects that "[i]n reality there is a single integral community of the Earth that includes all its component members whether human or other than human . . . [each of which] has its own role to fulfill, its own dignity, its inner spontaneity."[9] It is a relationship in which "[e]very being enters into communion with other beings."[10] Berry aligns the transition to a mutually enhancing human-Earth relationship with the emergence of the Ecozoic

7. *See* THOMAS BERRY, THE GREAT WORK: OUR WAY INTO THE FUTURE 2–3 (1999) (explaining that European occupation of North America has been unbroken since colonization and even with new achievements such as science, technology, industry, finance, and commerce, environmental devastation resulted, and consequently, a new transition of human-Earth mutual benefit is necessary).

8. *See* Oliver A. Houck, *Noah's Second Voyage: The Rights of Nature as Law*, 31 TUL. ENVT'L L.J. 1, 2–4 (2017) (listing grants of natural rights to glaciers, rivers, and animals and stating how these grants have changed the views of other countries or jurisdictions).

9. BERRY, *supra* note 7, at 4.

10. *Id.*

Era, "the period when humans will be present to the planet as participating members of the comprehensive Earth community."[11]

With regard to law, Berry wrote that "[e]cology is not a part of law; law is an extension of ecology."[12] In other words, law should reflect and maintain a human role within the broader community of life that is life-enhancing and respectful of the ecological roles of other members of that community.[13] He argued that "[t]o achieve a viable human-Earth situation a new jurisprudence must envisage its primary task as that of articulating the conditions for the integral functioning of the Earth process, with special reference to a mutually enhancing human-Earth relationship."[14] The law he envisioned "would provide for the legal rights of geological and biological as well as human components of the Earth community."[15] Each component of the Earth community would have the right "for habitat and the opportunity . . . to fulfill its role in the natural systems to which it belongs."[16] Humans and all other components of the Earth system would be mutually responsible to respect each other's rights, and "[j]ustice would consist in carrying out this complex of creative relationships."[17]

Several jurists have further developed Berry's proposal for legal systems with co-equal rights among all members of the Earth community with detailed elaborations and arguments for "wild law,"[18] "Earth jurisprudence,"[19] "Earth law,"[20] and "ecological law."[21] These related, or

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11. *Id.* at 8.

12. *Id.* at 84.

13. *See id.* (explaining that ecology is not just a single course of study, but rather the basis for cross-subject studies, including law).

14. *Id.* at 61.

15. *Id.* at 161.

16. *Id.* at 80.

17. *Id.* at 61–62.

18. *See* CORMAC CULLINAN, WILD LAW: A MANIFESTO FOR EARTH JUSTICE 30–31 (2d ed. 2011) (explaining that wild law is more of an "approach to human governance" than a sector of law, and further, that wild law attempts to encourage a human-nature relationship, with focus on strengthening that relationship to safeguard wilderness and self-regulation of communities).

19. PETER D. BURDON, EARTH JURISPRUDENCE: PRIVATE PROPERTY AND THE ENVIRONMENT 1 (2015) ("[Thomas Berry's] observation that law is central to the present environmental crisis is the motivation behind a growing movement in law called Earth jurisprudence.").

20. Earth law was a term associated with environmental protection laws as far back as the 1970s, but its more recent use is more closely associated with more radical notions of law, such as rights of nature, that explicitly or implicitly contain a strong critique of conventional environmental law. *See* Homer G. Angelo, Journal Review, ENVTL. CONSERVATION, Winter 1975, at 315 (providing a review of *Earth Law Journal: Journal of International and Comparative Environmental Law*, a new journal "[c]ombining interests in comparative and international law" highlighting issues of environmental protection); Michelle Maloney, *Building an Alternative Jurisprudence for the Earth: The International Rights of Nature Tribunal*, 41 VT. L. REV. 129, 131–35 (2016) (asserting that Earth law's more recent use is closely associated with more radical notions of law).

perhaps equivalent, legal concepts all make reference to rights of non-human components of nature.[22] Indeed, the increasing constitutional, legislative, or judicial recognition of rights of nature in legal systems at local and national scales is likely the most concrete trend in actual adoption of concepts associated with these broader legal framings, which remain largely conceptual.[23]

Paramount emphasis on the primacy of ecological limits, not rights of nature, is nonetheless the most essential and deep-rooted feature of ecological law that seeks to perpetuate a mutually enhancing human-Earth relationship.[24] Other key conceptual features include: treatment of humans as a part of nature, and not apart from it; intergenerational, intragenerational, and inter-species fairness; precaution about transgressing planetary boundaries and other systemic ecological and socio-ecological thresholds; and adaptiveness in the adoption and evolution of norms over time, based on appropriate monitoring.[25] Including humans in the understanding of nature embeds ecological law in a human-inclusive ecocentric worldview, which is distinct from both a purely anthropocentric worldview that places humanity in a position superior to nature and a purely ecocentric worldview that may be indifferent to the human prospect.[26]

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21. *See* Garver, *The Rule of Ecological Law*, *supra* note 4, at 328 ("Under the rule of ecological law, individual humans and artificial entities like corporations would be considered interrelational beings in a shared ecological context, and not as free agents whose quest to maximize abstract monetary wealth that can be converted into consumptive and waste-producing activities is given priority.").

22. CULLINAN, *supra* note 18, at 30; BURDON, *supra* note 19; Maloney, *supra* note 20, at 130; Garver, *The Rule of Ecological Law*, *supra* note 4, at 319.

23. *See* MIHNEA TANASESCU, ENVIRONMENT, POLITICAL REPRESENTATION, AND THE CHALLENGE OF RIGHTS: SPEAKING FOR NATURE 107, 117 (2016) (providing examples of legislative and judicial recognition of rights of nature at a local and national level).

24. *See* Garver, *The Rule of Ecological Law*, *supra* note 4, at 319 (outlining that ecological law emphasizes the notion of ecological integrity by stressing the ecological limits on the economy and society in the form of sustainability).

25. *Id.* at 327, 329; *see* Johan Rockström et al., *A Safe Operating Space for Humanity*, 461 NATURE 472, 472 (2009) (exploring the idea of "planetary boundaries" that define the safe operating space for humanity, and that some of the Earth-system processes have already transgressed their boundaries: climate change, rate of biodiversity loss, and the nitrogen cycle); Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, SCIENCE, Feb. 13, 2015, at 738 (explaining that applying the precautionary principle means that the planetary boundary is set at the "safe" end of a spectrum of uncertainty, which means that the further society transgresses from the boundary, the higher the risk of drastic environmental changes); KATE RAWORTH, DOUGHNUT ECONOMICS: SEVEN WAYS TO THINK LIKE A 21ST CENTURY ECONOMIST 95 (2017) (detailing the social influences that impact peoples' consumptive habits).

26. *See* CAROLYN MERCHANT, REINVENTING EDEN: THE FATE OF NATURE IN WESTERN CULTURE 4 (2d ed. 2013) (citing historian Lynn White Jr.'s article, *The Historical Roots of our Ecologic Crisis*, to explain that one can blame "Christian arrogance toward nature" for environmental disruption, in that Christianity is the most anthropocentric religion that contributes to a worsening ecological crisis).

Table 1 summarizes how these and other features distinguish ecological law from contemporary environmental law.

Feature	**Environmental law**	**Ecological law**
Human-nature relationship	Humans are separate from and superior to nature; goal is perpetual progress in human control of nature, with strong reliance on technological solutions (e.g. geo-engineering to mitigate climate change)	Humans are a part of nature; goal is a mutually enhancing human-Earth relationship, with humility as to prospects for technology to solve complex ecological challenges
Enforceable environmental or ecological limits	Enforceable limits on pollution and development are mostly reductionist, end-of-pipe, subordinate to economic growth, and subordinate to property rights	Ecological limits have primacy over social and economic spheres, and are based on a holistic, integrated, systems-based understanding of the human-Earth relationship; open to de-growth/steady state economics
Use of materials and energy	Promotes efficiency, with a core faith in perpetual decoupling of energy and material throughput and consequent impacts from perpetual economic growth	Promotes sufficiency and drastic reduction in material and energy throughput to keep economy within ecological bounds
Scale	Strong commitment to state sovereignty: weak international/global regimes to address ecological challenges; global and regional trade rules encourage competition and impede strong domestic regimes for environmental protection	Core commitment to subsidiarity principle: global regime with enforceable supranational rules for global ecological issues, with preference for local regulation and respect for local regimes per Ostrom's criteria
Fairness	Core belief in fairness of markets, with some need for correction (e.g. polluter pays principle, internalization of environmental externalities, etc.); tendency to monetize values in decision making, e.g. monetary valuation of "ecosystem services"	Strong limits on market mechanisms as needed to respect ecological limits; bigger role for non-market decision-making; focus on ensuring interhuman, interspecies and intergenerational fairness; multi-criteria valuation methods preferred for decision making involving incommensurate values
Research, monitoring and adaptation	Effects on human health paramount; environmental effects studied but not determinative; weak precautionary approach; few mechanisms to adjust rules based on monitoring	Planetary boundaries and "safe operating space" are key basis of research, monitoring and adaptation; strong precautionary approach

Table 1. Distinguishing Ecological Law from Environmental Law[27]

27. LAURA WESTRA ET. AL, ECOLOGICAL INTEGRITY, LAW AND GOVERNANCE 144 (2018) (internal citations omitted).

As noted above, rights of nature resonate strongly with core elements of ecological law.[28] However, while promising for those seeking law grounded in a mutually enhancing human-Earth relationship, rights of nature raise concerns that have not yet been resolved.[29] Resolving conflicts between rights of nature and human rights, including private property rights, requires criteria that inevitably will reflect a hierarchy of normative principles and values.[30] Particularly troubling is the risk that implementing and giving meaning to rights of nature in a globalized world still operating according to a growth-insistent narrative and worldview will lead to their erosion and dilution, rather than to the radical transformation that rights of nature advocates hope for.[31] Without fundamental shifts in narrative away from growth insistence, commodification, anthropocentrism, and human exceptionalism—where ever-increasing creation of wealth in human societies is assumed to provide for the common good—conflicts will likely be resolved so as to give priority to economic interests and private property rights.[32] That has been the case with the human right to a healthy environment enshrined in Pennsylvania's state constitution,[33] and in several

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28. *See supra* Part I (explaining that the argument for ecological law makes reference to the rights of nature, which is trending through legal systems).

29. *See* DAVID R. BOYD, THE RIGHTS OF NATURE: A LEGAL REVOLUTION THAT COULD SAVE THE WORLD 104 (Susan Renouf ed., 2017) (suggesting that ecological law conflicts with different ideas such as the "inanimate object[s]" in the *Sierra Club v. Morton (Mineral King)* case).

30. *See id.* at 178 (describing examples of the rights of nature conflicting with property rights such as shrimp farming in coastal mangrove forests that causes conflict between an ecological reserve and the farm owner's property rights).

31. *See id.* at 196 (providing evidence that erosion and dilution exists in both Ecuador and Bolivia); Peter Burdon & Claire Williams, *Rights of Nature: A Constructive Analysis*, *in* RESEARCH HANDBOOK ON FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL LAW 196, 210 (Douglas Fisher ed., 2016) (stressing the difficulty of extending a legal right to nature in the confines of capitalist economics); Garver, *The Rule of Ecological Law*, *supra* note 4, at 326 ("[E]cological law must permeate legal regimes and other disciplines like economics in a systemic, integrated way, and not be seen as a specialty area of the law that applies to isolated problems.").

32. *See* BOYD, *supra* note 29, at 230–31 (arguing that rights of nature cannot coexist with issues like economic growth, consumerism, and limitless globalization and that we cannot continue to prioritize property and corporate rights if the rights of nature are going to persist).

33. In Pennsylvania, the state supreme court has held that the State's constitutional right to a healthy environment (a more anthropocentric right regarding the human-Earth relationship), must be balanced against other constitutional and social and economic rights. Payne v. Kassab, 312 A.2d 86, 94 (Pa. Commw. Ct. 1973), *aff'd,* 361 A.2d 263 (Pa. 1976), *abrogated by* Pa. Envtl. Def. Found. v. Commonwealth, 161 A.3d 911 (Pa. 2017)). As a result, that state constitutional right has had little impact on decisions affecting the human-Earth relationship in Pennsylvania. Mary Ellen Cussack, *Judicial Interpretation of State Constitutional Rights to a Healthful Environment*, 20 B.C. ENVTL. AFF. L. REV. 173, 192–93 (1993). These examples, along with others, suggest that if rights of nature or similar rights are adopted within the dominant global paradigm of growth insistence, without clear criteria for when ecological limits must be accorded primacy, or how to interpret them in light of competing social objectives, the risk is high that the growth-insistent paradigm will overwhelm or at least dilute those rights. *Id.*; *see* Mary Elizabeth Whittemore, *The Problem of Enforcing Nature's Rights*

instances involving the constitutional rights of nature in Bolivia and Ecuador.[34] Counterexamples can be found but are less prevalent.[35] For justice to carry out the "complex of creative relationships" that Berry envisioned,[36] simply resorting to conventional balancing tests that subordinate environmental concerns and ecological integrity to economic factors will not do.[37] Ecological law requires ecological limits to have primacy throughout the legal system, and criteria must be identified to reflect this primacy in decision making and resolution of conflicts.[38]

Another concern is that without clearer criteria, according rights to all components of the Earth community, or to "nature" generally, risks creating a system in which nothing and nobody has meaningful rights.[39] Also, the rights of nature may have different weight at different scales. For example, building a hydroelectric dam may appear to violate the rights of nature because of harm to local ecosystems, but favor the rights of nature at the global scale because it would reduce greenhouse gas emissions.[40] With such vagueness, conflicts might be decided by power and force rather than by law, or according to interpretations of law that end up eroding the long-term rights of nature in view of conflicting rights grounded in short-term social or economic interests.[41]

Emphasis on place, and on the needs of the intricately linked local components of socio-ecological systems that must be met in order to maintain a mutually enhancing human-Earth relationship, is also part of the

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Under Ecuador's Constitution: Why the 2008 Environmental Amendments Have No Bite, 20 PAC. RIM L. & POL'Y J. 659, 659–67 (2011) (pointing out that Ecuador's constitutional provision is unclear and provides no guidance as to which living organism prevails in court).

34. Nathalie Rühs & Aled Jones, *The Implementation of Earth Jurisprudence Through Substantive Constitutional Rights of Nature*, 8 SUSTAINABILITY 174, 182 (2016).

35. *See* Paola Andrea Acosta Alvarado & Daniel Rivas-Ramirez, *A Milestone in Environmental and Future Generations' Rights Protection: Recent Legal Developments Before the Colombian Supreme Court*, 30 J. ENVTL. L. 519, 519–26 (2018) (analyzing the Colombian Supreme Court's historic decision to protect the Columbian Rainforest from deforestation, specifically that it was a restrictive approach in applying constitutional rights, and that international environmental law influenced the Court's decision).

36. BERRY, *supra* note 7, at 62.

37. *Payne*, 312 A.2d at 94.

38. *See* Garver, *The Rule of Ecological Law*, *supra* note 4, at 326 ("[L]egal regimes must be constrained by ecological considerations . . . ."). Developing decision making criteria that reflect this primacy should be a focus of research in the emerging community of scholars of ecological law and governance and organizations like the ELGA.

39. *See* LYNTON KEITH CALDWELL & KRISTIN SHRADER-FRECHETTE, POLICY FOR LAND: LAW AND ETHICS 224 (1993) ("If everything [is] said to have rights, and if there is no way to adjudicate among conflicting rights claims, then (practically speaking) nothing has rights.").

40. Rühs & Jones, *supra* note 34, at 184.

41. *See* BURDON, *supra* note 19, at 79 (demonstrating the possible challenges to using earth jurisprudence as a tool for change).

bedrock of rights of nature and other concepts in ecological law.[42] As applied in practice, rights of nature will only make sense if they are defined, recognized, and enforced with reference to the specific ecosystems and historical trajectories in which they are embedded.[43] Theory and experience related to ecological restoration, eco-cultural restoration, and sustainable management of common pool resources (CPRs) will be particularly relevant as this emphasis on place is incorporated into the meaning and application of ecological law.[44]

Ecological and eco-cultural restoration involve a "process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed,"[45] taking into account criteria such as ecological integrity, historical fidelity, and community engagement.[46] Of the two, eco-cultural restoration places more emphasis on recovery of mutually supportive cultural practices and ecosystem structure and functioning.[47] Perhaps the most appealing expression that captures the mutually enhancing interplay between human societies and the ecosystems that support them is the notion of reciprocal restoration.[48] Reciprocal restoration is "the mutually reinforcing restoration of land and culture such that repair of ecosystem services contributes to cultural revitalization, and renewal of culture promotes restoration of ecological integrity."[49] In other words, any notion of ecosystem services to humans must be counterbalanced with a notion of human services to ecosystems.[50]

For ecological, eco-cultural, or reciprocal restoration, human inclusion and intention are key.[51] These human dimensions encapsulate not only the reality of historical human impacts on ecosystems from the local to the

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42. Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4.

43. Garver, *The Rule of Ecological Law*, *supra* note 4, at 326.

44. ERIC HIGGS, NATURE BY DESIGN: PEOPLE, NATURAL PROCESS, AND ECOLOGICAL RESTORATION 1, 4 (2003).

45. SOC'Y FOR ECOLOGICAL RESTORATION, THE SER INTERNATIONAL PRIMER ON ECOLOGICAL RESTORATION 3 (Oct. 2004), https://www.ctahr.hawaii.edu/littonC/PDFs/682_SERPrimer.pdf.

46. HIGGS, *supra* note 44, at 4.

47. *See id.* at 236–37 (explaining that ecocultural restoration combines both community activism and the restoration of ecological integrity).

48. *See* Cathy Geist & Susan M. Galatowitsch, *Reciprocal Model for Meeting Ecological and Human Needs in Restoration Projects*, 13 CONSERVATION BIOLOGY 970, 974–75 (1999) (diagraming the reciprocal restoration model).

49. SOC'Y FOR ECOLOGICAL RESTORATION, HUMAN DIMENSION OF ECOLOGICAL RESTORATION: INTEGRATING SCIENCE, NATURE, AND CULTURE 255 (Dave Egan et al. eds., 2011) [hereinafter HUMAN DIMENSION].

50. Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 165–74.

51. HUMAN DIMENSION, *supra* note 49, at 73.

global level, but also the deliberate choice involved in pursuing "a vision of a better relationship between humans and the rest of the world."[52] Flexibility in the range of possible choices that will foster or maintain a mutually enhancing human-Earth relationship can be incorporated into the selection of reference ecosystems that are used to establish objectives for restoration.[53] The most appropriate are "*locally-tailored* historical references, using all the available and appropriate conceptual tools, so as to integrate both latent and on-going ecological and socio cultural processes and values."[54] The element of intentional choice renders ecological and eco-cultural restoration "inherently (1) value laden, (2) context driven, (3) prone to be immersed in disagreement and compromise, and (4) experiential."[55]

The essential role of choice and intention provides a foundation for incorporating principles from restoration theory and practice into the legal domain.[56] A key challenge will be to scale up these principles from the mostly local or landscape scales at which restoration takes place to broader regional, national, or transnational scales.[57]

The notion of a mutually enhancing human-Earth relationship also resonates with studies of social systems that have maintained sustainable, enduring use of at least some CPRs in supporting ecosystems.[58] Based on numerous case studies, Elinor Ostrom identified eight essential features of sustainable use of CPRs:[59] (1) clear boundaries in regards to the limits of the CPRs and who can access them; (2) locally-tailored rules regarding use and management of the CPRs; (3) participatory rulemaking processes that include those affected by the rules; (4) monitoring systems that are accountable to the community of CPR users; (5) graduated and effective sanctions appropriate for local conditions; (6) lost-cost mechanisms to resolve conflicts; (7) non-interference with government authorities external to the CPR; and (8) governance organized in "multiple layers of nested

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52. *Id.* at 1.

53. *Id.* at 156.

54. Luis Balaguer et al., *The Historical Reference in Restoration Ecology: Re-Defining a Cornerstone Concept*, 176 BIOLOGICAL CONSERVATION 12, 13 (2014).

55. HUMAN DIMENSION, *supra* note 49, at 1–2.

56. *See id.* at 139–40 (explaining that ecological restoration, especially because it is value-laden, requires questioning political power relations).

57. *See id.* at 142 (describing that restoration takes place in communities, or fields of interaction between different investments, and specifically that "*communities of interest*" involve shared concerns, but may need to converge or dissipate as issues appear).

58. *See* ELINOR OSTROM, GOVERNING THE COMMONS 89 (James E. Alt & Douglas C. North eds., 1990) (noting that the resource systems in long-enduring CPRs "clearly meet the criterion of sustainability").

59. *Id.* at 90.

enterprises."[60] A common theme in these features of sustainable governance of CPRs is the importance of a strong communal attachment to place and the local community, and to intergenerational continuity.[61] These place-based and intergenerational commitments imply a need to adapt legal and governance structures and rules for sustainable and shared human use of supportive ecosystems in response to information from monitoring of relevant social and ecological indicators at a local scale.[62]

Ostrom's conclusions about sustainable use of CPRs can be expanded to the broader notion of commons in general.[63] Although it is generally agreed that the commons "are neither private nor public,"[64] defining the commons in general terms is elusive because the concept of the commons incorporates the notion that they are defined by the communities in which they are recognized.[65] Yet the commons can be juxtaposed broadly to both private property, where rights to exclusion and control are paramount, and to government forces, which impose rules from afar.[66] In a commons, the community places limits on "[excessive property] accumulation and [excessive] concentration of power."[67] The role of the commons in resolving remote ownership problems under ecological law will be revisited in Part III.

II. THE REMOTE OWNERSHIP PROBLEM

Remote ownership problems arise when people, corporations, or governments exercise property rights over places with which they have

60. *Id.* By nested enterprises, Ostrom means different levels of governance within a layered system of governance, at which rules are tailored to the conditions at each level. *Id.* at 101–02.

61. *Id.*

62. *See id.* at 92 (stressing the need for local rules that satisfy the unique issues presented in different communities or geographical regions); Dell'Angelo et al., *supra* note 6 (expressing the need for policies to "take into account the multiple and diverging values of different societies").

63. *See* OSTROM, *supra* note 58, at 90 (listing the eight design principles illustrated by long-enduring CPR institutions); FRITJOF CAPRA & UGO MATTEI, THE ECOLOGY OF LAW: TOWARD A LEGAL SYSTEM IN TUNE WITH NATURE AND COMMUNITY 46 (2015) (explaining the Ancient Greek contribution to the notion of the commons in that they are "things belonging to nobody," but also belonging to everyone).

64. *See* CAPRA & MATTEI, *supra* note 63, at 46, 106 (explaining the Roman principle of *res communis omnium*, which stands for "things belonging to everyone").

65. *See id.* at 52 ("Life in such common-based organic communities was difficult for an outside authority to organize, discipline, or rationalize.").

66. *See id.* at 44 (contrasting the commons with private ownership, which "divid[es] the whole into individualistic components").

67. *See id.* at 52 (explaining the goals of the commons "were inclusion and community rather than exclusion and individualization; and traditional[ly] promoted the diffusion of responsibility . . . rather than the accumulation and concentration of power").

little or no attachment and about which they have little or no ecological knowledge.[68] Although remote ownership, or absentee landlordism, can arise in a wide variety of situations and take myriad forms, the focus here is on remote ownership in the context of land and resource grabbing for agricultural purposes.[69] Land and resource grabbing occurs when remote owners or investors drive conversion of land and resources from generally small-scale, traditional, locally controlled uses or relatively undeveloped wilderness to massive holdings devoted to industrial agriculture or resource extraction serving global markets of finance, goods, and services.[70] A focus on land and resource grabbing for agriculture shines a spotlight on most, if not all, of the main problems associated with remote ownership.[71]

A. Ecological Disruption from Agriculture

Since the Neolithic transition, agriculture has been the root of many forms of ecologically disruptive human behavior that strains scarce resources (renewable and non-renewable) or overwhelms the capacity of ecosystems to handle the outputs of human transformations of material and energy.[72] Agriculture is a form of simplification and intensification of land use[73] that, even in its most primitive forms, alters the ecosystems it

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68. *See* PEARCE, *supra* note 6, at vii–x (explaining the purpose for the author's global travel and that different people and corporations are acquiring large-scale land rights, while simultaneously staying disconnected to the grabbed land and contributing to world starvation, water scarcity, and over exploitation of resources in the grabbed lands areas).

69. *See id.* at 3–16, 29–42 (describing different examples of land grabs for agricultural reasons such as a Saudi billionaire grabbing land in Ethiopia for agricultural reasons, the Tabuk Agriculture Development Company over-irrigating in Saudi Arabia, and Philippe Heilberg's ties to a mega land deal with notorious warlords, General Paulino Matip and his son).

70. *See Agriculture at a Crossroads: Findings and Recommendations for Future Farming: Land Grabbing*, GLOB. AGRIC., https://www.globalagriculture.org/report-topics/land-grabbing.html (last visited Apr. 14, 2019) (explaining that international investors engage in large-scale land acquisitions for agriculture production).

71. *See* Mercedes Stickler & Alisa Zomer, *Agricultral Land Grabs Threaten Local Property Rights and Sustainable Development*, WORLD RES. INST., https://www.wri.org/blog/2011/04/agricultural-land-grabs-threaten-local-property-rights-and-sustainable-development (last visited Apr. 14, 2019) (explaining that land grabs have intense negative effects on the environment and rural living, specifically that it affects customary and traditional lands rights and impacts local ecosystems that natives rely on for their livelihood).

72. *See* VACLAV SMIL, ENERGY IN NATURE AND SOCIETY: GENERAL ENERGETICS OF COMPLEX 148, 308 (2008) (noting that preindustrial agriculture caused great environmental consequences).

73. *See* JAMES C. SCOTT, SEEING LIKE A STATE: HOW CERTAIN SCHEMES TO IMPROVE THE HUMAN CONDITION HAVE FAILED 165, 262, 264 (1998) (discussing detailed studies showing that industrialization resulted in less economic returns than intensification of agriculture did, which focusses on manuring and attentive breeding, and further, that "high-modernist agriculture" succeeds in farm

occupies.[74] For example, farming tends inherently to reduce biodiversity because, typically, its aim is to focus on a smaller range of species than would otherwise be present and harvest reduces the overall amount of energy available for life support.[75] Furthermore, strategies for meeting the basic challenge of finding, creating, or maintaining suitable soil and moisture conditions for agriculture include: swidden agriculture, fallow periods, crop rotation, multi-cropping, no-till cultivation, irrigation, and nutrient addition.[76] All have ecological implications, which may include: loss or degradation of habitat for terrestrial and freshwater species; reduced capacity for carbon storage; erosion and salinization of soil; desertification; and water and air pollution from nutrient and pesticide run-off and drift, along with climate and other ecological impacts associated with the energy source used.[77]

The environmental history of agriculture during the early modern period (roughly 1400–1800 C.E.) in different parts of the world is replete with accounts of its significant ecological impacts.[78] Reliance on energy from biomass, wind, and water placed a strong demand on agriculture, not only for food and fiber for human survival, but also the energy needed to extract work from humans and animals that powered much of the ever-

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simplification, which is the "process of simplifying the floral profusion of nature" to coax specific species of flora instead of others).

74. SMIL, *supra* note 72, at 308.

75. Helmut Haberl et al., *A Socio-Metabolic Transition Towards Sustainability? Challenges for Another Great Transformation*, 19 SUSTAINABLE DEV. 4, 5–7 (2009) (detailing the growing use of natural resources, such as land and water, and its effect on biodiversity loss and energy reductions).

76. *See* JOHN F. RICHARDS, THE UNENDING FRONTIER: AN ENVIRONMENTAL HISTORY OF THE EARLY MODERN WORLD 152 (2003) (demonstrating that Japan intensified cultivation through the use of crop rotation, multi-cropping, and fallow periods); *see also* SMIL, *supra* note 72, at 162, 164, 292 (detailing different agriculture strategies).

77. *See* Thorkild Jacobsen & Robert M. Adams, *Salt and Silt in Ancient Mesopotamian Agriculture: Progressive Changes in Soil Salinity and Sedimentation Contributed to the Breakup of Past Civilizations*, SCIENCE, Nov. 21, 1958, at 1251 (explaining that Iraq's semi-arid climate and low permeability of the soils subjected land to salt accumulation that was likely due to irrigation); J.R. MCNEILL, AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD 35 (2000) (asserting that agriculture has caused soil erosion since its inception, and that soil erosion first occurred with new agriculture practices in the Middle East, China, and India and continued as the population grew); Pichu Rengasamy, *World Salinization with Emphasis on Australia*, 57 J. EXPERIMENTAL BOTANY 1017, 1019 (2006) (discussing how irrigation causes the salinization of soil); SMIL, *supra* note 72, at 308 (considering the implications of different agricultural stratagies).

78. *See* Kenneth Pomeranz, *Political Economy and Ecology on the Eve of Industrialization: Europe, China, and the Global Conjuncture*, AM. HIST. REV. 425, 440, 445 (2002) (stating that from around 1400 to 1800 C.E., Europeans almost experienced similar environmental ruin to that which China experienced in the Yangtze Delta).

expanding economy.[79] The basic strategies were to intensify agricultural production locally with increased inputs of labor or other types of energy, irrigation, or modified production methods; or to augment production extensively by moving to or relying on (through trade or conquest) external areas, either nearby (e.g., drained wetlands) or remote (e.g., the Baltics, Eastern Europe, Scandinavia, the Americas, Northern China, Taiwan, and South Africa).[80]

Modern agriculture contributes significantly to climate change, disruption of global nutrient cycles, biodiversity loss, land use change, and other pressures on planetary boundaries.[81] Since 1800, cropland has tripled; it now takes up about 12% of the Earth's ice-free land surface, and pastures another 22%—a vast transformation since the Neolithic transition.[82] Irrigated land increased from 75 million hectares at the end of World War II to over 275 million hectares in 2000, mostly in Asia.[83] Agriculture globally places significant pressure on accessible freshwater supplies.[84] Crop farming uses about 5% of total primary energy supply globally, requiring fossil-fuel inputs at every stage.[85] Methane from rice paddies and livestock, nitrous oxide emissions from nitrogen fertilization and nitrification

79. *See* ROLF PETER SIEFERLE, THE SUBTERRANEAN FOREST: ENERGY SYSTEMS IN THE INDUSTRIAL REVOLUTION 23–26 (2001) (arguing that advances in agrarian technology result in human intensive energy centers); SMIL, *supra* note 72, at 155, 164 (noting that humans and animals expended enormous energy for irrigation); CLIVE PONTING, A NEW GREEN HISTORY OF THE WORLD: THE ENVIRONMENT AND THE COLLAPSE OF GREAT CIVILIZATIONS 40 (2007) (providing reasoning for the evolution and proliferation of agriculture).

80. Richard C. Hoffmann, *Frontier Foods for Late Medieval Consumers: Culture, Economy, Ecology*, 7 ENV'T & HIST. 131, 136–37 (2001); *see* Pomeranz, *supra* note 78, at 441–43 (providing examples of how Europe greatly benefited from imports from America); ERIC LIONEL JONES, THE EUROPEAN MIRACLE: ENVIRONMENTS, ECONOMIES, AND GEOPOLITICS IN THE HISTORY OF EUROPE AND ASIA 81–82 (2003) (discussing how widespread extraction economies created an advantageous position for European colonial powers); RICHARDS, *supra* note 76, at 106 (2003) (stating that China expanded into Taiwan to cultivate its "unused" land); SMIL, *supra* note 72, at 164, 166 (showing that many countries adopted crop rotation to increase agricultural productivity).

81. SMIL, *supra* note 72, at 308.

82. *See* MCNEILL, *supra* note 77, at 212–14 (describing how the world's cropland has grown, paralleling that of population growth, and that this growth continued throughout the centuries due to colonization, the international grain market, and chemical fertilizers); Navin Ramankutty et al., *Farming the Planet: 1. Geographic Distribution of Global Agricultural Lands in the Year 2000*, 22 GLOBAL BIOGEOCHEMICAL CYCLES 1, 14 (2008); Rockström et al., *supra* note 25, at 473 (showing that "change in land use" is one of the Earth-system processes that has converted 11.7% of total land cover to cropland use).

83. SMIL, *supra* note 72, at 294.

84. *See* Ramankutty et al., *supra* note 82, at 1 (expressing that "[h]uman land use activities are a force of global significance," and affect freshwater resources); Rockström et al., *supra* note 25, at 473 (stating that humanity is likely to soon approach the boundaries of freshwater use).

85. *See* SMIL, *supra* note 72, at 291–92, 303 (showing that the total energy cost of farming is less than 5% and that farmers around the world have mechanized their farming practices).

processes, and basic loss of carbon storage capacity also contribute to climate change.[86] Anthropogenic conversions of atmospheric nitrogen to reactive forms that enter ecosystems were virtually non-existent before the industrial era, but are now equal to natural conversions, doubling the global load.[87] Phosphorus, which (unlike nitrogen) derives from exhaustible fossil minerals, is also heavily used as an agricultural fertilizer.[88] Anthropogenic phosphorus and nitrogen loads contribute to eutrophication of freshwater ecosystems and oxygen-depleted dead zones where surface run-off enters ocean waters.[89]

B. Metabolic Rift and the Rise of Global Trade

Around 4,000 years ago, domestication of animals capable of transporting heavy loads over long distances (especially camels) led to the development of extensive networks in Asia for trading salt, spices, silk, gems, and other valued goods.[90] Regional trade networks gradually expanded in similar patterns in other parts of the world.[91] In Europe, for example, regional trade of grains, fur, stockfish, and other goods in the 12th and 13th centuries solidified into the Hanseatic League.[92] The Hanseatic League was a sophisticated network for facilitating trade and protecting the

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86. *See* Ramankutty et al., *supra* note 82, at 1 (finding agriculture at least partially responsible for the emissions of greenhouse gases and changing regional climates); Rockström et al., *supra* note 25, at 474 (explaining that modern agriculture, specifically manufacturing fertilizer, results in additional nitrous oxide in the atmosphere, which causes environmental changes).

87. *See* Rockström et al., *supra* note 25, at 473 (comparing the pre-industrial levels of nitrogen "removed from the atmosphere for human use" at zero tonnes per year, with the current status at 121 million tonnes per year and the proposed boundary of 35 million tonnes); Steffen et al., *supra* note 25 (arguing that it is important to place boundaries on changes in biochemical flows, such as nitrogen, because these changes affect the Earth's capacity for resilience).

88. *See* SMIL, *supra* note 72, at 294 (providing that phosphorus is found in potash, which when diluted with H_2SO_4 creates a superphosphate fertilizer).

89. *See* Rockström et al., *supra* note 25, at 474 (emphasizing that anthropogenic changes in the nitrogen and phosphorus flows have altered marine ecosystems, which justifies the need for planetary boundaries for nitrogen and phosphorous flows); Stephen Carpenter & Elena Bennett, *Reconsideration of the Planetary Boundary for Phosphorus*, 6 ENVT'L RES. LETTERS 1, 8 (2011) ("Human release of [phosphorus] to the environment is causing widespread eutrophication of surface freshwaters."); Steffen et al., *supra* note 25, at 742 (noting that there is increasing evidence that biochemical flows, such as nitrogen and phosphorous, may have impacts on sea biodiversity, and further that the analysis revealed a need for another boundary to avert eutrophication of freshwater).

90. Eric C. Ellis et al., *Used Plant: A Global History*, 110 PROC. NAT'L ACAD. SCI. U.S. 7978, 7981–82 (2013).

91. *See* Donald Worster, *The Vulnerable Earth: Toward a Planetary History*, 11 ENVTL. REV. 87, 94 (1987) ("[M]arkets and trade had existed in pre-modern times . . . .").

92. *See* Hoffmann, *supra* note 80, at 148 (narrating how the herring industry created a trade revolution establishing the Hanseatic League).

interests of merchants in Northern Europe from the 13th to the 17th century.[93]

Beginning in the late 15th century, the long-distance oceanic voyages of Europeans to East Asia, Africa, and the Americas initiated a period of significant expansion in trade.[94] European countries brought new forms of intensive agricultural land use to the Americas and elsewhere.[95] For example, export-oriented Caribbean sugar plantations in the 17th and 18th centuries stood out as a new agricultural form, with massive local ecosystemic consequences, as well as the social consequences associated with the African slave trade.[96] Europeans brought Old World domesticated plants and animals to the Americas (e.g., wheat, sheep, horses, and cattle) and introduced New World domesticated plants (e.g., maize, tomatoes, and potatoes) to the Old World.[97] They also brought Old World diseases, most notably smallpox, which killed off 50% or more of indigenous populations, thereby temporarily reducing the ecosystemic impacts of indigenous agriculture.[98]

Another feature of this era is the privateers acting on behalf of European monarchs through official charters that evolved into the first corporations—essentially, legally recognized artificial entities that allowed investors to reap vast material returns from conquest of new territory and resources in Asia, Africa, and the Americas.[99] The imprimatur of divinely-rooted royal right infused the violent European invasions and conquests of the early modern era with moral and legal authority. This authority implicitly persists in the modern societies that emerged from conquered lands in the Americas and elsewhere—in the sense that the legitimacy of

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93. GEORGE CAWSTON, THE EARLY CHARTERED COMPANIES 4 (W.S. Hein 2008) (1896).

94. *See* Hoffmann, *supra* note 80, at 135–39 (discussing trade expansion such as the grain trade expansion of the 1460s and line cattle trades).

95. *See id.* at 131 ("A continual western history of feeding beyond the bounds of natural local ecosystems goes back to Europe's high and later Middle Ages.").

96. *See* Richards, *supra* note 76, at 460 (stating that sugar planting caused ecological and social stresses in the Caribbean).

97. *Id.* at 311–12; *see* ALFRED W. CROSBY, THE COLUMBIAN VOYAGES, THE COLUMBIAN EXCHANGE, AND THEIR HISTORIANS 8 (Michael Adas ed., 1987) (discussing the exchange of agricultural and livestock species between the Old and New World).

98. *See* CROSBY, *supra* note 97 ("The decisive advantage of the human invaders of America was not their plants or animals—and certainly not their muskets and rifles, which Amerindians eventually obtained in quantity—but their diseases."); Richards, *supra* note 76, at 314 (reviewing how the sudden onset of new diseases, like smallpox, devastated indigenous peoples); PONTING, *supra* note 79, at 215 (describing the variety of diseases brought from the Old World to the New World).

99. DAVID C. KORTEN, THE GREAT TURNING: FROM EMPIRE TO EARTH COMMUNITY 129–30 (1st ed. 2006) ("Over time, the ruling monarchs turned from swashbuckling adventurers and chartered pirates to chartered corporations as their favored instruments of colonial expansion, administration, and pillage.").

those colonial conquests rarely has been comprehensively or effectively questioned or redressed on the basis of contemporary notions of the rule of law, human rights, and justice.[100] This is true not only in regard to those societies domestically, but also in regard to global patterns of material and energy flows through trade channels that have roots in the power imbalances and legal orders of the early modern era.[101] Notably, the privateers of the early modern era evolved into modern corporations. Corporations continue to play a role in land and resource grabbing that transfers wealth from relatively powerless indigenous peoples and smallholders to remote owners—often, investors in corporate schemes package land and resources into financial instruments that reap high returns on investment.[102]

Thus, the early modern period began a global trade and investment regime, in which increasingly wealthy population centers in Europe,[103] and eventually elsewhere, became increasingly dependent on provisioning from remote parts of the world—in other words, a period of rising metabolic rift (i.e., the removal of some portion of bioregional metabolism to remote areas) and reliance on "ghost acre[s]" (i.e., the amount of land spared from agricultural or other uses by using remote lands or new energy regimes).[104] Ever since, through expanding trade, people—especially in wealthy industrial societies—have become increasingly detached from the ecosystems that maintain them; based on consumption, individual

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100. Michael M'Goningle, *Green Legal Theory: A New Approach to the Concept of Environmental Law*, 4 NEUE KONZEPTE 34, 36 (2008).

101. *See* JUAN MARTINEZ-ALIER, ECOLOGICAL ECONOMICS: ENERGY, ENVIRONMENT AND SOCIETY 102 (1987) (explaining that the study of the flow of material and energy shows that energy has not reached a "subsistence limit"); Arturo Escobar, *Latin America at a Crossroads: Alternative Modernizations, Post-Liberalism, or Post-Development?*, 24 CULTURAL STUD. 1, 1 (examining the socio-economic changes occurring in Latin America); PONTING, *supra* note 79, at 171–72 (showing how colonialism created a world economy).

102. *See* PEARCE, *supra* note 6, at 41–42 (speaking of Philippe Heilberg's ties with South Sudan's Unity Province, through a mega land deal with notorious warlords, General Paulino Matip and his son).

103. *See* Joshua K. Leon, *The Role of Global Cities in Land Grabs*, 36 THIRD WORLD Q. 257, 258 (2015) (stressing that the concentration of power in cities continues, with more than half of the world's population now in urban areas, and cities are increasingly the power centers underlying land grabs).

104. *See* Hoffmann, *supra* note 80, at 139, 149 (showcasing that Europe became dependent on long distance trading of cattle and fish from remote locations); Pomeranz, *supra* note 78, at 438 (providing examples of different countries relying on imports from remote locations); JONES, *supra* note 80, at 83 (defining the concept of "ghost acreage"); Brett Clark & John B. Foster, *Ecological Imperialism and the Global Metabolic Rift: Unequal Exchange and the Guano/Nitrates Trade*, 50 INT'L J. COMP. SOC. 311, 311, 313, 316 (2009) [hereinafter Clark & Foster] (asserting that ecological imperialism creates a metabolic rift, specifically highlighting the international guano trade in the 19th century that created a metabolic rift from international soil transfers).

ecological footprints globally are less and less local.[105] Ongoing patterns of land and resource grabbing exacerbate these trends in the current era.[106]

C. Modern Global Trade and Investment

By the end of the early modern era and at the onset of the Industrial Revolution, a world market was well established, creating an unprecedented level of global interconnectedness of agricultural production and its cascade of impacts.[107] Yet agriculture and trade prior to about 1800 were still contained within the energetic limits on transport and production methods achievable in an agrarian energy system.[108] Powered by fossil fuels, population expansion, technological innovations, and rising consumption, global markets have expanded exponentially since the dawn of the Industrial Revolution.[109] As noted above, the ecological impacts of modern agriculture, transformed over the past two centuries by fossil fuels and scientific, industrial, and chemical revolutions, are of another order altogether.[110] Fossil-fuelled modern agriculture depends on mechanization, automation, massive use of inorganic fertilizers and pesticides, irrigation that relies on major alterations of aquatic and hydrologic systems with dams and other water management infrastructure, an industrial approach that favors disease-vulnerable monocultures of a dwindling number of species of plants and animals, genetic engineering, and increasing consumption of

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105. *See* BJÖRN NYKVIST ET AL., NATIONAL ENVIRONMENTAL PERFORMANCE ON PLANETARY BOUNDARIES: A STUDY FOR THE SWEDISH ENVIRONMENTAL PROTECTION AGENCY 22 (2013) (discussing that humans now live in what is known as the Anthropocene—"an era when humans have become the dominant geological force"—and that international trade causes environmental impacts elsewhere, as opposed to locally).

106. *See, e.g.*, PEARCE, *supra* note 6, at 93–95 (outlining Susan Payne's London connection with Africa, specifically that she owns the largest land hold in southern Africa, while she engages in buying and selling African farmland with unlimited rights to irrigation).

107. Rachel Beddoe et al., *Overcoming Systemic Roadblocks to Sustainability: The Evolutionary Redesign of Worldviews, Institutions, and Technologies*, 106 PROC. NAT'L ACAD. SCI. U.S. 2483, 2485 (2009) (explaining that the Industrial Revolution brought fuels to the nation, which led to economic growth from factors such as pesticides, fertilizers, and mechanized agriculture).

108. *See* SIEFERLE, *supra* note 79, at 34 (discussing the natural limitations of traditional agrarian expansion due to a limited amount of solar energy); SMIL, *supra* note 72, at 166 (describing how the agrarian food production system led to cyclical famine).

109. *See* KARL POLANYI, THE GREAT TRANSFORMATION: THE POLITICAL AND ECONOMIC ORIGINS OF OUR TIME 42–43 (2d ed. 2001) (noting that the Industrial Revolution brought a new belief that an unlimited amount of material commodities could resolve societal issues, and further, that growth in population and industry influenced change in the market economy).

110. *See* Lester R. Brown, *The Social Impact of the Green Revolution*, 39 INT'L CONCILIATION 3, 6 (1971) ("The technological breakthrough achieved by agricultural scientists foreshadows widespread changes in the economic, social, and political orders . . . .").

meat.[111] Along with these impacts, the metabolic rift between where food and fiber are produced and consumed has widened significantly.[112]

The modern globalized economy is the progeny of this market.[113] Today's globalized market operates on the principles of capitalism, profit-seeking, and commitment to perpetual economic growth.[114] Capital now moves with few constraints around the globe, always seeking to expand and maximize short-term profit. Countries and multinational corporations engage in a frenzy of market competition that relies on the greatest exploitation of cheap labor and lowest-cost extraction of material and energy possible.[115] In the recent rash of land and resource grabs—particularly in Africa, Latin America, and Asia—and bioprospecting in tropical forests, the owners and controllers of financial capital, along with political leaders they support or tolerate, retain authority and control over the flows of material and energy.[116]

The contemporary rationale for international trade and investment is embedded in the dominant paradigm that gives priority to economic growth

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111. *See* MCNEILL, *supra* note 77, at 216 (stating that by the early 1990s, most industrialized nations revolutionized their agriculture practice with fossil fuels, chemicals, monocropping, and machines); Rockström et al., *supra* note 25 (suggesting that reliance on fossil fuels and industrialized agriculture have resulted in damaging levels of human activity that are detrimental to the systems that keep Earth in a stable state); Jonathan A. Foley et al., *Solutions for a Cultivated Planet*, 478 NATURE 337, 338–39 (2011) (discussing the environmental impacts of agricultural expansion and intensification, threatening land and water quality, biodiversity, and the climate).

112. *See* Clark & Foster, *supra* note 104, at 315 (arguing that capitalism, global trade, and intense agricultural practices create a metabolic rift in soil nutrients).

113. *See id.* at 313 ("[T]he rise of the capitalist world economy itself was synonymous with the emergence of a hierarchical division of nations through the appropriation of distant lands, labor, and resources.").

114. *See id.* at 314 (finding that the globalized markets approach of capitalism is "'*expansion-oriented* and *accumulation-driven*', which pushes it to subsume the entire world to its logic of accumulation").

115. *See* MCNEILL, *supra* note 77, at 358 (highlighting that the extraction of materials and energy may have left mankind in an "ecological crisis," which is unsustainable and necessitates a new regime to avoid collapse); JAMES GUSTAVE SPETH, THE BRIDGE AT THE EDGE OF THE WORLD: CAPITALISM, THE ENVIRONMENT, AND CROSSING FROM CRISIS TO SUSTAINABILITY 47–51 (2008) (proclaiming that consumption stimulates a "growth fetish" in the economy, which now grows exponentially, parallel to natural resource use and pollution output); PEARCE, *supra* note 6, at 29–30 (providing one example of a multinational corporation, Tabuk Agriculture Development Company, in Saudi Arabia that is irresponsibly using enormous amounts of water to operate a 90,000-acre dairy farm).

116. *See* Clark & Foster, *supra* note 104, at 312–13 (examining the world's capital system, specifically its vertical flow of energy and matter to more developed countries, negatively impacting the socio-ecological conditions of the extractive countries); PEARCE, *supra* note 6, at 141 (discussing American fruit companies taking over whole states in Latin America and sustaining relationships with corrupt governments).

and strong protection of private property and state sovereignty.[117] Trade broadens the market arenas in which private proprietors can seek profit, create employment opportunities, and contribute to economic growth. It also expands the goods and services available to people worldwide—for example, North American grocery stores now have produce from around the world throughout the year.[118] Trade liberalization reduces or eliminates measures of sovereign states that impose tariffs or other restrictions on imports or foreign investments.[119]

The main economic justification for international trade derives from David Ricardo's principle of comparative advantage—a country "has a comparative advantage if it can produce the good in question more cheaply relative to other goods it produces than can its trading partners, regardless of absolute costs."[120] Comparative advantage relies on a country's internal cost ratios in producing goods and services rather than on absolute advantage; absolute advantage is based on a direct comparison of costs of individual goods and services in different countries.[121] However, comparative advantage is based on the assumption that capital is immobile.[122] In the globalized economy, in which capital is increasingly mobile beyond national borders through foreign investments and transnational companies, this core assumption is more and more in doubt.[123] In contemporary trade regimes,

> [g]lobalization creates an increasingly prominent role for transnational corporations, encourages the transportation of resources and manufactured goods all over the planet, facilitates the instantaneous opportunistic movement of finance capital across national boundaries in search of the highest returns, and

117. *See* HERMAN E. DALY & JOSHUA FARLEY, ECOLOGICAL ECONOMICS: PRINCIPLES AND APPLICATIONS 366 (2d ed. 2011) (demonstrating that international trade is not trade between countries, but rather between private firms within different countries for the firm's private benefit and economic gain).

118. *See id.* at 355 (highlighting that trade allows us to experience "other peoples' traditions, tastes, and capacities").

119. *Cf. id.* at 396 ("In the recent era of liberalization, we often witnessed unpredicted changes in international capital flows in and out of countries . . . .").

120. *Id*. at 310.

121. *See id.* at 311 (explaining, with a hypothetical, how comparative advantage works).

122. *Id.* at 312.

123. *See id.* at 361 (finding that "it is not impossible for productive capacity, capital, to be transferred from one country to another," even though capital mobility must be ruled out for the "comparative advantage argument to work between countries").

> generally encourages the integration of regional and national economies.[124]

In this economic environment, the competition for high returns, combined with the domestic benefits nation states derive if they can attract investment and productive enterprises, creates a disincentive for strong environmental protection or other socially or ecologically beneficial measures that reduce profits.[125] This dynamic is especially disadvantageous for less developed countries, which end up trapped in debt and hampered in regard to domestic social and environmental programs as they compete to export commodities to markets in wealthier countries.[126]

The international community has a strong commitment to enhancing trade and investment across national borders. The World Trade Organization (WTO) is the international institution that administers and enforces international trade rules at the global scale.[127] Bilateral or multilateral trade agreements, such as the expiring North American Free Trade Agreement (NAFTA), supplement those rules at the regional scale.[128]

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124. William E. Rees, *Globalization and Sustainability: Conflict or Convergence?*, 22 BULL. SCI., TECH. & SOC'Y 249, 257 (2002).

125. *Id.* at 258.

126. *See id.* (indicating that the price of primary goods in developing countries depreciated over 50% from 1980 to 1983).

127. *See What We Stand For*, WTO, https://www.wto.org/english/thewto_e/whatis_e/what_stand_for_e.htm (last visited Apr. 14, 2019) (demonstrating that the WTO promotes trade and investment by lowering trade barriers and discouraging unfair practices).

128. The NAFTA experience demonstrates governments' ability to adopt rigorous, enforceable supranational rules to support their priorities. *See* North American Free Trade Agreement, Can.-Mex.-U.S., Dec. 17, 1992, 32 I.L.M. 289 (1993) (showing that Articles 1116 and 1117 allow investors to pursue arbitration). They did so in NAFTA Chapter 11 by waiving their sovereign immunity to allow private investors to pursue binding arbitration seeking judicially enforceable monetary awards that include estimated lost profits for breach of the NAFTA's investor protections. *Id.* at arts. 1101–1138.2. Although a comprehensive review of Chapter 11 cases involving challenges to environmental measures is beyond the scope of this analysis, two recent cases bear mention because they clearly illustrate problematic aspects of remote ownership and control. For example, see *Clayton v. Canada*, Case No. 2009.04 (Perm. Ct. Arb. 2015), where a Chapter 11 panel of three arbitrators ruled 2–1 that Canada violated Chapter 11 as a result of a joint federal-provincial environmental assessment process that led to Canada's rejection of a marine terminal on the Digby Peninsula in Nova Scotia that a U.S.-based company sought to ship basalt from a quarry in the area to the U.S. The federal and provincial governments concluded that the project "poses the threat of unacceptable and significant adverse effects to the existing and future environmental, social and cultural conditions influencing the lives of individuals and families in the adjacent communities." Letter from Mark Parent, Minister of Env't and Labour, to Paul G. Buxton, Project Manager, Bilcon of Nova Scotia Corp. (Nov. 20, 2007). Canada now faces the panel's ruling on the investors' compensation claim totaling more than $475 million. *See* SCOTT SINCLAIR, CANADIAN CTR. FOR POLICY ALT., CANADA'S TRACK RECORD UNDER NAFTA CHAPTER 11: NORTH AMERICAN INVESTOR–STATE DISPUTES TO JANUARY 2018, at 5 (2018) (reflecting on Canada's eight loses and NAFTA Chapter 11's interference with Canada's regulatory authority). In

The WTO, established in 1995, aims "to help trade flow as freely as possible—so long as there are no undesirable side effects—because this is important for economic development and well-being."[129] The approach to the human-Earth relationship reflected in the WTO is largely mimicked in regional trade and investment agreements.[130]

Expanded liberalized trade and investment is a key component of the international community's dominant commitment to ever-rising economic growth.[131] For example, in 2014 the G20 leaders stated:

> Trade and competition are powerful drivers of growth, increased living standards and job creation. In today's world we don't just trade final products. We work together to make things by importing and exporting components and services. We need

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Lone Pine Resources Inc. v. Government of Canada, a U.S. investor claimed in excess of $250 million to compensate for the Quebec government's revocation under its 2011 *Act to Limit Oil and Gas Activities* of the investor's licenses to explore for oil and natural gas along and near the St. Lawrence River near Trois Rivières, Quebec. *See* Lone Pine Res. Inc. v. Canada, ICSID Case No. UNCT/15/2. Notice of Arbitration, ¶¶ 49, 58 (Sept. 6, 2013) (stating that Lone Pine expended millions of dollars and considerable time and resources in Quebec to receive necessary mining permits). The investor anticipated that the exploration licenses could lead to shale gas development in the region. *Id.* ¶¶ 7–8. Based on a strategic assessment of the impacts of shale gas and other hydrocarbon development on the human and biophysical environment in the region, the government of Quebec concluded that the region was not suitable for hydrocarbon development. *Id.*

129. *See Understanding the WTO: Who We Are*, WTO, https://www.wto.org/english/thewto_e/whatis_e/who_we_are_e.htm (last visited Apr. 14, 2019) ("At [the] heart [of the WTO] are the WTO agreements, negotiated and signed by the bulk of the world's trading nations."); WTO, ANNUAL REPORT 2016, at 4 (2016) (providing a basic understanding of the WTO, including who it is, what it stands for, and what it does).

> These documents provide the legal ground rules for international commerce. They are essentially contracts, binding governments to keep their trade policies within agreed limits. Although negotiated and signed by governments, the goal is to help producers of goods and services, exporters, and importers conduct their business, while allowing governments to meet social and environmental objectives.

Understanding the WTO: Who We Are, *supra*. The WTO administers and enforces trade rules pursuant to the General Agreement on Tariffs and Trade (GATT), the General Agreement on Trade in Services (GATS), and the Trade-Related Aspects of Intellectual Property Rights (TRIPS). *See* WTO, ANNUAL REPORT 2016, *supra* at 2, 5, 37 (explaining the WTO's collaboration with the World Bank). A significant change from prior international trade arrangements was the establishment of an overarching dispute settlement process covering all aspects of the WTO. *See id.* at 5 (outlining the dispute settlement process).

130. *See* WTO, *Regional Trade Agreements*, https://www.wto.org/english/tratop_e/region_e/scope_rta_e.htm (last visited Apr. 14, 2019) (outlining that regional trade agreements are essential in international trade relations and specifically that, since 2016, all WTO members have a regional trade agreement in effect).

131. *See* MANUEL GONZÁLEZ DE MOLINA & VÍCTOR M. TOLEDO, THE SOCIAL METABOLISM: A SOCIO-ECOLOGICAL THEORY OF HISTORICAL CHANGE 137 (2004) (citing the statistical growth of international trade); G20, *G20 Leaders' Communiqué*, ¶ 11 (Nov. 16, 2015) (stating that global trade and investment are paramount to economic growth and development).

> policies that take full advantage of global value chains and encourage greater participation and value addition by developing countries. Our growth strategies include reforms to facilitate trade by lowering costs, streamlining customs procedures, reducing regulatory burdens and strengthening trade-enabling services. We are promoting competition, entrepreneurship and innovation, including by lowering barriers to new business entrants and investment. We reaffirm our longstanding standstill and rollback commitments to resist protectionism . . . . We need a strong trading system in an open global economy to drive growth and generate jobs. To help business make best use of trade agreements, we will work to ensure our bilateral, regional and plurilateral agreements complement one another, are transparent and contribute to a stronger multilateral trading system under World Trade Organization (WTO) rules. These rules remain the backbone of the global trading system that has delivered economic prosperity. A robust and effective WTO that responds to current and future challenges is essential.[132]

The outcome document of the Rio+20 Conference stated that measures to promote a green economy or sustainable development should "[n]ot constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade."[133] The Sustainable Development Goals (SDGs) that the U.N. General Assembly adopted in 2015 implicitly endorse the WTO regime[134] and include a goal of doubling the share of the least developing countries' global exports by 2020.[135]

Others have done comprehensive reviews of the WTO agreements and other trade and investment agreements and their relationship to environmental issues.[136] Such a detailed analysis is beyond the scope of this Essay, but some summary observations regarding the WTO are relevant to consideration of how international trade and investment can best promote a mutually enhancing human-Earth relationship in the Anthropocene. First, the WTO and similar regional accords institutionalize a global economic model that promotes global expansion of economic activity founded on

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132. G20, *G20 Leaders' Communiqué*, ¶¶ 8, 16 (Nov. 15–16, 2014).

133. U.N. Conference on Sustainable Development, *The Future We Want*, ¶ 58, U.N. Doc. A/CONF.216/L.1* (June 19, 2012).

134. G.A. Res. 70/1, at 27 (Sept. 25, 2015).

135. *Id.*

136. JAMES K.R. WATSON, THE WTO AND THE ENVIRONMENT: DEVELOPMENT OF COMPETENCE BEYOND TRADE 2 (2013).

limited interference with private property rights.[137] However, this model lacks a mechanism to understand local conditions or to monitor or make adjustments according to aggregate impacts on ecological limits, such as planetary boundaries.[138] Second, the dispute settlement mechanism in the WTO makes clear the international community's capacity to adopt supranational rules with an enforcement regime that has real impact on national policy.[139] The final decisions in WTO disputes in which national environmental measures were held to violate WTO rules demonstrate the power of this judicialization[140] of international rules and show how difficult it is for WTO member states to adopt environmental measures that overcome concerns regarding over-regulation and protectionism.[141]

D. Trade, Investment, and Remote Ownership Problems

Long-distance trade and international investment tend to increase the detrimental influence of remote actors on social, economic, and ecological systems at a local scale.[142] In the forms of remote ownership that are the most abstract, investors in private corporate land grabs for conversion into vast industrial agricultural operations typically have little knowledge of or interest in the cultural history, ecological functioning, or local-level human-

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137. *Id.* at 4–5.

138. *See id.* (showcasing how the WTO has ruled to the detriment of the environment).

139. *See id.* at 93 (providing that the WTO is not only resolving specific disputes between Members, but also making *de facto* precedent at the same time).

140. *See id.* at 89 (demonstrating the judicialization of the WTO rules).

141. The most notable of these cases were: (1) the Tuna-Dolphin cases; *see* Report of the Panel, *U.S.—Restrictions on Imports of Tuna*, DS21/R (Sept. 3, 1991), GATT BISD (39th Supp.), at 155, *reprinted in* 30 I.L.M. 1594 (1991) [hereinafter *Tuna/Dolphin I*] (rejecting an embargo the U.S. imposed on commercial yellowfin tuna and yellowfin tuna products that were harvested in a way that harmed dolphins); *see also* Report of the Panel, *U.S.—Restrictions on Imports of Tuna*, WTO Doc. DS29/R (June 16, 1994) (unadopted) [hereinafter *Tuna/Dolphin II*] (reviewing the *Tuna/Dolphin I* decision after the E.U. and the Netherlands requested a GATT Panel review because neither Mexico nor the U.S. requested that the GATT Contracting Parties adopt the findings of *Tuna/Dolphin I*); (2) the Shrimp-Turtle case, *see* Appellate Body Report, *U.S.—Import Prohibition of Certain Shrimp and Shrimp Products*, WTO Doc. WT/DS58/AB/R (adopted Oct. 12, 1998), *reprinted in* 38 I.L.M. 121 (1999) [hereinafter *Shrimp/Turtle*] (rejecting the U.S.'s appeal of the Panel Report's prior decision to reject the U.S.'s imposed prohibition on the importation of certain shrimp and shrimp products that were caught using methods that harmed sea turtles); and (3) the Brazil Tire cases. *See* Report of the Panel, *Brazil—Measures Affecting Imports of Retreaded Tyres*, WTO Doc. WT/DS332/R (adopted Dec. 17, 2007) [hereinafter *Brazil Tyres*] (rejecting Brazil's import restrictions on certain used tires to reduce negative environmental impacts from tire storage and disposal).

142. *See* PEARCE, *supra* note 6, at 115 (overviewing the author's visit with investor Campo Aberto, Aberto's plans to profit from Brazilian agriculture, and an example of an international investment that is likely to contribute to Brazil's relentless practice of monoculture).

Earth interactions of the land underlying their investment.[143] They simply want the greatest financial return possible, regardless of the ecological or social cost.[144] Meanwhile, local people possessing centuries-old knowledge of, connection to, and experience with the converted land are moved to new places, no longer able to maintain their connection to place or to sustain themselves on local ecosystems—no longer able to maintain a mutually enhancing human-Earth relationship.[145] Breaches of this essential relationship have occurred across history and across the globe.[146]

III. CONFRONTING REMOTE OWNERSHIP UNDER ECOLOGICAL LAW

Like ecological economics, ecological law is still mostly conceptual and not yet widely understood or practiced, largely because they both envision a transition away from the hard-wired insistence on economic growth that undergirds policy and decision making globally.[147] Yet the growth-insistent economic model and the legal and governance systems that support it are entirely socially constructed, and therefore subject to change as the flaws in their conceptual foundations become more and more clear. Ecological economics and ecological law are emerging social constructions that respond to the increasingly apparent impossibility of perpetual economic growth on our finite planet (even if economic growth is more and more decoupled from throughput of material and energy in the economy and consequent ecological impacts).[148]

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143. *See generally id.* (exposing the author's encounters with several *land grabbers* in different areas of the globe, and specifically revealing the human costs of land grabbing for the purpose of large-scale agriculture).

144. A similar set of problems can arise when locally based owners seek to profit from remote sale of local products that exert a local ecological footprint—local owners who have not developed institutions for sustainable governance of the commons.

145. *See* ANDREAS NEEF, LAND RIGHTS MATTER! ANCHORS TO REDUCE LAND GRABBING, DISPOSSESSION AND DISPLACEMENT: A COMPARATIVE STUDY OF LAND RIGHTS SYSTEMS IN SOUTHEAST ASIA AND THE POTENTIAL OF NATIONAL AND INTERNATIONAL LEGAL FRAMEWORKS AND GUIDELINES 8, 13 (Caroline Kruckow & Maike Lukow eds., 2016) (stating that land grabs have caused the displacement of more than 770,000 people, and specifically that displacement has affected the rights of indigenous peoples of the six Southeast Asian countries).

146. *See, e.g.*, PEARCE, *supra* note 6 (providing specific examples of global land grabbing done by those geographically disconnected from the land grab); ROBIN WALL KIMMERER, BRAIDING SWEETGRASS: INDIGENOUS WISDOM, SCIENTIFIC KNOWLEDGE, AND THE TEACHINGS OF PLANTS 259 (2013) (positing that "[r]estoration is imperative for healing the earth" and that if "[w]e restore the land, . . . the land restores us," providing a mutually beneficial human-Earth relationship).

147. WESTRA, *supra* note 27, at 143.

148. *See* Garver, *The Rule of Ecological Law*, *supra* note 4, at 326, 330 (finding that ecological law arises from the tension between our infinite economic growth and the socio-ecological consequences that will occur with such growth).

Under ecological law, remote ownership and control of land and ecosystems would give way mostly or entirely to institutions favoring locally tailored rules.[149] When they incorporate institutions and features that are essential to real sustainability, these locally tailored rules reflect the emphasis on attention to place and local ecological knowledge that is necessary to sustain a mutually enhancing human-Earth relationship.[150] Moreover, these locally sourced rules subject trade and investment rules to the hierarchical primacy of ecological limits and the attainment of a mutually enhancing human-Earth relationship.[151] In such a regime, providing investors with investment opportunities involving the conversion of land in such a way that decreases the prospects for a mutually enhancing human-Earth relationship would be inconceivable.[152]

To serve as the foundation for an overarching, global objective that can be applied at the scale of landscapes or the entire Earth, a mutually enhancing human-Earth relationship must encompass not only the most pristine wild ecosystems, but also dense human settlements and other areas where humans or their impacts have significantly transformed the evolutionary trajectory of the pre-human or an imagined human-free ecosystem.[153] A rigorous yet practicable notion of sustainability must incorporate some level of symbiosis between humans and non-human nature in order to be consistent with a mutually enhancing human-Earth relationship.[154] The challenge is to determine, along the spectrum from the least impacted to the most anthropogenically transformed ecosystems, where benchmarks for a mutually enhancing human-Earth relationship (that are practicable in law and governance systems) can and should be drawn at different spatial and temporal scales, while accounting for humans as an integral ecosystem component.[155]

Another challenge in applying a cohesive yet practicable notion of a mutually enhancing human-Earth relationship is that human communities

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149. *See id.* at 317 (explaining that the degrowth movement emphasizes local autonomy).

150. *See* Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 171 (providing examples of how local communities develop tailored ecological policies).

151. *See* Garver, *The Rule of Ecological Law*, *supra* note 4, at 321 (stating the economic constraints of the current environmental laws and that ecological law would place ecological constraints on the market instead).

152. *See id.* (asserting that ecological law places ecological constraints on property).

153. *See* Erle Ellis & Navin Ramankutty, *Putting People in the Map: Anthropogenic Biomes of the World*, 6 FRONTIERS ECOLOGY & ENV'T 439, 445–46 (2008) (discussing that "[s]ustainable ecosystem management" requires "maintaining beneficial interactions between managed and natural systems").

154. Garver, *The Rule of Ecological Law*, *supra* note 4, at 327.

155. Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 167.

and ecosystems at the local, landscape, and regional level inevitably and increasingly are "subject to human impacts that derive from spatially and temporally diverse drivers—including those that are remote geographically or whose impacts are temporally delayed."[156] Meanwhile, those local communities inevitably cause temporally and spatially remote impacts as well.[157] Thus, at whatever temporal or spatial scale, practical efforts to promote a mutually enhancing human-Earth relationship require an adaptive, multi-scalar systems approach that maintains an ongoing focus on and connection to the local scale.[158] This approach requires the humility inherent in dealing with the inevitable uncertainties and unpredictability in how systems evolve by applying a precautionary approach, and not the hubris of many Western secular and religious traditions that idealize total human mastery and perfection of nature.[159]

Determining place-based benchmarks for mutual human-Earth enhancement and implementing an adaptive, systems-based approach to law with primacy for ecological limits implies a need to place constraints on human choice and to guide human intention toward new goals.[160] The human-Earth relationship will inevitably be socially constructed, and human intention is thus a critical variable for the human prospect.[161] For example, properly done and implemented on a regional and ultimately global scale, reciprocal restoration adheres to an adaptive, systems-based approach and both commits to and recognizes the need for human intention, choice, decision making, and active intervention to restore damaged human-Earth relationships.[162] Ecological law that incorporates a broad vision of reciprocal restoration and similar innovative ideas is ultimately a hopeful vision of human societies orientating this intention so as to develop workable norms and rules for a thriving human community within a thriving community of all life on Earth.[163]

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156. *Id.*

157. *See id.* at 166 ("Ultimately, how human society crafts law and governance systems from the local to the global level will significantly affect whether humanity will trigger globally or regionally catastrophic shifts in the ecosystems on which human societies depend.").

158. *Id.* at 167.

159. *Id.*

160. *Id.*

161. *See id.* at 168 (emphasizing that the incorporation of human intentions and "decision making with ecological systems at various scales can lead either to local or civilizational collapse, at one extreme, or to long-term resilience and adaptiveness, at the other").

162. *See* HUMAN DIMENSION, *supra* note 49, at 258 (providing that reciprocal restoration recognizes the human role in the ecological restoration process).

163. *See id.* at 1 (arguing that ecological restoration needs human involvement that is value based, involving human knowledge and behaviors).

CONCLUSION

Significant obstacles stand in the way of a transition to a limits-insistent global legal system that promotes a mutually enhancing human-Earth relationship.[164] Ecological law encapsulates a future vision not only of law, but also of the social, cultural, political, and economic contexts in which law is embedded.[165] It is a vision that implies an inevitable evolution away from current political orders and power structures toward new ones that must emerge as this transition unfolds.[166] To attain this vision, the resistance to change in the legal system and related systems is high and will take a long time to overcome.[167] This is particularly true with respect to necessary paradigm shifts—especially the transition from the dominant growth-insistent paradigm to the limits-insistent paradigm proposed in this Essay.[168] This transition implies a significant change in deeply entrenched power structures and political orders at all scales—change that will likely emerge in unpredictable ways and through unpredictable actors.[169]

Among other promising recent development, the creation of the Ecological Law and Governance Association (ELGA) in 2016 was an important step toward the transition from environmental to ecological law.[170] The Oslo Manifesto from which ELGA emerged states:

> To overcome the flaws of environmental law, mere reform is not enough. We do not need more laws, but different laws from which no area of the legal system is exempted. The ecological

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164. *See supra* Part I (explaining that conflicts arise between the rights of nature and human rights, and further explaining the necessity of a fundamental shift away from a focus on wealth).

165. *See* M'Goningle, *supra* note 100 (showing that, through the lens of legal pluralism, "a plurality of social structures have internal legal orders that function in a compelling regulatory fashion").

166. *See supra* Part I (overviewing the necessity of a change from the assumptive need for wealth creation and suggesting that ecological law requires limits to have priority in a legal system).

167. *See* Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 167 (explaining that a system's resistance to change can "lock in and lock out" certain characteristics of that system, and that a system's resilience and adaptiveness, together with the degree of lock-in or lock-out characteristics, reflect that system's ability to change).

168. *See id.* at 170 (discussing the merits of a lock-in/lock-out assessment system in the transition to a limits-insistent paradigm).

169. *See id.* at 167 (describing the cultural humility that will be necessary to transition to a growth-insistent paradigm); PETER G. BROWN ET AL., RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY 141 (2009) ("People must bear witness, when working, playing, transacting, and relating to each other every day, so that these discussions will turn from *talk* into the *walk* of right relationship.").

170. *See* Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 167 (discussing the mission of the ELGA).

> approach to law is based on ecocentrism, holism, and intra-/intergenerational and interspecies justice. From this perspective, or worldview, the law will recognise ecological interdependencies and no longer favour humans over nature and individual rights over collective responsibilities. Essentially, ecological law internalises the natural living conditions of human existence and makes them the basis of all law, including constitutions, human rights, property rights, corporate rights and state sovereignty.[171]

ELGA is a growing network of jurists and others who are convinced of the need to further develop ecological law and to seek opportunities to put it into practice.[172] Addressing remote ownership problems should be high on the list of priorities for ELGA and like-minded groups and individuals seeking a mutually enhancing human-Earth relationship.[173]

171. Ecological Law and Governance Association, *Oslo Manifesto for Ecological Law & Governance*, art. V (June 21, 2016), https://www.elga.world/oslo-manifesto/.

172. Garver, *A Systems-Based Tool for Transitioning to Law*, *supra* note 4, at 167.

173. *See id.* at 169 (stating that systems with strong private property rights have historically caused political inequality and ecological detriment).

DOES THE RULE OF ECOLOGICAL LAW DEMAND VEGANISM?: ECOLOGICAL LAW, INTERSPECIES JUSTICE, AND THE GLOBAL FOOD SYSTEM

Heather McLeod-Kilmurray[*†]

INTRODUCTION

The concept of ecological law challenges many fundamental assumptions and norms of our conventional understandings of law and requires profound changes to our usual approaches to sustainability.[1] A somewhat less explored issue is whether ecological law requires or leads us toward interspecies justice. To tackle this question, I have chosen the case study of our global industrialized food system, focusing in particular on animal foods. Not only does eating animal products directly raise the issue of interspecies justice, but it acutely demonstrates the challenges of achieving human justice (both inter- and intragenerational) and justice for

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1. *See* Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316, 325 (2013) (theorizing that "[t]he rule of ecological law must overcome the limitations of contemporary environmental law," namely its protection of consumption-based lifestyles that are "rooted in strong notions of property rights and personal freedom").

other species at the same time.[2] It is therefore interesting to ask the question: does ecological law demand veganism?[3] While this short Essay does not attempt to provide a complete and final answer to this question, it provides an excellent opportunity for an initial thought experiment on how ecological law would change one of the most ecologically harmful and unjust aspects of our global food system.[4]

In understanding and actualizing ecological law, several related concepts are helpful. One purpose of the law is to achieve justice. Klaus Bosselmann has proposed a concept of "ecological justice," which requires three kinds of justice: intergenerational, intragenerational, and interspecies.[5] Our current globalized, industrialized food system is a challenge to all three.[6] To overcome this challenge, our dominant food system, and the laws and policies that shape it, must be changed. Although it is true that what we eat is often a personal choice, this choice, for many of us, is significantly shaped and limited by the modern industrial food system, which is colonial, exploitative, and creates injustice to present and future generations of human and non-human animals.[7] This is particularly true in relation to industrial animal agriculture, especially industrial meat production.[8] Arguments in favor of the industrial food system emphasize the need to increase food production to feed a growing global population,[9] especially in

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2. *See infra* Part I (explaining how the global food system's focus on industrial animal agriculture contributes to inter- and intragenerational as well as interspecies injustice).

3. This Essay is an introductory thought experiment—rather than a comprehensive review of how ecological law would reform the global, regional, and local food systems—and is certainly not intended to answer the question of whether each person's or group's food choices meets any particular ethic of ecological law.

4. *See infra* Part IV (analyzing how Garver's ten features of ecological law would reform the global food system).

5. Klaus Bosselmann, *Ecological Justice and Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 129, 160 (Benjamin J. Richardson & Stepan Wood eds., 2006).

6. *See infra* notes 116–21 and accompanying text (explaining how the developed world's consumption of meat contributes to food insecurity, thereby causing intergenerational injustice).

7. *See infra* notes 97–101 and accompanying text (outlining the ways in which the legal system incentivizes and promotes the modern global food system).

8. *See Global Meat Production and Consumption Continue to Rise*, WORLDWATCH INST., http://www.worldwatch.org/global-meat-production-and-consumption-continue-rise (last visited Apr. 14, 2019) [hereinafter *Global Meat Production*] (discussing the negative impacts that industrialized meat production has on animals, humans, and the climate).

9. *See, e.g.*, *Who Will Feed Us? The Industrial Food Chain vs the Peasant Food Web*, ETC GROUP (Oct. 16, 2017) [hereinafter *Who Will Feed Us?*], http://www.etcgroup.org/content/who-will-feed-us-industrial-food-chain-vs-peasant-food-web ("We are told that it is big agribusiness, with its flashy techno-fixes and financial clout, that will save the world from widespread hunger and malnutrition . . . .").

regions where financial wealth is increasing.[10] However, there is very little discussion about tackling hunger by other means, such as addressing human population growth, reducing food waste, enhancing redistribution of food, and producing food with more efficient energy ratios.

Therefore, this Essay specifically asks: (1) Does ecological law require interspecies justice? (2) Does interspecies justice demand (human) veganism?[11] (3) Would veganism enhance or challenge inter- and intragenerational human justice?

I will use Geoffrey Garver's ten features of ecological law[12] to explore these issues and to propose changes to our food systems, with a particular focus on industrial animal agriculture.[13] I conclude that ecological law would respect indigenous approaches to food, which permit non-human animals to fulfill their ecological and natural roles.[14] Similarly, ecological law may permit traditional small-scale animal husbandry, with its system of

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10. *See Global Meat Production*, *supra* note 8 (documenting that "[w]orldwide meat production has tripled over the last four decades," especially in industrial countries that consume "nearly double the quantity [of] developing countries").

11. Another interesting question to consider is whether interspecies justice requires an end to non-human animal *unrewarded* labor, but this is beyond the scope of this Essay. *See Workshop on 'Animal Labour: Ethical, Legal and Political Perspectives on Recognizing Animals' Work*,*'* ANIMALS PHIL., POL., L. & ETHICS (Feb. 21, 2018), http://animalpolitics.queensu.ca/workshop-animal-labour/ (promoting workshop that "aim[s] . . . to explore the potential benefits and pitfalls of recognizing animals as workers"); *Charlotte Blattner On* '*Animals Are (Forced) Workers, Too*,*'* ANIMALS PHIL., POL., L. & ETHICS (Feb. 21, 2018), http://animalpolitics.queensu.ca/charlotte-blattner-on-animals-are-forced-workers-too/ (examining "whether animals require a right against forced labour and explor[ing] how this right can be secured").

12. Garver, *supra* note 1, at 325–30.

13. *See infra* Part IV (applying Garver's ten features of ecological law to the industrial animal food system).

14. As Angela Lee has written:

> Looking to other kinds of belief systems can help us to envision alternative, non-technological ways in which meat eating might occur ethically, though here, we must be vigilant so as not [to] pick and choose those elements of other cultures that are convenient or favourable to our position, while discarding those that are not. We must also be careful to avoid the assumption that "indigenous people cannot maintain traditional values if their use of native implements has been supplanted by technology and practices imported from the dominant white culture." A "primitive" subsistence culture is not the only one in which meat-eating could defensively take place. Instead of being guided by rigid rules or absolute prohibitions, value systems and worldviews predicated on different set of principles can teach us to think more relationally about the environment we live in and the food that it provides. For example, Aboriginal attitudes towards hunting and meat-eating frequently reflect a profound reverence for animal life within a system of kinship, and underscore the ethical responsibilities associated with taking that life away.

Angela Lee, *The Milkmaid's Tale: Veganism, Feminism, and Dystopian Food Futures*, WINDSOR REV. LEGAL & SOC. ISSUES (forthcoming 2019) (manuscript at 31–32) (on file with author) (footnotes omitted) (quoting J. Douglas Rabb, *The Vegetarian Fox and Indigenous Philosophy: Speciesism, Racism, and Sexism*, 24 ENVTL. ETHICS 275, 286 (2002)).

mutual dependence between human and non-human animals.[15] However, these food systems alone are unlikely to feed the rapidly growing global human population; thus, these systems may not achieve inter- and intragenerational equity.[16] If ecological law also requires interspecies justice, it is difficult to justify significant human consumption of animal products where humans can feed themselves adequately from plant-based sources—a complex idea explored in more detail below.[17] While a dramatic shift away from animal food products will not occur overnight, and may never be fully achieved, ecological law still demands the dismantling of the myriad laws—including environmental laws—that encourage and perpetuate our current globalized industrial food system's reliance on animal food products.[18] A shift from animal-product consumption would also allow us to solve some of the more pressing problems of the industrial-animal-agriculture system.

I. DEFINING "ECOLOGICAL LAW" AND THE "GLOBAL (ANIMAL) FOOD SYSTEM"

Garver explains ecological law as follows:

> Systems-based ecological boundaries that promote the flourishing of life systems provide the base of a structure of ecological law (in the legal sense) that must be respected and enforced to fend off catastrophe and enhance the capacity for life. The looming prospect of transgressing critical ecological points of no return requires the global community to fashion a systems-based legal and institutional structure that is built on the

15. *See infra* notes 166–73 and accompanying text (highlighting how ecological law could encourage local food movements).

16. *See* Tamar Haspel, *Why Small, Local, Organic Farms Aren't the Key to Fixing Our Food System*, WASH. POST (Sept. 22, 2017), https://www.washingtonpost.com/lifestyle/food/why-small-local-organic-farms-arent-the-key-to-fixing-our-food-system/2017/09/21/146f72b2-9e4d-11e7-8ea1-ed975285475e_story.html?utm_term=.fbd57989db0a (positing that local farms cannot solve issues in the food system because (i) they do not produce the right crops, (ii) they are not equipped to grow such crops, (iii) cropland is not situated close enough to populated areas, and (iv) local food is only available for limited seasons). *But see Who Will Feed Us?*, *supra* note 9 ("[A] new report . . . shows that in fact, it is a diverse network of small-scale producers, dubbed the Peasant Food Web, that feeds 70% of the world . . . .").

17. *See infra* Part III (discussing whether interspecies justice demands human veganism).

18. *See infra* Part IV (arguing that ecological law requires reducing reliance on industrial-animal-agriculture systems).

> foundation of ecological law under an expanded notion of the rule of law.[19]

Many others have used different terms to describe similar approaches and challenges.[20] More specifically, Garver proposes ten features of ecological law: (1) ecological law should recognize humans are part of Earth's life systems; (2) ecological limits must have primacy over social and economic regimes; (3) ecological law must permeate all areas of law; (4) ecological law should focus on radically reducing material and energy output; (5) ecological law must be global but distributed (otherwise referred to as the principle of subsidiarity and common but differentiated responsibility); (6) ecological law should ensure a fair sharing of resources among present and future generations of humans and other life; (7) ecological law must be "binding . . . and supranational, with supremacy over sub-global legal regimes as necessary"; (8) ecological law requires "greatly expanded program[s] of research and monitoring"; (9) ecological law requires precaution in relation to crossing global ecological boundaries; and (10) ecological law must be adaptive.[21]

According to Garver, ecological law grows out of two competing impossibilities:

> The call for the rule of ecological law emerges from the tension between opposing narratives of impossibility. On the one hand is the seeming impossibility of ending the current intransigent commitment to infinite economic growth, the primacy of short-term economic interests and the overriding belief in technological solutions to ecological challenges . . . . On the other hand are the systemic impossibilities and long-term catastrophic socio-ecological consequences if the economy grows infinitely and economic and political trade-offs continue to outweigh non-negotiable ecological limits.[22]

The current global food system's approach to animal food products is at exactly this juncture of impossibilities, and this is why ecological law could be particularly relevant in trying to transform the system to achieve

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19. Garver, *supra* note 1, at 317–18; s*ee also id.* at 319 ("[T]he 'rule of law' means that global regulatory limits required to meet ecological limits and ensure fair sharing of the earth's bounty must be respected." (quoting PETER G. BROWN & GEOFFREY GARVER, RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY 135 (2009))).

20. *See id.* at 318–19 (explaining various concepts analogous to Garver's theory of ecological law).

21. *Id.* at 325–29.

22. *Id.* at 330.

ecological sustainability and justice. But in fact, what *is* the global food system? According to the Committee on World Food Security:

> [A] food system encompasses all the stages of keeping us fed: growing, harvesting, packing, processing, transforming, marketing, consuming and disposing of food. The most common food system is the agro-industrial food system that is global. It is dominated by a few multinational corporations through vertical integration. This is a very complex system with a long supply chain and it has a lot of processed foods. [23]

The global food system, particularly since World War II, has been increasingly focused on and driven by industrialization, corporatization, and monopolization, including in the production and marketing of animal-based foods.[24] In addition, this model is being exported: industrial animal operations "are becoming increasingly prevalent in developing regions."[25] For example, "[i]n East and Southeast Asia . . . meat production increased by 25 million tons, or 31 percent, between 2001 and 2007 alone, and most of this growth took place in industrial systems."[26] The Food and Agriculture Organization of the United Nations (FAO) "estimates that 80 percent of growth in the livestock sector now comes from industrial production systems. And in many developing regions, environmental, animal welfare, public health, and labor standards are not as well established as in North America and Europe."[27] Industrial animal agriculture causes significant harm to the climate and water and requires land use change—not to mention the harms to animal and human health.[28] It also affects access to healthy, sustainable, and ecologically and culturally appropriate foods.[29]

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23. Myriam Welvaert, *The Future Food System: The World on One Plate?*, COMMITTEE ON WORLD FOOD SECURITY (Oct. 20, 2016), http://www.fao.org/cfs/home/blog/blog-articles/article/en/c/448182/.

24. Heather McLeod-Kilmurray, *Commoditizing Nonhuman Animals and Their Consumers: Industrial Livestock Production, Animal Welfare, and Ecological Justice*, 32 BULL. SCI., TECH. & SOC'Y 71, 73, 77, 80 (2012) [hereinafter McLeod-Kilmurray, *Commoditizing Animals*].

25. *Rising Number of Farm Animals Poses Environmental and Public Health Risks*, WORLDWATCH INST., http://www.worldwatch.org/rising-number-farm-animals-poses-environmental-and-public-health-risks-0 (last visited Apr. 14, 2019) [hereinafter WORLDWATCH INST., *Farm Animals*].

26. WORLDWATCH INST., VITAL SIGNS VOLUME 20: THE TRENDS THAT ARE SHAPING OUR FUTURE 56 (2013) [hereinafter VITAL SIGNS].

27. *Id.* (foonote omitted).

28. FOOD & AGRIC. ORG. OF THE UNITED NATIONS, LIVESTOCK'S LONG SHADOW: ENVIRONMENTAL ISSUES AND OPTIONS 4, 6, 16 (2006), http://www.fao.org/3/a-a0701e.pdf [hereinafter FOOD & AGRIC. ORG., LIVESTOCK].

29. BRIGHTER GREEN & THE GLOB. FOREST COAL., INDUSTRIAL AGRICULTURE, LIVESTOCK FARMING AND CLIMATE CHANGE: GLOBAL SOCIAL, CULTURAL, ECOLOGICAL, AND ETHICAL IMPACTS OF AN UNSUSTAINABLE INDUSTRY 4, https://globalforestcoalition.org/wp-content/uploads/2013/05/

If the current global food system causes so many health and justice problems to the environment, economy, humans, and animals, why have we structured it this way to date? While the evolution of the current system is a long—though surprisingly recent—story, some of the key arguments for maintaining, and even expanding, this system include: (1) the lack of adequate food for millions of people;[30] (2) the increasing wealth of the human population, which has led to rising demand for animal food products;[31] and (3) the risks that climate change poses to food production.[32] What would ecological law have to say about each of these arguments?

First, it would question more specifically *why* there is a lack of adequate food for the current generation and why the dominant food system's prescription for fixing this problem is so heavily focused on increasing the food supply.[33] It is widely documented that the world currently produces sufficient food to feed every human on Earth, and the problem is one of distribution.[34] In addition, food waste is an enormous problem, and some have estimated that roughly 33% of produced food is wasted.[35] Second, ecological law would emphasize tackling the human population growth problem itself, rather than accepting it and placing the extra burden on the ecosystem and other lives within it.[36] Third, if hunger persisted despite reduced waste, fairer distribution, and human population control, ecological law would ask whether increasing growth through

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MM_Brighter-Green-and-the-Global-Forest-Coalition_WSF_Industrial_Livestock-FINAL.pdf (last visited Apr. 14, 2019).

30. *See* FOOD & AGRIC. ORG. OF THE UNITED NATIONS, THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD 2 (2018) ("The absolute number of undernourished people in the world is now estimated to have increased from around 804 million in 2016 to almost 821 million in 2017.").

31. WORLDWATCH INST., *Farm Animals*, *supra* note 25.

32. *See* Renee Cho, *How Climate Change Will Alter Our Food*, COLUM. U.: EARTH INST. (July 25, 2018), https://blogs.ei.columbia.edu/2018/07/25/climate-change-food-agriculture/ (describing how climate change will likely result in decreased yields in all food production because of increased temperatures and extreme weather fluctuations).

33. *See* Garver, *supra* note 1, at 326–27 (explaining that ecological law calls for both a "fair sharing of resources among present and future generations" as well as a "radical re-focusing of the economy on reduc[ing]" consumption and energy).

34. Eric Holt-Giménez et al., *We Already Grow Enough Food for 10 Billion People . . . and Still Can't End Hunger*, 36 J. SUSTAINABLE AGRIC. 595, 595 (2012).

35. *Key Facts on Food Loss and Waste You Should Know*!, FOOD & AGRIC. ORG. UNITED NATIONS, http://www.fao.org/save-food/resources/keyfindings/en/ (last visited Apr. 14, 2019) [hereinafter *Facts on Food Loss*].

36. Garver, *supra* note 1 ("The primary concern of the human community must be the preservation and enhancement of [the community of all living species]." (quoting THOMAS BERRY, GREAT WORK: OUR WAY INTO THE FUTURE 58 (1999))).

animal food products is the most efficient or fair system—both in terms of justice to humans and the ecosystem.[37]

Second, some have argued that industrial animal agriculture is the most efficient way to satisfy the demands of the growing global human population and its increasing wealth.[38] However, ecological law might ask whether more animal products are a need or a want.[39] ecological law would ask about the ecological realities of the peoples in question to answer this. For example, the human need to eat meat is very different in the far North or in extreme drought conditions than in Western urban contexts.[40] In addition, while eating animal products is a personal choice,[41] these choices are very often shaped and limited by the industrial food system, the laws and subsidies that support it,[42] and the economic realities and practical

37. *See id.* at 327 ("[T]he rule of ecological law must ensure fair sharing of resources among present and future generations . . . .").

38. *See, e.g.*, Ron Smith, *Population Growth Demands Improved Farm Efficiency*, SOUTHWEST FARMPRESS (Apr. 22, 2010), https://www.farmprogress.com/management/population-growth-demands-improved-farm-efficiency (arguing that to feed 9 billion people by 2050, farmers and ranchers "must find ways to make significant improvement in farm productivity and efficiency").

39. *See* Garver, *supra* note 1, at 326–27 (advocating for a cultural shift to an economy that produces only things that are needed).

40. *See* Marcelo Gleiser, *Is a No-Meat World Really Better?*, NAT'L PUB. RADIO (June 28, 2017), https://www.npr.org/sections/13.7/2017/06/28/532880755/is-a-no-meat-world-really-better ("[I]t is clear that less meat is good morally and environmentally, but no meat may not be as good as some may think. Some poor regions in the world need all the meat they can get."); *see also* Tiff-Annie Kenny et al., *Dietary Sources of Energy and Nutrients in the Contemporary Diet of Inuit Adults: Results from the 2007–08 Inuit Health Survey*, 21 PUB. HEALTH NUTRITION 1319, 1319–20 (2018) (chronicling that "[i]n the latter half of the 20th century," the Inuit decreased their consumption of "country foods," which are those "harvested from northern ecosystems, through cultural practices, traditions and detailed environmental knowledge" while increasing their consumption of foods "purchased in stores"); Ursula King & Christopher Furgal, *Is Hunting Still Healthy? Understanding the Interrelationships Between Indigenous Participation in Land-Based Practices and Human-Environmental Health*, 11 INT'L J. ENVTL. RES. & PUB. HEALTH 5751, 5772 (2014) (arguing for a transdisciplinary approach to "better understand" the complexity between hunting and "[l]and-human health interrelationships").

41. Of course, this assumes that the person in question has the ability to exercise choice in relation to food—clearly millions of people do not exercise free choice in relation to food for a variety of reasons, including income, accessibility, and other barriers. *See, e.g.*, Rebecca Seguin et al., *Understanding Barriers and Facilitators to Healthy Eating and Active Living in Rural Communities*, J. NUTRITION & METABOLISM, 2014, at 5–6, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4276670/pdf/JNME2014-146502.pdf ("The cost of fresh food was identified as a barrier to eating healthy, especially among low-income members of the community.").

42. *See, e.g.*, Adam Spiers, *The Public Health Dilemma of Excessive Meat Consumption*, NETWORK FOR PUB. HEALTH L.: PUB. HEALTH L. BLOG (May 9, 2013, 12:14 PM), https://www.networkforphl.org/the_network_blog/2013/05/09/179/the_public_health_dilemma_of_excessive_meat_consumption ("Between 1995 and 2009, the federal government spent approximately $250 billion to subsidize the agricultural industry — approximately 63 percent of these expenditures supported the meat and dairy industries.").

availability of options for variously situated people.[43] Therefore, ecological law would question this argument as an appropriate solution to global hunger.

Third, if the goal is to tackle hunger, expanding food systems that exacerbate ecological harms will only worsen the problem. For example, animal food products are among the greatest cause of reduced food availability—both currently and in the future—due to their serious role in exacerbating climate change, which also challenges food production itself.[44] For example:

> The production of animal products generates the majority of food-related GHG emissions (72–78% of total agricultural emissions), which is due to low feed-conversion efficiencies, enteric fermentation in ruminants, and manure-related emissions; the feed-related impacts of animal products also contribute to bluewater use (around 10%) and pressures on cropland, as well as nitrogen and phosphorus application (20–25% each).[45]

Apart from its effects on climate, the industrial food system is colonial, exploitative, and creates injustice to the current and future generations of human and non-human animals. The feed conversion ratio creates inter- and intragenerational inequalities.[46] Fears of future food scarcity drive land grabbing and other injustices.[47] The industrial food system also creates path

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43. *See* Gleiser, *supra* note 40 (explaining that in many places, raising animals is easier or the only option available given the state of the land).

44. FOOD & AGRIC. ORG., LIVESTOCK, *supra* note 28, at 4–6.

45. Marco Springmann et al., *Options for Keeping the Food System Within Environmental Limits*, 562 NATURE 519, 520 (2018) (footnote omitted); *see also* Walter Willett et al., *Food in the Anthropocene: The EAT–Lancet Commission on Healthy Diets from Sustainable Food Systems*, 393 LANCET COMMISSIONS 447, 449 (2019) ("Food production is the largest cause of global environmental change."). For further details on how industrial meat production impacts climate change and causes other environmental harm, see Robert Goodland & Jeff Anhang, *Livestock and Climate Change: What if the Key Actors in Climate Change are . . . Cows, Pigs and Chickens?*, WORLDWATCH INST., Nov.–Dec. 2009, at 10–11, http://www.worldwatch.org/node/6294 (explaining that livestock contributes between 18 and 51% of annual worldwide greenhouse gas emissions); FOOD & AGRIC. ORG., LIVESTOCK, *supra* note 28, at iii (outlining the "very substantial contribution of animal agriculture to climate change and air pollution, to land, soil and water degradation and to the reduction of biodiversity"); *see also* Heather McLeod-Kilmurray, *Vegetarianism and Food Governance: Sustainability and Ecological Justice*, *in* GLOBALISATION AND ECOLOGICAL INTEGRITY IN SCIENCE AND INTERNATIONAL LAW 57, 58–59 (Laura Westra et al. eds., 2011) [hereinafter McLeod-Kilmurray, *Vegetarianism*] (reporting that intensive livestock production is one of the greatest emitters of greenhouse gases).

46. *See infra* notes 115–22 and accompanying text (explaining that because industrial agricultural has a high feed-conversion ratio it can only feed a small percentage of planet).

47. Kihwan Seo & Natalia Rodriguez, *Land Grab, Food Security and Climate Change: A Vicious Circle in the Global South*, *in* HUMAN AND SOCIAL DIMENSIONS OF CLIMATE CHANGE 165, 167 (Netra Chhetri ed., 2012), https://www.intechopen.com/chapter/pdf-download/40834.

dependence, making us forget that there may be other, better systems and approaches available[48] and causing us to look to economic and technological fixes.[49] For example, some have suggested that genetic engineering could reduce methane emissions from meat production.[50] Yet the risks of genetically modified foods have not been fully tested or understood and could create systemic ecological harms, which in turn could harm humans as well as the animals, both farmed and wild, and plants they rely on.[51] These technological approaches also have a tendency to cause even further corporatization and concentration of power in the food system.[52] Given the challenges of the current global industrial-animal-agricultural system, how could ecological law, and its commitment to interspecies justice, help?

II. DOES ECOLOGICAL LAW REQUIRE INTERSPECIES JUSTICE?

Many ecological law scholars make reference to some aspects of interspecies justice. For example, as stated above, Bosselmann explicitly argues that ecological justice requires intergenerational, intragenerational and *interspecies* justice.[53] The Earth Charter, which "is an ethical

48. *See, e.g.*, MICHAEL POLLAN, THE OMNIVORE'S DILEMMA 130–33 (2006) (contrasting a "conventional 500-acre corn-and-bean operation in Churdan, Iowa" with a 550-acre sustainable, organic farm in Swoope, Virginia).

49. *See, e.g.*, Shenggen Fan, *Innovations in Food Systems: The Key to Human and Planetary Health*, INT'L FOOD POL'Y RES. INST.: IFPRI BLOG (Mar. 27, 2018), http://www.ifpri.org/blog/innovations-food-systems-key-human-and-planetary-health (promoting "new and potentially transformative technologies" in the global food system, such as "lab-grown meat" and gene-edited seeds). *But see* Angela Lee, *An Ecofeminist Perspective on New Food Technologies*, 5 CAN. FOOD STUD. 63, 69 (2018) ("Given the social, political, economic, and ethical contexts that food occupies, technical evaluations of new food technologies are conspicuously incomplete, and require a more nuanced consideration of their systemic implications.").

50. *See, e.g.*, Geoff Geddes, *Burps and Bovine: Dairy Genomics Project Cuts Feed Costs, Emissions*, GENOME ALTA.: GENOMICS BLOG (Feb. 2, 2016), http://genomealberta.ca/genomics/burps-and-bovines-dairy-genomics-project-cuts-feed-costs-emissions.aspx (describing a research initiative "aimed at harnessing genomics to boost feed efficiency and reduce methane emissions in dairy cattle").

51. *See* JEFFREY M. SMITH, GENETIC ROULETTE: THE DOCUMENTED HEALTH RISKS OF GENETICALLY ENGINEERED FOODS 194 (2007) ("Since GM food is proclaimed by proponents and some regulators to be as safe as its non-GM counterpart, the pressure on researchers to not contradict this assumption is considerable. . . . This helps explain the lack of serious studies on GM foods . . . .").

52. *See, e.g.*, Leonid Bershidsky, *Why the EU Approved Bayer-Monsanto*, BLOOMBERG (Mar. 23, 2018), https://www.bloomberg.com/opinion/articles/2018-03-23/bayer-monsanto-analysis-eu-approval-is-about-competition (explaining that, if a merger is approved, three companies will control 61% of the seed and pesticide market); *see also* Jennifer Clapp, *Mega-Mergers on the Menu: Corporate Concentration and the Politics of Sustainability in a Global Food System*, 18 GLOBAL ENVTL. POL. 12, 12 (2018) (examining "the environmental dimensions of corporate concentration in the agricultural input industry as well as the challenges involved in establishing international policy and governance on this issue").

53. Bosselmann, *supra* note 5, at 160.

framework for building a just, sustainable, and peaceful global society,"[54] recognizes the interdependence of species, and the value of all living things, regardless of their utility for human animals.[55] Cormac Cullinan claims that "the essential *purpose* of human governance systems should be to support people to play a mutually enhancing role within the community of life on Earth."[56] Maintaining the focus on Garver's ten features, features 1, 2, and 6 seem to lead us toward interspecies justice.[57] Feature 1, requiring us to "recognize[] that humans are part of Earth's life systems," moves us away from anthropocentric approaches to food law.[58] "[L]ife systems" seem to include all species, including non-human life, as something humans must relate to in a balanced and systemic way.[59] Feature 6 clearly encompasses all three types of justice in Bosselmann's definition, when it requires laws to "ensure fair sharing of resources among present and future generations of humans and other life forms."[60]

III. DOES INTERSPECIES JUSTICE DEMAND (HUMAN) VEGANISM?

At first glance, it would seem that an ecological law that includes interspecies justice would make veganism a non-negotiable necessity—it is unjust for humans to subordinate other species' right to life to their human tastes and preferences.[61] A full analysis of whether ecological law—or more narrowly interspecies justice—presumes a non-human animal right to life is beyond the scope of this Essay. However, the consumption of animal products may not undermine the goal of interspecies justice *per se* and certainly not in all cases.[62] Thomas Berry argues that:

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54. *What is the Earth Charter?*, EARTH CHARTER INITIATIVE, http://earthcharter.org/discover/what-is-the-earth-charter/ (last visited Apr. 14, 2019).

55. *See The Earth Charter*, EARTH CHARTER INITIATIVE, http://earthcharter.org/discover/the-earth-charter/ (last visited Apr. 14, 2019) (outlining the foundational principle "that all beings are interdependent and every form of life has value regardless of its worth to human beings").

56. Garver, *supra* note 1, at 318 (quoting CORMAC CULLINAN, WILD LAW: A MANIFESTO FOR EARTH JUSTICE 29 (2d ed. 2011)).

57. *Id.* at 325–27.

58. *Id.* at 325.

59. *Id.* (explaining that "Earth's life systems" includes "the community of all living species" (quoting BERRY, *supra* note 36)).

60. *Id.* at 327.

61. *See* Bosselmann, *supra* note 5, at 154 (explaining how interspecies justice requires recognizing "the intrinsic value of the non-human natural world").

62. *See* Thomas Berry, *Rights of the Earth: We Need a New Legal Framework Which Recognises the Rights of All Living Beings*, *in* EXPLORING WILD LAW: THE PHILOSOPHY OF EARTH JURISPRUDENCE 227, 229 (Peter Burdon ed., 2012) (acknowledging that "predatory-prey relationships" are part "of the Earth community").

> (2) Every component of the Earth community has three rights: the right to be, the right to habitat, and the right to fulfil[l] its role in the ever-renewing processes of the Earth community.
>
> (3) All rights are specific and limited. Rivers have river rights. Birds have bird rights. Insects have insect rights. Humans have human rights. Difference in rights is qualitative, not quantitative. The rights of an insect would be of no value to a tree or a fish.
>
> (6) These rights are based on the intrinsic relations that the various components of Earth have to each other. The planet Earth is a single community whose members are bound together with interdependent relationships. No living being nourishes itself. Each component of the Earth community is dependent on every other member of the community for the nourishment and assistance it needs for its own survival. This mutual nourishment, which includes predator-prey relationships, is integral with the role that each component of the Earth has within the comprehensive community of existence.[63]

Also, it is important to recall that not all animal-product production is industrial or exploitative.[64] Many societies—such as some indigenous peoples, hunter-gatherers, and fishing groups—have maintained balanced relationships with other species and ecosystems for generations as interdependent communities of life without captivity, cruelty, or exploitation of other species and ecosystems.[65]

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63. *Id.*

64. *See* JENNIFER CLAPP, FOOD 181–82 (2d ed. 2016) (introducing alternative food movements, which "seek to address the ecological damage associated with industrial farming practices by promoting ecologically sound farming methods").

65. *See* Nancy J. Turner et al., *Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia*, 10 ECOLOGICAL APPLICATIONS 1275, 1276 (2000) ("Practices of aboriginal peoples to maintain and enhance their lands, waters, and living resources are derived from generations of experimentation and observation, leading to an understanding of complex ecological and physical principles."). Indigenous nations, cultures, and individuals obviously differ vastly in their approaches to food and the food system. For example, some indigenous scholars have advocated veganism as not incompatible with some indigenous cultures. *Compare* Margaret Robinson, *Veganism and Mi`kmaq Legends*, 33 CAN. J. NATIVE STUD. 189, 190 (2013) (acknowledging that in Mi'kmaq culture, "[t]he killing of a moose acted as a symbol of a boy's entry into manhood," but "propos[ing] a postcolonial ecofeminist reading of Mi'kmaq legends as the basis for a vegan diet rooted in indigenous culture"), *with* Priscilla Settee, *Indigenous Food Sovereignty in Canada*, *in* TRADITIONAL ECOLOGICAL KNOWLEDGE: LEARNING FROM INDIGENOUS PRACTICES FOR ENVIRONMENTAL SUSTAINABILITY 175, 179 (Melissa K. Nelson & Dan Shilling eds., 2018) ("Indigenous peoples hold lands, foods, medicines, and animals as sacred and freely gifted. Without them, Indigenous values of reciprocity and relationship diminish and a loss of Indigenous humanity results.").

It is important to remember that ecological law and justice do not *only* require interspecies justice, but also inter- and intragenerational human justice.[66] While vegan food systems, and some indigenous or other more symbiotic human–animal systems, may appear to more adequately achieve interspecies justice than the global industrial food system, would they be able to achieve inter- and intragenerational human justice—particularly if we do not address the problems of food waste and human population growth?

Focusing on industrial animal farming practices, it would be difficult to qualify forcibly ending the lives of animals raised for food, reducing the quality of their shortened lives drastically, and breeding or genetically altering animals to produce more protein faster—despite the pain and shortened lifespans this may cause[67]—merely to satisfy human *wants*, as interspecies justice.[68] Thus, although ecological law and its commitment to interspecies justice would have a nuanced view of veganism greatly depending on place, culture, and ethical reasons for eating animal products, ecological law would require an end to, or a drastic reduction in, industrial animal agriculture.[69] However, would this actually lead to inter- or intragenerational justice?

For example, would ecological law always favor plant-based alternatives to animal products? Would ecological law lead a particular human consumer, all other factors being equal, to opt for a mass-produced, processed plant-based burger over a wild caught salmon? Rather than providing a complete, unequivocal answer, I think that ecological law leads us to ask helpful questions to guide us to possible answers, leading to a choice that enhances ecological justice for all species, now and in the future. For example, the plant-based burger does not involve the intentional raising, reproducing, and killing of animals in an industrial environment, which seems to enhance interspecies justice.[70] However, if producing the plant-based burger challenges the amount or viability of subsistence crops in a developing country to provide processed, corporate foods for wealthier

66. Garver, *supra* note 1, at 327.

67. *See* McLeod-Kilmurray, *Commoditizing Animals*, *supra* note 24, at 73–74 (highlighting the animal suffering that occurs at intensive livestock operations).

68. *Cf.* Nigel Barber, *Do Humans Need Meat?*, PSYCHOL. TODAY (Oct. 12, 2016), https://www.psychologytoday.com/us/blog/the-human-beast/201610/do-humans-need-meat ("In general, modern-day vegetarians are as healthy as their meat-eating counterparts and actually have lower rates of heart disease.").

69. *See infra* Part IV (analyzing the question of whether ecological justice requires veganism).

70. *See* Rina Raphael, *Meatless Burger vs. Beef: How Beyond Meat's Environmental Impact Stacks Up*, FAST COMPANY (Sept. 26, 2018), https://www.fastcompany.com/90241836/meatless-burgers-vs-beef-how-beyond-meats-environmental-impact-stacks-up (describing the environmental benefits of plant-based burgers).

consumers in the global North, this might not enhance intragenerational justice. How much does the burger cost in comparison to meat burgers? Where can the plant-based burger be accessed and by whom? How much water, energy, transportation emissions, and waste are involved in producing, packaging, and distributing it? Is the move towards these meat alternatives transferring more power to large industrial food corporations to further control the shape and future of the global industrial food system? The answers to these questions might suggest that the plant-based burger is not even enhancing equity among consumers within the Western market in which it is sold. Whether catching the wild salmon would reduce interspecies justice may depend on a wide range of other factors. Would the consumer be catching that fish him- or herself? Would this reduce reliance on corporate foods? Would it also reduce the income of large fish farming companies that may be creating unnecessary and uncontrollable risks to wild fish and other elements of aquatic ecosystems? For the human consumer, which food choice has more nutrients, calories, or other impacts on health? Thus, although the rule of ecological law may not lead us to one clear and simple answer, it provides specific guiding principles for getting closer to finding a rational, sustainable, and just answer.

IV. WOULD ENDING OR REDUCING INDUSTRIAL ANIMAL AGRICULTURE ENHANCE OR CHALLENGE INTER- AND INTRAGENERATIONAL HUMAN JUSTICE? THE 10 FEATURES OF ECOLOGICAL LAW AND THE INDUSTRIAL ANIMAL FOOD SYSTEM

If we focus solely on Garver's ten features of ecological law, they provide helpful guidance in rethinking the industrial production of animal products for food. The features can be helpfully separated into three sections: features 1, 2, 4, 6, and 9 highlight the ecological law injustices the industrial animal food system causes.[71] Features 3, 5, 7, and 8 suggest changes to the legal system to tackle these problems.[72] Finally, feature 10 provides a nuanced answer to the question of whether ecological law demands an end to industrial animal agriculture.[73]

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71. *See infra* notes 76–130 and accompanying text (explaining how Garver's theory of ecological law illustrates why the global food system causes inter- and intragenerational, as well as interspecies, injustice).

72. *See infra* notes 112–31 and accompanying text (arguing that Garver's theory of ecological law requires reducing meat consumption, overconsumption of food, and food waste).

73. *See infra* notes 143–47 and accompanying text (asserting that ecological law requires a drastic reduction, but not complete elimination, of meat consumption).

Feature 1 provides that ecological law "recognizes that humans are part of Earth's life systems."[74] This highlights that humans have an interdependent relationship with all species, suggesting that ecological law does embrace interspecies justice.[75] The idea of "systems" is important.[76]

First, ecological law emphasizes the importance of Earth's life systems.[77] If our global industrial animal food system threatens these life systems, then the food system should change.[78] Some argue that the solution to global hunger is to produce *more* food; yet, producing even more food, particularly meat, often[79] directly contravenes planetary boundaries, causing threats to interspecies and human justice for current and future generations.[80] This idea of respecting ecological limits will be raised again in the discussion of feature 2 below.[81]

ecological law also asks why we produce food in a global system in the first place.[82] What are the advantages of a global system as opposed to a more regional, local, or even individual approach to food production? Garver suggests that one way to achieve the related second feature of ecological law—ensuring that "ecological limits" have primacy over social, political, and legal concerns[83]—is by changing the driver of human systems (including legal systems) from "growth-driven economic globalization" to de-growth economics (i.e., ensuring that we live within the basic limits of ecology and planetary boundaries).[84] A few examples suggest that industrial animal agriculture is failing to achieve this.

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74. Garver, *supra* note 1.

75. *Id.*

76. *Id.*

77. *Id.* ("First, and most fundamentally, the rule of ecological law recognizes that humans are part of Earth's life systems, not separate from it.").

78. *See id.* at 326 ("[L]egal regimes must be constrained by ecological considerations necessary to avoid catastrophic outcomes and promote the enhancement of life . . . .").

79. Some argue for "[s]ustainable intensification . . . as a process or system where yields are increased without adverse environmental impact and without the cultivation of more land." Jules Pretty & Zareen Pervez Bharucha, *Sustainable Intensification in Agricultural Systems*, 114 ANNALS BOTANY 1571, 1578 (2014). I thank Angela Lee for this observation.

80. *See supra* notes 24–29 and accompanying text (describing how meat production and expanding food systems threaten ecological health).

81. *See infra* notes 84–101 and accompanying text (exploring how Garver's second feature of ecological law would change industrial animal agriculture).

82. *See* Garver, *supra* note 1, at 328 (explaining that ecological law has a "preference for establishing policy at the local level").

83. *Id.* at 326. This is a *nested* sustainability approach. Pretty & Bharucha, *supra* note 79, at 1571.

84. Garver, *supra* note 1; *see, e.g.*, Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14 ECOLOGY & SOC'Y 32, 33 (2009) (presenting the "novel concept" of "planetary boundaries, for estimating a safe operating space for humanity with respect to the functioning of the Earth System").

The Canadian government's approach to agricultural food policy is largely based on "growth-driven economic globalization."[85] In 2017, it adopted as one goal of its national budget to increase agricultural-food exports from $50 billion to $75 billion by 2025.[86] Although Canada intends to do this sustainably, ecological balance is not currently a specific targeted goal of the budget in the same way as this enumerated economic growth target is.[87]

In addition, ecological law, similar to Green Legal Theory,[88] would ask us to examine why and how our current food system came to be structured as it is, and, specifically, why we have moved so quickly to increasing and exporting our industrial animal-food-production system.[89] As I have noted elsewhere, the history of corn illustrates a major reason why these Intensive Livestock Operations (ILOs) and Concentrated Animal Feedlot Operations (CAFOs) have grown.[90] While other scholars have elaborated on the concept, the main idea is that subsidies and increased centralization led to a grain surplus, which was fed to livestock.[91] This meant that industrial

85. Garver, *supra* note 1.

86. DEP'T OF FIN. CAN., BUILDING A STRONG MIDDLE CLASS 107 (2017) [hereinafter 2017 Budget], https://www.budget.gc.ca/2017/docs/plan/budget-2017-en.pdf; *see also* Kelsey Johnson, *Ottawa Wants Farmers to Grow the Economy, Agriculture Exports*, IPOLITICS (Mar. 21, 2017), https://ipolitics.ca/2017/03/21/agriculture/ (explaining that the Candian government seeks to grow agriculture exports from $50 billion to $75 billion by 2025); *Agri-Info Newsletter – May 2017*, AGRIC. & AGRI-FOOD CAN., http://www.agr.gc.ca/eng/about-us/publications/agri-info-newsletter/agri-info-newsletter-may-2017/?id=1493224585244 (last visited Apr. 14, 2019) ("To support Canada's farmers and food processors, Budget 2017 sets an ambitious target to grow Canada's agri-food exports to at least $75 billion annually by 2025, and launches several initiatives, from investments in science and innovation to value-added processing and infrastructure."). Canada set this goal after the government asked the Advisory Council on Economic Growth for a report, which it entitled *Unleashing the Growth Potential of Key Sectors*, where it identified the agri-food sector as an area with potential for significant growth. ADVISORY COUNCIL ON ECON. GROWTH, UNLEASHING THE GROWTH POTENTIAL OF KEY SECTORS 2 (2017), https://www.budget.gc.ca/aceg-ccce/pdf/key-sectors-secteurs-cles-eng.pdf. A clearer example of Garver's "growth-driven economic globalization" would be hard to find. Garver, *supra* note 1.

87. *See* 2017 Budget, *supra* note 86, at 108 (outlining funding for "advanced research in agricultural science and genomics," "agricultural discovery science and innovation, with a focus on addressing emerging priorities, such as climate change," and the "expanded adoption of clean technology by Canadian agricultural producers").

88. *See Green Legal Theory*, POLIS PROJECT ON ECOLOGICAL GOVERNANCE, https://www.polisproject.org/projects/greenlegaltheory (last updated Jan. 22, 2013) ("[Green Legal Theory] seeks to understand how to create self-sustaining social, economic and political institutions that are ecologically based . . . .").

89. *See* Garver, *supra* note 1, at 325–26 (explaining that ecological law challenges "growth-driven economic[s]" and focuses on reducing the material and energy demands of the economy).

90. McLeod-Kilmurray, *Commoditizing Animals*, *supra* note 24, at 73.

91. *See* DAVID N. CASSUTO, ANIMALS & SOC'Y INST., THE CAFO HOTHOUSE: CLIMATE CHANGE, INDUSTRIAL AGRICULTURE & THE LAW 3–4 (2010) (citing Pollan, *supra* note 48, at 54–64), http://www.planetaverde.org/arquivos/biblioteca/arquivo_20131031141640_2453.pdf; *see also* JEREMY

farmers could feed livestock more cheaply with corn and soy than small-scale farmers could with their own grazing land, creating strong economic incentives for centralization and industrialization of livestock production.[92] So neither human health, animal welfare, environmental sustainability, nor human food preferences have been the driving force behind industrialization of livestock production.[93] The transition to an industrial-animal-agriculture system was based on producing more at less cost.[94] These industrial efficiencies, and the technologies that enable them, are best achieved by large corporations.[95]

> The FAO reports that industrial animal production systems are increasing at six times the rate of traditional mixed farming systems and at twice the rate of grazing systems. At least 50% of the world's pigmeat and over 70% of the world's poultry meat and eggs are produced in industrial systems.[96]

This is still due in part to the many economic subsidies and legal rules that promote the industrialization of our animal food supply.[97] For example, the World Society for the Protection of Animals notes that industrial meat production in Canada would not be economically viable without

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RIFKIN, BEYOND BEEF: THE RISE AND FALL OF THE CATTLE CULTURE 93 (Penguin Books 1992) ("America came up with a unique scheme. For the first time in agricultural history, they brought together cattle production and grain production into a new symbiotic relationship . . . .").

92. McLeod-Kilmurray, *Commoditizing Animals*, *supra* note 24, at 73.

93. *Id.*

94. *Id.*

95. *Id.* ("The real control of th[e] [industrial livestock] 'industry' is now highly centralized in the hands of a small number of very powerful corporations . . . .").

96. COMPASSION IN WORLD FARMING, GLOBAL WARNING: CLIMATE CHANGE AND FARM ANIMAL WELFARE 4 (2009), https://www.ciwf.org.uk/media/3817777/global-warning-full-report.pdf.

> The high levels of concentration that exist in livestock production are a result of two trends in the agribusiness world: consolidation, or the joining together of firms through mergers or strategic alliances, and vertical integration, the process by which one agribusiness buys up control of firms along the production chain for a food product. . . . The small and mid-sized operations that until recently supplied most of our domestically-produced meat have disappeared, to be replaced by large-scale animal feeding operations. Specialization has replaced diversity on the farm. . . . And uniformity has replaced variety—in the kinds of feed crops grown, the breeds of livestock raised, and the companies to which farmers sell their products and from which consumers buy them.

Elanor Starmer, *Corporate Power in Livestock Production: How it's Hurting Farmers, Consumers, and Communities—And What We Can Do About It*, ISSUE BRIEF 1 (AGRIBUSINESS ACCOUNTABILITY INITIATIVE), at 1–2, http://www.ase.tufts.edu/gdae/Pubs/rp/AAI_Issue_Brief_1_3.pdf (last visited Apr. 14, 2019).

97. McLeod-Kilmurray, *Commoditizing Animals*, *supra* note 24, at 73, 74.

government subsidies, such as the $4 billion given to hog producers since 1996 ("with nearly three-quarters going to the largest corporations").[98]

Laws also assist industrial animal food producers.[99] For example, Canadian animal welfare and transport laws are very weak, which reduces the cost for producers at the expense of animal welfare but also creates waste—a presumed percentage of deaths per voyage.[100] Some countries criminalize those raising awareness of cruelty to animals raised for food, thus legally protecting the practice and reducing the agency of consumers by limiting information.[101]

Feature 9 of ecological law also refers to ecological boundaries, cautioning that the law should enforce precaution in relation to crossing them.[102] The global industrialized food system is a significant threat to planetary boundaries.[103] Indeed, of the nine planetary boundaries identified by Johan Rockström et al.,[104] the four that have already been transgressed

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98. WORLD SOC'Y FOR THE PROT. OF ANIMALS, WHAT'S ON YOUR PLATE?: THE HIDDEN COSTS OF INDUSTRIAL ANIMAL AGRICULTURE IN CANADA 19 (2012).

> Canada's hog production sector would not even be viable were it not for multi-million dollar taxpayer-funded subsidies. Since 1996, taxpayers have given more than $4 billion to hog producers, with nearly three-quarters going to the largest corporations. In 2009, the largest 28 percent (with annual revenues greater than $1 million) collected 72 percent of the support. Federal and provincial governments have facilitated the proliferation of ILOs and the size of them by steadily increasing the maximum subsidy per operation. Each operation can now receive up to $3 million per year – triple what they could have received 13 years ago – essentially working to triple the size of the ILO. In addition, there are tax exemptions for building materials, subsidies to packers and tens of billions of dollars worth of subsidies paid to grain farmers which facilitate the production and sale of feed grains below actual costs of production. All of this demonstrates that our food system is actually very inefficient. Many ILOs would not be able to turn a profit without these subsidies.

Id.

99. Anna Pippus, *The Fox Regulating the Henhouse: How the Law Fails Animals Farmed for Food*, *in* FOOD LAW AND POLICY IN CANADA (Heather McLeod-Kilmurray, Angela Lee & Natalie Chalifour eds.) (forthcoming 2019) (manuscript at 23–24) (on file with author).

100. *Id.*

101. *See, e.g.*, *What Is Ag-Gag Legislation?*, AM. SOC'Y FOR PREVENTION CRUELTY ANIMALS, https://www.aspca.org/animal-protection/public-policy/what-ag-gag-legislation (last visited Apr. 14, 2019) [hereinafter *What Is Ag-Gag*] (discussing how seven states in the U.S. "penaliz[e] whistleblowers who investigate the day-to-day activities of industrial farms").

102. *See* Garver, *supra* note 1, at 329 ("[T]he rule of ecological law requires precaution about crossing planetary boundaries, with margins of safety to ensure both that the boundaries are respected from the global to the local level, and that Earth's life systems have the capacity to thrive.").

103. *Compare id.* (explaining the precautionary planetary boundaries set for climate change), *with* McLeod-Kilmurray, *Vegetarianism*, *supra* note 45, at 58–59 (highlighting the significant contributions industrialized livestock production makes to climate change).

104. Rockström, *supra* note 84, at 37–38 (identifying the nine planetary boundaries as the "nitrogen, phosphorous, carbon, and water [cycles]; the [planet's] physical circulation systems . . . (the climate, stratosphere, ocean systems); biophysical features of Earth . . . (marine and terrestrial

are genetic diversity,[105] biochemical flows (particularly of nitrogen),[106] climate change, and land system change.[107]

In relation to genetic diversity—apart from strongly encouraging the consumption of a limited number of animals such as cows, pigs, and chickens—industrial meat production also limits the genetic diversity within these three main animals raised and consumed as food.[108] The Worldwatch Institute suggests that "as the global livestock population increases, its diversity declines," which is dangerous for sustainability in the face of climate change and its resulting effects on resources.[109] Large-scale meat farming also significantly reduces crop diversity and induces land system change.[110]

Furthermore, feature 4 of ecological law requires "a radical re-focusing of the economy on reduction of its throughput of material and energy."[111] Feature 4 is reminiscent of Sustainable Development Goal 12, which

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biodiversity, land systems); and two critical features associated with anthropogenic global change (aerosol loading and chemical pollution)").

105. Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, 347 SCI. 736, 736 (2015).

106. Nina Chestney, *Meat and Dairy Consumption Should Be Halved in Europe to Cut Nitrogen: Report*, SCI. AM., https://www.scientificamerican.com/article/meat-and-dairy-consumption-should-be-halved-in-europe-to-cut-nitrogen-report/ (last visited Apr. 14, 2019) ("Around 79-88 percent of total emissions in the EU related to nitrogen are from livestock production. The nitrogen footprint of meat and dairy is considerably higher than that from plant-based products . . . ."); *see also* Henk Westhoek et al., *Food Choices, Health and Environment: Effects of Cutting Europe's Meat and Dairy Intake*, 26 GLOBAL ENVTL. CHANGE 196, 196 (2014) ("Concerns about animal welfare, reactive nitrogen and greenhouse gas emissions have stimulated public debate in Europe about eating less meat and dairy products.").

107. Will Steffen et al., *supra* note 105.

108. VITAL SIGNS, *supra* note 26, at 55.

109. *Id.*

> Industrial meat operations rely on a narrow range of commercial breeds selected for their high productivity—two cow breeds, Holstein and Jersey, make up 97 percent of the US dairy-cow herd. As a result, indigenous livestock breeds, which have evolved to the specific climate, terrestrial, and disease characteristics of their regions, are rapidly disappearing: in 2010, FAO reported that at least 21 percent of the world's livestock breeds are at risk of extinction. It is estimated that between 2002 and 2007, one breed of cattle, goats, pigs, horses, or poultry was lost every month on average. This narrowing of genetic diversity greatly compromises livestock producers' ability to withstand the challenges of climate change, including water supply changes, lack of forage, disease expansion, and increasing temperature variation.

Id. (footnotes omitted).

110. *See, e.g.*, *id.* ("[C]ountries in South America are clearing large swaths of forest and other land to grow feed crops like maize and soybean.").

111. Garver, *supra* note 1, at 326.

requires "[r]esponsible consumption and production."[112] Garver suggests that to do this, we need systems that "improve[] resource productivity."[113] Closely connected, feature 6 provides that ecological law should "ensure fair sharing of resources among present and future generations of humans and other life forms."[114] However, an increased focus on animal products, particularly those that are industrially produced, does not seem to achieve this goal.

For one thing, many advocates point out that, as compared to plant-based diets, producing and eating meat and dairy is inefficient due to the "Feed-Conversion Ratio[]," meaning the amount of energy, water, and other inputs needed to produce and consume animals.[115] For example, "[o]ne kilogramme of edible boneless beef requires around 20 kg of animal feed and 15,500 litres of water to produce . . . . One calorie of food energy obtained from beef requires inputs of 9 calories of food energy from plants and 40 calories of fossil fuel energy."[116] The Pew Commission claims that "the ratio of energy input to output for industrially produced meat can reach as high as 35:1."[117] Another way of looking at this is to say that "the American diet would feed only 2.5 billion people globally."[118] This suggests that the dietary choices of wealthier people, mainly in the developed world, is currently one factor causing the food insecurity of the poorer in the developing world.[119] This is a situation of intragenerational inequity caused by diets high in products with significant environmental footprints, including animal products.[120] Not only is increasing meat and dairy consumption unjust to the animal victims of this food system, but also to the current and future generations of humans consuming them.

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112. *Goal 12: Responsible Consumption and Production*, UNITED NATIONS DEV. PROGAMME, http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-12-responsible-consumption-and-production.html (last visited Apr. 14, 2019).

113. Garver, *supra* note 1, at 327.

114. *Id.*

115. *Animals are Inefficient Converters of Food*, A WELL-FED WORLD: NOURISHING PEOPLE/SAVING ANIMALS, https://awfw.org/feed-ratios/ (last visited Apr. 14, 2019); *see also* Alon Shepon et al., *Energy and Protein Feed-To-Food Conversion Efficiencies in the US and Potential Food Security Gains from Dietary Changes*, 11 ENVTL. RES. LETTERS, Oct. 2016, at 5 ("Plant-based diets can . . . serve as a viable replacement for animal products, and confer larger mean environmental and food availability gains." (citation omitted)).

116. McLeod-Kilmurray, *Vegetarianism*, *supra* note 45, at 59 (alteration in original) (footnotes omitted) (quoting COMPASSION IN WORLD FARMING, BEYOND FACTOR FARMING: SUSTAINABLE SOLUTIONS FOR ANIMALS AND THE PLANET 19 (2009)).

117. *See* Cassuto, *supra* note 91, at 7 (citing PEW COMM'N ON INDUS. FARM ANIMAL PROD., PUTTING MEAT ON THE TABLE: INDUSTRIAL FARM ANIMAL PRODUCTION IN AMERICA 19 (2008)).

118. McLeod-Kilmurray, *Vegetarianism*, *supra* note 45, at 59.

119. FOOD & AGRIC. ORG., LIVESTOCK, *supra* note 28, at 6.

120. *Id.* at 10.

Responsible consumption and production—and "a radical re-focusing of the economy on reduction of its throughput of material and energy"—also both point to reducing food waste.[121] "Roughly one third of the food produced in the world for human consumption every year—approximately 1.3 billion tonnes—gets lost or wasted."[122] "Food losses and waste amounts to roughly US$ 680 billion in industrialized countries and US$ 310 billion in developing countries."[123] "Global quantitative food losses and waste per year are roughly 30% for cereals, 40-50% for root crops, fruits and vegetables, 20% for oil seeds, meat and dairy plus 35% for fish."[124]

Although food waste occurs at every stage of the food system including farming, transporting, selling, consuming, and throwing away food—and while these statistics suggest that meat and dairy are a relatively low contributor to overall food waste[125]—ecological law, particularly features 4 and 6, would require significantly reducing food waste before expanding industrial animal food production.[126]

Features 4 and 6 would also require us to focus on tackling the growing problem of overconsumption of food. The rates of over-nutrition are rising globally, with numbers in the developing world recently almost attaining levels in developed countries.[127] Although its causes are complex and varied, contributing factors include the growing availability of fast and processed foods, poor nutritional education, lack of time for home cooking, the comparative costs of fast versus fresh food, and the massive, relentless marketing campaigns of global food corporations.[128] Increased consumption

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121. Garver, *supra* note 1, at 326–27.

122. *Facts on Food Loss*, *supra* note 35.

123. *Id.*

124. *Id.*

125. *Id.*

126. *Compare* Garver, *supra* note 1, at 316 (summarizing the fourth and sixth features of ecological law, which demand reducing material and energy, and sharing resources with future generations of human life), *with Facts on Food Loss*, *supra* note 35 (detailing the quantities of materials wasted each year in the food system, of which animal food products are a part).

127. *See* Paul Allen, *Overeating Hits the Developing World*, GUARDIAN (Apr. 22, 2014), https://www.theguardian.com/global-development-professionals-network/2014/apr/22/eat-smaller-and-smarter ("In the past three decades, the number of obese people in the developing world has tripled . . . ."); Daniel Hoffman, *Obesity in Developing Countries: Causes and Implications*, 28 FOOD, NUTRITION & AGRIC. REV. 35, 38 (2001), http://www.fao.org/docrep/pdf/003/y0600m/y0600m04.pdf (reporting that the rate of obesity is increasing worldwide, partly due to over-nutrition).

128. *See* Andrea Freeman, *The Unbearable Whiteness of Milk: Food Oppression and the USDA*, 3 U.C. IRVINE L. REV. 1251, 1253–54, 1270–71 (2013) (detailing how fast food contributes to over-nutrition in developed nations); *see also Cooking at Home Tonight? It's Likely Cheaper and Healthier, Study Finds*, SCI. DAILY: SCI. NEWS (Mar. 14, 2017) (mentioning that many lack the time to prepare nutritious meals).

of animal products is clearly a part of these trends.[129] A more ecological global food system would encourage and enable the production and consumption of diets that promote good health, which would help to rebalance the two global challenges of under- and over-nourishment.[130]

This quick examination of features 1, 2, 4, 6, and 9 of Garver's ecological law have raised a number of questions about our industrial-animal-agriculture system: why we created the system; whether continuing it advances or reduces interspecies justice; and whether the system is fair to present and future humans. The remaining features guide us more directly to the legal aspects of this dilemma.

Features 3, 5, and 7–9 focus more specifically on how law itself can help put ecological law into practice to achieve its goals. The third feature demands that ecological law "permeate" all legal systems.[131] Food law and policy is itself an excellent example of a field that cannot be reformed without changing many different areas of law, which all permeate each other, such as environmental, health, trade, and social justice law.[132] In the evolving debate on a new national food policy for Canada, for example, some are calling for a "joined-up food policy"—which tackles both the problems of government and research silos[133] and food governance—that links health, social, economic, and environmental concerns, and moves away from economic growth as its dominating goal.[134]

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129. *See, e.g.*, *Global Meat Production*, *supra* note 8 (explaining that a high-meat diet "can lead to a host of health problems, including obesity").

130. *See* Garver, *supra* note 1, at 327 (highlighting that ecological law puts the "protection of the global commons and public goods paramount" and "must ensure fair sharing of resources"); WORLD HEALTH ORG., THE DOUBLE BURDEN OF MALNUTRITION: POLICY BRIEF 2 (2017) (explaining "[t]he double burden of malnutrition," which is "the coexistence of undernutrition along with overweight, obesity or diet-related" noncommunicable diseases).

131. Garver, *supra* note 1, at 326.

132. *See What is Food Law?*, LEGAL CAREER PATH, https://legalcareerpath.com/food-law/ (last visited Apr. 14, 2019) (summarizing "the collection of laws and regulations" that relate to food production, including those governing "pesticide use, tariffs on agricultural imports . . . restaurant cleanliness," bottled water, the claims supplement producers can make "about the effectiveness of their products," and food stamps).

133. For example, food law and policy in Canada is governed by a wide variety of ministries and at three levels of government, not including the international level. *See* CENTRE FOR FOOD IN CAN., GOVERNING FOOD: POLICIES, LAWS, AND REGULATIONS FOR FOOD IN CANADA 13–14 (2011) ("[Policies, laws, and regulations] and bureaucratic structures exist at all levels of government, with multiple agencies responsible for the numerous functions being carried out."). Within the federal government alone, for example, food law and policy involves, among other groups, Health Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, Industry Canada, and the trade department. *Id.* at 13. Despite increasing efforts, coordination remains difficult. *Id.*

134. Rod MacRae, *A Joined-Up Food Policy for Canada*, 6 J. HUNGER & ENVTL. NUTRITION 424, 424–25 (2011). MacRae notes:

> [F]ood policy in the 21st century must be designed and implemented to reflect fully the essential reality of our biological and social dependence on food and the

Garver's fifth feature posits that ecological law must be global, but distributed.[135] This recalls the legal doctrines of subsidiarity[136] and the common but differentiated responsibility approach in the climate change treaties.[137] As a side note, the most recent IPCC report emphasizes reducing meat consumption as a rapid and effective way to tackle climate change.[138] In addition, Garver's fifth feature reminds us that in developing international food law and policy—and the global food system structure—the current food production and consumption patterns of wealthy nations, as well as their influence on global food trade policies, have resulted in the neglect of their heightened responsibilities to ensure inter- and intragenerational justice to food producers and consumers in poorer countries.[139] Feature 7, which requires that ecological law "be binding . . . and supranational, with supremacy over sub-global legal regimes as necessary," reinforces these ideas.[140] Feature 7 also reminds us how trade law influences global food sustainability and justice as well as how corporate and trade laws are more effectively binding and global than

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> resources needed to produce it sustainably. During the 20th century, rules about food were framed in the industrial world by the dominant view of markets. Food was primarily something to be bought and sold, rather than a biological and cultural necessity. . . . Overproduction at the farm level was positive for food firms because it helped keep farm and processor prices low. The food system was designed, directly and indirectly, to encourage people to overconsume because this contributed to firm profitability, and aggregate levels of food waste received limited attention. This consumption, and the diseases it produced, actually appeared to be economically positive because it drove up health care costs and made some of Canada's economic accounts (eg, gross national product) look better.

Id.

135. Garver, *supra* note 1, at 327.

136. *See* 14957 Canada Ltée v. Hudson, 2001 SCC 40, [2001] 2 S.C.R. 241, 249 (Can.) (describing the doctrine of subsidiarity, which assumes that the local level of government is the most efficient law-making body because it is closest to the people).

137. *See* United Nations Framework Convention on Climate Change, art 3.1, May 9, 1992, 1771 U.N.T.S. 107, https://unfccc.int/resource/docs/convkp/conveng.pdf ("The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their *common but differentiated responsibilities* and respective capabilities." (emphasis added)).

138. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT: GLOBAL WARMING OF 1.5°C, at 327 (2018), https://www.ipcc.ch/sr15/ (estimating that reducing "the demand for meat and other livestock products" could "bring large co-benefits, through GHG mitigation and improvements in the overall efficiency of food systems").

139. *See* Carmen G. Gonzalez, *The Global Food System, Environmental Protection, and Human Rights*, 26 NAT. RESOURCES & ENV'T 7, 9–10 (2012) (outlining how international trade law "placed small farmers in ruinous competition with subsidized agricultural producers in the United States and the European Union"); *see also supra* notes 71–130 (overviewing how the global food system produces inter- and intragenerational injustice).

140. Garver, *supra* note 1, at 328.

human rights and international environmental law.[141] ecological law suggests that international trade, as well as corporate and environmental laws, should be changed to address the power of multinational animal-food corporations to build a more ecological food system.[142]

Finally,[143] but perhaps most importantly, feature 10 requires ecological law to be adaptive.[144] Once again, this captures a wide range of ideas and goals, but two come to mind as crucial. First, ecology adapts to changes, and ecological law must mirror this.[145] If our laws are not producing the effects we desire, or are producing surprising results, we must adapt the laws to these new circumstances. For example, if we make a herculean effort to reduce food waste but we still have significant global hunger problems, then perhaps it would be time to turn back to ideas of increased growth. Second, being adaptive suggests that whether a food is ecologically appropriate depends on the particular place, society, group, or person.[146] This brings us back to our original question: does ecological law demand veganism? As stated at the outset, increasing consumption of industrial-animal products is not an adaptive response to the growing realities of food insecurity that climate change will create.[147] However, where plant-based diets do not provide healthy, nutritious, and culturally appropriate sustenance, sustainable meat production and consumption—particularly place-based hunting and fishing—may be, as it has always been, the most sustainable, appropriate, and adaptive response to satisfy food needs and sustain a balanced ecosystem.

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141. *See* Gonzalez, *supra* note 139, at 8–10 ("[I]nternational trade law has taken precedence over human rights and international environmental law, to the detriment of small farmers, agrobiodiversity, and efforts to forestall climate change.").

142. *See, e.g.*, CLAPP, *supra* note 64 (explaining that some in the alternative food movement promote "transnational efforts to make legally enforceable improvements to the rules and norms that govern" the global food system); *see also* Jennifer Clapp, *Agribusiness Mega-Mergers Won't Help to Feed the World*, HILL TIMES (Jan. 18, 2017) [hereinafter Clapp, *Agribusiness*], https://www.hilltimes.com/2017/01/18/agribusinessmega-mergers-wont-help-feed-world/92980 (arguing that because agribusiness is driven by profits, it will not create "sustainable food security").

143. This Essay does not allow room to explore feature 8, which requires "greatly expanded program[s] of research and monitoring." Garver, *supra* note 1, at 329. However, an initial thought is that ecological law requires us to be vigilant about *what* we are researching and monitoring to guard against unexamined technological fixes for industrial animal agriculture and to appropriately balance the various goals of an ecological and just food system. *See, e.g.*, Lee, *supra* note 49, at 65 ("Although an ecofeminist interrogation of the political, social, and ethical dimensions of new food technologies may be imperfect, it is arguably a necessary corrective . . . [given] the narrow grounds on which the benefits and impacts of technologies are assessed under a purportedly more 'science-based' approach.").

144. *Garver*, *supra* note 1, at 330.

145. *Id.* at 329–30.

146. *Id*. at 330.

147. *See supra* notes 23–29 (explaining the various problems associated with the current global food system).

CONCLUSION: SOME SOLUTIONS THAT ECOLOGICAL LAW MIGHT POINT TOWARD

Thinking through a few of the implications of the features of ecological law has suggested some possible alternatives to maintaining and expanding the industrial-animal-agriculture system, such as reducing population growth, reducing food waste, and adopting ecological law—rather than economic growth alone—as a guiding principle for food governance.[148] The following are further measures that ecological law might suggest for improving, reducing, or even ending the industrial-animal-agriculture system.

In order to move toward interspecies justice, ecological law would consider the long-term advantages and disadvantages of creating substantive rights for non-human animals. There have been a few attempts at this recently, such as habeas corpus claims brought unsuccessfully in New York,[149] but successfully in Argentina.[150] If not full substantive rights, perhaps non-human animals should enjoy procedural rights, such as legal standing to protect their interests.[151]

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148. *See supra* Part IV (discussing how ecological law might reform the global food system).

149. *In re* Nonhuman Rights Project *ex rel.* Tommy v. Lavery, 100 N.E.3d 846, 846 (N.Y. 2018).

150. Richard Lough, *Captive Orangutan Has Human Right to Freedom, Argentine Court Rules*, REUTERS (Dec. 24, 2014), https://www.reuters.com/article/us-argentina-orangutan-idUSKBN0JZ0Q620141221. Relatedly, in New Zealand, the Whanganui River has been recognized as having the status of "a legal person [with] all the [corresponding] rights, powers, duties, and liabilities." Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, cls 12, 14 (N.Z.); *see also* Dan Cheater, *I am the River and the River is Me: Legal Personhood and the Emerging Rights of Nature*, W. COAST ENVTL. L. (Mar. 22, 2018), https://www.wcel.org/blog/i-am-river-and-river-me-legal-personhood-and-emerging-rights-nature (highlighting New Zealand's 2017 legislation recognizing the Whanganui River as a legal person); WHANGANUI TRIBUNAL, THE WHANGANUI RIVER REPORT 309–10 (1999), https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_68450539/Whanganui%20River%20Report%201999.pdf (mentioning New Zealand laws that recognize the intrinsic value of natural resources). In addition, in March 2017, the High Court of Uttarakhand, India declared the Ganga and Yamuna Rivers "as juristic/legal persons/living entities having the status of a legal person with all corresponding rights, duties and liabilities of a living person." Salim v. State of Uttarakhand, Writ Petition (PIL) No. 126 of 2014, ¶ 19 (Uttarakhand HC) (India). In July 2017, however, the Supreme Court of India stayed the High Court's order. State of Uttarakhand v. Salim, Petition(s) for Special Leave to Appeal (July 7, 2017) (India); *see also* A Vaidyanathan, *No, Ganga and Yamuna are Not Living Entities, Says Supreme Court*, NDTV, https://www.ndtv.com/india-news/no-yamuna-and-ganga-are-not-living-entities-says-supreme-court-1721833 (last updated July 7, 2017) (outlining the Supreme Court's ruling).

151. *See* Christopher Stone, *Should Trees Have Standing?—Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450, 464 (1972) (arguing that natural objects should have the legal authority to sue); David Cassuto, Jonathan Lovvorn & Katherine Meyer, *Confronting Barriers to the Courtroom for Animal Advocates: Legal Standing for Animals and Advocates*, 13 ANIMAL L. 61, 61 (2006) (examining the issue of "legal standing for non-human animals and their human advocates").

Alternatively, humans could have legal duties not to cause the suffering of animals farmed for food. For example, several countries have banned certain industrial farming practices such as battery cages[152] and others are working to achieve this soon.[153] Laws could be enacted to ensure the five basic freedoms: from discomfort; from hunger and thirst; from fear and distress; from pain, injury, and disease; and to express natural behavior.[154] Where these measures are resisted on the basis that they increase costs for producers and consumers, ecological law would encourage a full accounting of the costs, including the externalized costs of failing to enact these protections.

Various legal tools could enhance support for such measures by ensuring greater access to information about the industrial-animal-agriculture system. So-called "ag-gag" laws could be revoked.[155] Animal "welfare" labels could be required on animal-based food products.[156] To enhance food literacy and consumer agency, which is part of the broader consumer right to know, labels on animal products could also indicate: water, soil, antibiotic, and other inputs; emissions; and feed-conversion ratios.[157] Carbon taxes, and other taxes on industrially produced animal products, could help to alter producer and consumer behavior through "free" market mechanisms (indeed, how can the market be truly free if there is such limited information about the food we eat?). For example, a price on carbon would impact the price of local foods competing with those

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152. *See* James Andrews, *European Union Bans Battery Cages for Egg-Laying Hens*, FOOD SAFETY NEWS (Jan. 9, 2012), https://www.foodsafetynews.com/2012/01/european-union-bans-battery-cages-for-egg-laying-hens/ (describing the E.U.'s ban on battery cages).

153. *See Canada's Battery Cage Phase-Out Officially Begins*, HUMANE CAN. (Mar. 27, 2017), https://www.humanecanada.ca/canadas_battery_cage_phase_out_officially_begins ("As of April 1, 2017, no new barren battery cages will be built in Canada . . . .").

154. McLeod-Kilmurray, *Commoditizing Animals*, *supra* note 24, at 76–77.

155. "Ag-gag" laws are "designed to silence whistleblowers revealing animal abuses on industrial farms." *What is Ag-Gag*, *supra* note 102. In some states, these laws are being challenged as unconstitutional. *See, e.g.*, Animal Legal Def. Fund v. Reynolds, 4:17-cv-00362–JEG-HCA, 2019 WL 140069, at *2, 9 (S.D. Iowa Jan. 1, 2019) (invalidating IOWA CODE ANN. § 717A.3A (2012), which "prohibit[s] conduct and speech related to agricultural operations," as facially unconstitutional under the First Amendment).

156. *See, e.g.*, *Labelling Related to Animal Welfare*, EUROPEAN COMMISSION, https://ec.europa.eu/food/animals/welfare/other_aspects/labelling_en (last visited Apr. 14, 2019) (explaining that despite increasing consumer interest for "information on how animals are treated on farms and in livestock facilities," "there is only one EU-wide system of compulsory labeling on animal welfare - for table eggs").

157. *See* David Alan Nauheim, *Food Labeling and the Consumer's Right to Know: Give the People What They Want*, 4 LIBERTY U. L. REV. 97, 99–102 (2009) (discussing the consumer's right to know in the context of food labeling).

packaged and transported long distances and might encourage the reduction of food waste.[158]

National food guides are another tool that could significantly raise awareness of the ecological law problems that industrial animal agriculture creates. Brazil's newest food guide provides that "[h]ealthy [d]iets [d]erive [f]rom [s]ocially and [e]nvironmentally [s]ustainable [f]ood [s]ystems" and that "[d]ietary recommendations need to take into account the impact of the means of production and distribution of food on social justice and environmental integrity."[159] Sweden's 2015 food guidelines take a systemic approach,[160] linking human and environmental health.[161] The guidelines link Swedish consumers' food choices to climate change, which highlights intragenerational justice.[162] The guidelines justify their recommendation to eat less processed meats based upon the benefits to human health, animal welfare, and the environment.[163] The Canadian government issued a revised Food Guide in January 2019,[164] and although it does not make an explicit link to environmental sustainability, its recommended *food plate* is quite similar to the EAT-Lancet Commission's Planetary Diet[165] in recommending significant reduction in animal-based foods and significant increases in vegetable, fruit, and grain consumption.[166] The Canadian government is also devising its first national food policy.[167] It is interesting

158. *Cf. Eat Your Way to a Smaller Carbon Footprint*, TERRAPASS: THE FOOTPRINT BLOG, https://www.terrapass.com/eat-your-way-to-a-smaller-carbon-footprint (last visited Apr. 14, 2019) (explaining that by eating locally, carbon footprints can be reduced by up to 7%).

159. MINISTRY OF HEALTH OF BRAZ., DIETARY GUIDELINES FOR THE BRAZILIAN POPULATION 18 (2d ed. 2014), http://bvsms.saude.gov.br/bvs/publicacoes/dietary_guidelines_brazilian_population.pdf.

160. NAT'L FOOD AGENCY, FIND YOUR WAY: TO EAT GREENER, NOT TOO MUCH AND BE ACTIVE 1 (2015), https://www.livsmedelsverket.se/globalassets/publikationsdatabas/andra-sprak/kostraden/kostraden-eng-a4-utskriftversion.pdf ("When it comes to food, it's easy to concentrate on individual nutrients or foods to the exclusion of everything else. But all aspects are interlinked, so it's important to maintain a holistic approach.").

161. *Id.* ("[W]e've devised this advice on how you can eat sustainably – to the benefit of both your health and the environment. So that you don't have to choose.").

162. *See id.* ("[O]ne-quarter of the climate impact of Swedish households comes from the food we eat — or throw away. Economising on the Earth's resources will ensure we have good food to eat in the future.").

163. *Id.* at 9.

164. *See generally* HEALTH CAN., CANADA'S DIETARY GUIDELINES: FOR HEALTH PROFESSIONALS AND POLICY MAKERS (2019) [hereinafter CANADA'S DIETARY GUIDELINES], https://food-guide.canada.ca/static/assets/pdf/CDG-EN-2018.pdf (providing Health Canada's guidelines and considerations on healthy eating).

165. Willett et al., *supra* note 45, at 447.

166. CANADA'S DIETARY GUIDELINES, *supra* note 164, at 9, 15.

167. *Revision Process for Canada's Food Guide*, GOV'T CAN., https://www.canada.ca/en/health-canada/services/canada-food-guide/about/revision-process.html (last visited Apr. 14, 2019) (explaining that Canada is revising its "food guide so that it meets the needs of

to imagine how our food system would change if ecological law was adopted as a guiding principle for this new policy.

Governments could also move toward a more ecological law approach to food by creating institutional food projects such as farm to school lunch programs.[168] These programs would require food procurement policies, which could enhance local and sustainable food production.[169] School lunch programs could also, as in Japan, be added to the school curriculum to enhance food literacy from a young age.[170] This would be particularly effective if the programs enhanced the plant-based food options in these meals.[171] Governments could also pass laws to improve food sustainability, justice, and sovereignty.[172] For example, a right to food could be enacted.[173] Governments could also promote an ecological law approach by changing competition laws to address the concentration and corporatization of the food system, particularly the massive power of multinational food corporations.[174]

However, ecological law does not necessarily encourage relying solely, or even primarily, on centralized government control. From a more bottom-up perspective, ecological law would also encourage empowering local food movements—farmers markets, urban agriculture, and similar

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different Canadian audiences"); *see, e.g.*, *Canada's Food Guide*, GOV'T CAN., https://food-guide.canada.ca/en/ (last visited Apr. 14, 2019) (showing Canada's new interactive food guide).

168. *See What is Farm to School?*, NAT'L FARM TO SCH. NETWORK, http://www.farmtoschool.org/about/what-is-farm-to-school (last visited Apr. 14, 2019) (highlighting the benefits of existing farm to school programs).

169. *See id.* (noting that farm to school programs "always include[]," among other things, procurement, meaning that "[l]ocal foods are purchased, promoted, and served in the cafeteria").

170. *See* Nobuko Tanaka & Miki Miyoshi, *School Lunch Program for Health Promotion Among Children in Japan*, 21 ASIA PAC. J. CLINICAL NUTRITION 155, 156 (2012) (discussing curriculum objectives for the Japanese school lunch program); *see also* Alexis Agliano Sanborn, *More than a Meal: School Lunch in Japan*, 22 EDUC. ABOUT ASIA 45, 45 (2017), http://aas2.asian-studies.org/EAA/EAA-Archives/22/1/1468.pdf (discussing how Japan's school lunch program focuses around local foods and educates students about food production issues).

171. *See supra* notes 115–20 and accompanying text (highlighting the environmental benefits of widespread adoption of the plant-based diet).

172. *See, e.g.*, Earl Blumenauer, *A Green New Deal Must Include Food and Farming*, 10 YEARS CIVIL EATS (Jan. 30, 2019), https://civileats.com/2019/01/30/a-green-new-deal-must-include-food-and-farming/ ("A Green New Deal can start by incorporating the principles of agricultural reform and applying them to practices that will decarbonize the economy, while bringing justice to the food system.").

173. *See, e.g.*, *What is the Human Right to Food?*, NAT'L ECON. & SOC. RTS. INITIATIVE, https://www.nesri.org/about/mission-vision (last visited Apr. 14, 2019) (listing the various United Nation treaties that prove a right to food).

174. *See* Clapp, *Agribusiness*, *supra* note 142 (arguing that agribusiness mega-mergers allow for corporate concentration, which does not effectively tackle hunger).

endeavors—through law and policy, individual and group activism, and regional and international support.[175]

Garver's ten features of ecological law are an excellent vehicle for assessing and proposing alternatives to our current industrial-animal-agriculture system.[176] Although ecological law strives to achieve interspecies justice, it also seeks inter- and intragenerational human justice, so it does not provide a clear and simple answer to whether it "demands" veganism.[177] Instead, ecological law prompts us to ask probing questions to guide us to food systems that enhance ecological justice for all species now and in the future.

175. *See* Garver, *supra* note 1, at 329 (discussing how ecological law encourages "global[], regional[] and local[]" connections).

176. *See supra* notes 131–47 and accompanying text (suggesting how ecological law principles would reform the global food system).

177. *See supra* notes 40–43, 143–47 and accompanying text (concluding that ecological law would permit eating meat in some circumstances).

FIDUCIARY DUTIES UNDER THE TRUSTEESHIP THEORY: THE CONTRIBUTION OF CANADIAN CASE LAW IN JUDICIAL REVIEW OF ENVIRONMENTAL MATTERS

Stéphanie Roy[*†]

ABSTRACT

The potential of trusteeship theory and related fiduciary duties in resolving environmental problems first emerged in the 1970s. Trusteeship theory suggests a governance model that would allow the State to adopt a holistic approach to nature management and to consider future generations' interests. The theory is of particular interest to researchers in Canada, as it draws on concepts that already exist in Canadian public law, and therefore might allow for a rapid paradigm shift in environmental governance. It nevertheless remains necessary to define the substance and nature of the fiduciary duties that this shift implies for the public sector. This Essay brings to light aspects of Canadian jurisprudence in the environmental domain that imposes duties of environmental protection on the government and sets out a path for advancing the trusteeship theory to address the mounting ecological challenges of the Anthropocene.

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INTRODUCTION

In 1970, when the international community was beginning to demonstrate awareness of the human impact on its natural environment,[1] Joseph L. Sax published one of the most cited articles of all time,[2] *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*,[3] as a reaction to the increasing number of lawsuits brought against governmental agencies that are supposed to protect the public interest and natural resources in the U.S.[4] Sax believed the increase in lawsuits was in part due to inconsistency in legislative responses and administrative actions.[5] The public trust doctrine is the legal approach Sax suggested as the most likely to obtain effective court intervention related to environmental problems.[6] Other similar concepts redefining government obligations towards the environment have emerged in the legal and political literature proposing solutions to government inaction to protect the environment, including *parens patriae*,[7] *stewardship*,[8] *nature's trust*,[9] and *trusteeship*.[10] These concepts and theories all rely on the central proposal of

1. *See* U.N. Conference on the Human Environment, *Stockholm Report of the U.N. Conference on the Human Environment*, ¶ 7, U.N. Doc A/CONF.48Rev.1 (June 16, 1972) ("A growing class of environmental problems . . . will require extensive co-operation among nations and action by international organizations in the common interest.").

2. Fred R. Shapiro & Michelle Pearse, *The Most-Cited Law Review Articles of All Time*, 110 MICH. L. REV. 1483, 1490 (2012).

3. Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 473 (1970).

4. *Id.* at 473–74.

5. *Id.*

6. *Id.* at 474.

7. *See* Wilfred Estey, *Public Nuisance and Standing to Sue*, 10 OSGOODE HALL L.J. 563, 576 (1972) (explaining the historic role of the government to act as *parens patriae*, i.e., as legal representative to protect the public's rights, including rights to enjoy the environment, through the concept of public nuisance); *see also* Allan Kenner, *The Public Trust Doctrine, Parens Patriae, and the Attorney General as the Guardian of the State's Natural Resources*, 16 DUKE ENVTL. L. & POL'Y F. 57, 100–01 (2005) (explaining the general concept of *parens patriae*).

8. Emily Barritt, *Conceptualising Stewardship in Environmental Law*, 26 J. ENVTL. L. 1, 3 (2014); PAULE HALLEY & JULIA SOTOUSEK, L'ENVIRONNEMENT, NOTRE PATRIMOINE COMMUN ET SON ÉTAT GARDIEN: ASPECTS JURIDIQUES, NATIONAUX, TRANSNATIONAUX ET INTERNATIONAUX 14–15 (2012).

9. *See* MARY CHRISTINA WOOD, NATURE'S TRUST: ENVIRONMENTAL LAW FOR A NEW ECOLOGICAL AGE 17 (2014) (proposing a radical expansion of the public trust doctrine to cover all natural resources essential to life on Earth, including the atmosphere).

10. *See* EDITH BROWN, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY 123 (United Nations Univ. 1989) (describing natural resource trustees "who are required to bring claims for damages to natural resources . . . ."); *see generally* KLAUS BOSSELMANN, EARTH GOVERNANCE: TRUSTEESHIP OF THE GLOBAL COMMONS (2015)

imposing fiduciary duties on the government and consider the natural environment to be the common property of citizens. The government would therefore have to act in the best interest of its current citizens and future generations.[11]

In her 2013 book, *Nature's Trust: Environmental Law for a New Ecological Age*, Professor Mary C. Wood argues in favor of infusing current environmental law with trust principles in order to make it more protective.[12] Wood explains that current governmental decision making based on discretion has proved ineffective for environmental protection.[13] Discretion-based decision making allows the executive—that is, government agencies—to consider single monetary interests and short-term considerations when it exercises delegated rulemaking, issues technical determinations of a project's impacts, or chooses to enforce regulations.[14] By comparison, imposing a fiduciary obligation would force the government to act in the best interest of citizens and future generations and to protect the natural assets on which their future depends, in addition to making the government more accountable.[15]

Professor Klaus Bosselmann suggested the adoption of trusteeship as an overarching framework to establish better international environmental governance in his 2015 book, *Earth Governance: Trusteeship of the Global Commons*.[16] For Bosselmann, "political leaders and the state-centered structure of international governance appear incapable of responding to [an emerging ecological crisis] in an effective way: there is not only a democratic deficit but an ecological deficit as well."[17] Bosselmann therefore creates a governance model that would reconcile democracy with ecological well-being.[18] The task of this book, he explains, is to "help establish a culture of democracy powerful enough to achieve sustainable societies."[19] This task includes separating markets from the commons by reshaping state sovereignty, empowering governments to define the functions and legitimacy of the market, and restructuring democracy to protect the commons.[20] The solution to the ecological predicament is to establish a value-based democracy that should not be confined to nation-

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(detailing and advocating for an international trusteeship to govern global environmental decision making).

11. *See infra* Part I.A (detailing the fundamental principles behind trusteeship theories).
12. WOOD, *supra* note 9, at 15–16.
13. *Id.*
14. *Id.* at 68–69.
15. *Id.* at 138–39, 203–04.
16. PETER G. BROWN, RESTORING THE PUBLIC TRUST: A FRESH VISION FOR PROGRESSIVE GOVERNMENT IN AMERICA (1994); BOSSELMANN, *supra* note 10, at 116.
17. BOSSELMANN, *supra* note 10, at 1.
18. *Id.* at 21–22.
19. *Id.* at 23.
20. *Id.* at 29.

states, but rather should be shared internationally, to achieve "earth governance" of this universal concern.[21]

But what would such a model change in our political system? That is, how does the trusteeship or nature's trust model of governance derive from the actual "command and control" approach?[22] Some would argue that the government—in the Canadian model of parliamentary sovereignty—already acts in the public interest, already is accountable to Parliament, and already must be loyal and equitable to its citizens according to responsibilities set by public law.[23] However, what is lacking in this model of governmental responsibility is an understanding that the goal of preserving nature is not set only to avoid damages.[24] Rather, governments should take on the greater responsibility to let nature thrive and to recognize the interconnectedness of humanity and nature.[25] This interconnectedness should inform our obligations towards future generations of humans, to ensure their survival by preserving the Earth's ecosystems upon which we depend.[26]

In this Essay, I argue that the trusteeship theory—which builds on the experience with, and critiques of, public trust doctrine—would allow for a rapid paradigm shift towards ecological responsibility in public governance by using tools and concepts that are already known to jurists. But the pragmatists—including me—will ask: how would governments and legislatures apply their fiduciary duties on a day-to-day basis? How would the duty translate into administrative law and action? In this Essay, I provide some answers to these questions by considering judicial review cases decided by the Supreme Court of Canada and provincial Courts of Appeals in environmental matters.

I demonstrate that relevant Canadian case law indicates a path for advancing the application of trusteeship theory to address the mounting ecological challenges of the Anthropocene. The resort to this case law to demonstrate aspects of the trusteeship theory is justified in two ways. First, when reviewing administrative action, courts already impose duties on the government in their evaluating the *reasonableness* of government action. Second, the similarities between the concepts of *public interest*,

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21. *Id.* at 29–30.

22. COLIN T. REID & WALTERS NSOH, THE PRIVATISATION OF BIODIVERSITY? NEW APPROACHES TO CONSERVATION LAW 14–15 (2016).

23. 1 PETER W. HOGG, CONSTITUTIONAL LAW OF CANADA 12–2 (5th ed. 2007).

24. *Cf.* REID & NSOH, *supra* note 22, at 15 (2016) (explaining that the issue with the *command and control* approach is the reaction once damage is already done to the species rather than intercepting the degradation before it becomes a problem).

25. *Cf. id.* at 4 (recognizing that an acknowledgement of an interconnected world is necessary to preserve nature).

26. *See id.* (explaining that preservation of ecosystems is necessary to ensure that natural heritage of the Earth is passed to later generations).

accountability, *impartiality*, and *fairness* that are used in Canadian public law and in the trusteeship literature show that this case law is applicable to trusteeship theory by analogy. Extracting detailed examples from the case law helps us to understand how these public law concepts could be applied in further cases to establish clear conditions of the application, content, and scope of fiduciary duties. Part I of the Essay sets out the most promising literature on the trusteeship theory that distinguishes it from the American public trust doctrine. Part II studies Canadian judicial review cases that are related to the environment to illustrate how relevant judicial decisions can contribute to a practical, working definition of trusteeship that could be imposed on the government.

I. TRUSTEESHIP THEORY

A. Foundational Principles

Developing a legal doctrine based on trust is not a new idea. In addition to the public trust doctrine already applied in the U.S. and in other common law jurisdictions,[27] other countries have adopted public trust inspired legislation,[28] and many authors have suggested mechanisms or governance frameworks based on trust at the international level.[29] The trusteeship theory set out by Mary C. Wood and Klaus Bosselmann, considered from a different perspective, would allow the State to adopt a holistic approach in nature management and to consider the interests of

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27. Michael C. Blumm & Rachel D. Guthrie, *Internationalizing the Public Trust Doctrine: Natural Law and Constitutional and Statutory Approaches to Fulfilling the Saxion Vision*, 45 U.C. DAVIS L. REV. 741, 745 (2012) (identifying India, Pakistan, and South Africa as countries where "the [public trust] doctrine has become equated with environmental protection . . . .").

28. *Philippines Environmental Policy*, Pres. Dec. No. 1151 (June 6, 1979) (Phil.), https://www.lawphil.net/statutes/presdecs/pd1977/pd_1151_1977.html (proclaiming "the responsibilities of each generation as trustee and guardian of the environment for succeeding generations"). Sweden has had an environmental ombudsman—a role close to that of a trustee—since 1909. Thomas Hillmo & Ulrik Lohm, *Nature's Ombudsmen: The Evolution of Environmental Representation in Sweden*, 3 ENV'T & HIST. 19, 25 (1997).

29. *See, e.g.*, Jeanine Gama Sá, *Le Trust : de la protection patrimoniale au Moyen Âge à la protection internationale de l'environnement au XXIe siècle*, 21.1 REVUE QUEBECOISE DE DROIT INTERNATIONAL 97, 98 (2008) (analyzing the use of environmental trust funds at the international level); Peter H. Sand, *Sovereignty Bounded: Public Trusteeship for Common Pool Resources?*, 4 GLOB. ENVTL. POL. 47, 55–56 (2004) (proposing a model of international environmental trusteeship where the state is trustee; the community is trustor; and, the people are beneficiaries); PETER BARNES, WHO OWNS THE SKY?: OUR COMMON ASSETS AND THE FUTURE OF CAPITALISM xix (2001) (proposing a trust model to bring accurate pricing to shared atmospheric resources, thereby conserving them); Christopher D. Stone, *Defending the Global Commons*, *in* GREENING INTERNATIONAL LAW 34–40 (Philippe Sands ed., 1993) (proposing a global system of guardians assigned to advocate on behalf of the environment in an international system of guardianship); Eyal Benvenisti, *Sovereigns as Trustees of Humanity: On the Accountability of States to Foreign Stakeholders*, 107 AM. J. INT. L. 295, 295–333 (2013) (articulating "three moral arguments supporting the interpretation of contemporary sovereignty as trusteeship").

future generations and nature itself when making decisions.[30] One of the goals of this theory is to increase the duties of government towards the environment and future generations, and therefore remedy the lack of accountability of government representatives and the insufficient number of long-term measures that consider future generations' environmental interests.[31] The duties in question are those that traditionally exist in a fiduciary relationship, more specifically that exist under a trust,[32] as the name of the theory suggests. A fiduciary relationship is one where the holder "has rights and powers he or she must exercise for the benefit of" another person.[33] The fiduciary has a duty of loyalty, which means that she must not benefit from the position she holds unless explicitly authorized by the other person.[34] Other fiduciary obligations derive from this duty of loyalty.[35] Where fiduciary duties protect relationships that are of importance to the public—for instance, solicitor–client, guardian–ward, director–company, and principal–agent relationships—the trust–beneficiary relationship is the most stringent because the trustee has control over a property that belongs to another, the beneficiary.[36] The trustee will consequently be held to the highest fiduciary standards.[37] Another element that distinguishes the trust from other fiduciary relationships is that "a trust relationship cannot exist without trust property."[38]

The traditional fiduciary duties a trustee must respect in addition to the duty of loyalty are: the obligation to perform personally,[39] the duty to invest

30. *Cf.* WOOD, *supra* note 9, at 191 (advocating for fiduciary duties as a way of ensuring environmental decision makers protect the interests of future generations); *see also* BOSSELMANN, *supra* note 10, at 39–40 (calling for an international covenant to bind governments in respecting "the greater community of life"—human and non-human, present and future).

31. *See, e.g.*, WOOD, *supra* note 9, at 191–92 (explaining that the duty of loyalty to trust beneficiaries would improve legislative accountability by "prohibit[ing] a legislator from voting on a particular resource issue if he or she accepted significant campaign contributions from an [interested] industry" and by "prohibit[ing] legislative 'vote trading' on environmental matters").

32. *See Trust*, BARRON'S CANADIAN LAW DICTIONARY (6th ed. 2009) (defining "trust" as "[a] right of property held by one party for the benefit of another," and noting that the term "implies two interests, one legal and the other equitable; the trustee holding the legal title or interest, and the cestui que trust, or beneficiary, holding the equitable title or interest"); *see also Fiduciary*, BARRON'S CANADIAN LAW DICTIONARY, *supra* (defining "fiduciary" as "[r]elating to or proceeding from trust or confidence" and noting that "[o]ne stands in a fiduciary relationship, with regard to another person when he or she has rights and powers he or she must exercise for the benefit of that other person. Consequently, a fiduciary is not allowed to benefit personally in any way from the position he or she holds unless he has the requisite consent").

33. *See Fiduciary*, BARRON'S CANADIAN LAW DICTIONARY, *supra* note 32 (providing the definition for fiduciary).

34. EILEEN E. GILLESE, THE LAW OF TRUSTS 10 (3d ed. 2014).

35. *Id.*

36. *Id.* at 10–11.

37. *Id.*

38. *Id.* at 11.

39. *Id.* at 130.

the trust assets,[40] the obligation to act impartially,[41] the duty to account,[42] and the duty to provide information.[43] If governments were to apply these duties, it would obviously translate into types of action other than a private trust.[44] As an example of these other causes of action, it could force a government to take positive actions towards the environment, not only conservative ones, as the government would have the duty to make nature thrive (that is, to "invest the trust assets").[45] The trusteeship also allows citizens to undertake lawsuits against the government in case of omission, in ways similar to the public trust doctrine currently applied in the U.S.[46] This raises questions of how these trusteeship approaches to environmental law can be meaningfully differentiated from the public trust doctrine. In fact, the public trust doctrine is a type of "trusteeship in action,"[47] but the trusteeship theory considered in this Essay has broader application, as is suggested by Wood and Bosselmann.[48]

B. The Public Trust Doctrine

The public trust doctrine developed in the U.S. can be defined as "an ancient Roman law doctrine which provides that states must hold certain natural resources, particularly submerged lands under tidal and navigable waters, in trust for the use and benefit of the public and future generations."[49] In short, it means that states ought to protect natural resources that are included in the trust for future use and enjoyment, and that the alienation of these resources is prohibited.[50] States have "some discretion in managing their trust resources, although many impose a presumption against alienation of public resources, requiring clear legislative intent to accomplish such alienation."[51] The alienation of

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40. *Id.*
41. *Id.*
42. *Id.*
43. *Id.* at 155.
44. *Cf.* BOSSELMANN, *supra* note 10, at 193 (arguing that the state, as trustee, must consider future generations and act for beneficiaries beyond the scope in a private trust).
45. GILLESE, *supra* note 34, at 130.
46. *See, e.g.*, WOOD, *supra* note 9, at 221 (describing the legal theory behind atmospheric trust litigation—that governments have harmed trust resources by failing to regulate greenhouse gas emissions).
47. BOSSELMANN, *supra* note 10, at 180.
48. WOOD, *supra* note 9, at 125; *see* BOSSELMANN, *supra* note 10, at 183 (offering the public trust doctrine as an example but distinguishing environmental trusteeship as applying more broadly to become "a fundamental principle of governance").
49. Alexandra B. Klass, *The Public Trust Doctrine in the Shadow of State Environmental Rights Laws: A Case Study*, 45 ENVTL. L. 431, 432–33 (2015).
50. Michael C. Blumm & Aurora Paulsen Moses, *The Public Trust as an Antimonopoly Doctrine*, 44 B.C. ENVTL. AFF. REV. 1, 2 (2017).
51. *Id.* at 17–18.

resources, parcels of land for instance, will be justified when it furthers the purposes of the trust or "do[es] not substantially impair the public interest" in the trust resource that is remaining.[52]

The U.S. Supreme Court referred to the doctrine for the first time in 1842[53] and articulated the parameters of the theory fifty years later in the 1892 case *Illinois Central Railroad Co. v. Illinois*.[54] Its application was then limited to navigable waters and their underlying beds, and was extended to wildlife four years later in *Geer v. Connecticut*.[55] Courts subsequently applied the doctrine to these limited common resources until 1970, when Sax suggested that the courts should use the doctrine to compel the government to apply fiduciary duties not only to submerged lands and navigable waters, but also to other natural resources on public lands.[56] Sax argued that this extension of the doctrine would allow courts to balance conflicting private and public interests when the executive and legislative branches fail to do so for a greater number of resources.[57]

In the second half of the twentieth century, mainly in the years following Sax's article, courts have extended public trust protection to other resources.[58] However, as the public trust is under state rather than federal jurisdiction, the doctrine has evolved in different ways in different state jurisdictions.[59] A number of states added ecological preservation as a trust purpose.[60] Some state courts (including California, Hawaii, New York, and Louisiana) have developed case law applying the public trust doctrine to a range of environmental problems arising outside of submerged lands, including: groundwater,[61] lakes,[62] wetlands,[63] parkland,[64] the dry sand area

52. *Id.* at 17 n.104 (quoting Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 452 (1892)).

53. Martin v. Waddell's Lessee, 41 U.S. 367, 411 (1842).

54. *Ill. Cent. R.R.*, 146 U.S. at 452.

55. Geer v. Connecticut, 161 U.S. 519, 535 (1896), *overruled on other grounds by* Hughes v. Oklahoma, 441 U.S. 322 (1979); Blumm & Moses, *supra* note 50, at 4.

56. Sax, *supra* note 3, at 473.

57. *Id.* at 561–62 (characterizing courts' role as "democratization" in response to cases "not . . . properly handled at the administrative or legislative level").

58. *See infra* notes 61–67 (providing examples of how courts have extended the public trust doctrine to other resources).

59. Blumm & Moses, *supra* note 50, at 25–26.

60. *Id.*

61. *See, e.g.*, *In re* Water Use Permit Applications, 9 P.3d 409, 447 (Haw. 2000) (declaring no distinction between ground and surface water under the public trust doctrine).

62. *Id.* at 448.

63. *See, e.g.*, Nat'l Audubon Soc'y v. Super. Ct. of Alpine Cty., 658 P.2d 709, 721 (Cal. 1983) (expanding public trust protection to non-navigable waters under California law).

64. *See, e.g.*, Raritan Baykeeper, Inc. v. City of New York, No. 31145/06, 2013 WL 6916531, at *5 (N.Y. Sup. Ct. Dec. 20, 2013) (asserting that only the legislature may command that park lands be utilized for anything but serving the public interest).

of beaches,[65] archeological remains,[66] and likely problems arising out of a hazardous waste disposal facility's operation.[67] The ongoing case of *Juliana v. United States* could also lead to recognition of the atmosphere as a trust resource.[68] In that case, 21 youth plaintiffs brought an action against the U.S. government for adopting fossil fuel policies that threaten the atmosphere and therefore impede their rights to life, liberty, and property.[69] They also claim these actions violate the federal government's duty to manage public resources in trust for the people and future generations.[70] At the time of writing, the U.S. District Court for the District of Oregon has allowed the case to proceed, but proceedings are stayed pending an interlocutory appeal filed by the Trump administration, which will be decided before any judgment on the merits.[71] Despite these developments, for most states, the doctrine remains limited to the protection of use and access to navigable waters, submerged lands, and fishing, but has evolved to include not only commercial but also recreational water-based resources.[72] Therefore, the scope of states' jurisdiction on natural resources is still limited by the high-water mark in many places.[73]

Over the past forty years, the U.S. public trust doctrine has been the subject of many critiques.[74] These critiques touch mainly on two themes: the power of the judiciary and the doctrine's reliance on private property.[75] The power of judges to overturn democratic decisions of the executive or the legislature has been criticized because judges are not accountable to the public.[76] Some commentators, such as Richard Lazarus, who produced one

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65. *See, e.g.*, Matthews v. Bay Head Improvement Ass'n, 471 A.2d 355, 365–66 (N.J. 1984) (holding that the public has an interest in accessing dry sand areas of beaches despite private ownership).

66. *See, e.g.*, Wade v. Kramer, 459 N.E.2d 1025, 1027 (Ill. App. Ct. 1984) (discussing trusteeship of the state over archaeological sites).

67. *See, e.g.*, Save Ourselves, Inc. v. La. Envtl. Control Comm'n, 452 So. 2d 1152, 1154, 1157 (La. 1984) (describing the responsibility of government to act as trustee and prevent environmental pollution by hazardous waste).

68. Juliana v. United States, 217 F. Supp. 3d 1224, 1252–55, 1255 n.10 (D. Or. 2016); *see also Meet the Youth Plaintiffs*, OUR CHILDREN'S TRUST, https://www.ourchildrenstrust.org/federal-plaintiffs/ (last visited Apr. 14, 2019) (providing biographical information on the 21 youth plaintiffs).

69. *Juliana*, 217 F. Supp. 3d at 1233.

70. *Id.*

71. Order at 1, United States v. U.S. Dist. Ct. for the Dist. of Ore., No. 18-73014 (9th Cir. 2018).

72. Klass, *supra* note 49, at 437–38.

73. *See* WOOD, *supra* note 9, at 147 (explaining that many courts are reluctant to expand the scope of the public trust doctrine for fear of interfering with private property rights).

74. *See, e.g.*, Erin Ryan, *Public Trust and Distrust: The Theoretical Implications of the Public Trust Doctrine for Natural Resource Management*, 31 ENVTL. L. 477, 484–85 (2001) (summarizing critiques of the public trust doctrine from various perspectives).

75. *Id.* (quoting public trust critics who say that the public trust is "vulnerabl[y] dependen[t] on a proenvironment judicial bias" and supports a theory of property that "contradicts the first law of ecology").

76. *Id.* at 483.

of the most influential critiques of the public trust doctrine, believe that it relies unduly on pro-environment judicial bias.[77] For Lazarus, the judiciary lacks the technical competence to decide whether fiduciary duties are performed adequately by the government and its agencies.[78] In his view, agency administrators are more likely to have professional training as resource managers.[79] The subjective definitions of fundamental concepts such as *beneficial use* or *public concern* exemplify the problematic reliance on the judiciary.[80] Indeed, for a resource (e.g., water) to be held in trust, there has to be a beneficial use of the resource for the public.[81] If the resource is not seen as beneficial or of public concern, it is not considered public property and therefore not subject to the trust. [82] Shifting judicial visions of what constitutes a "beneficial use" could be detrimental to resource protection and move courts in favor of more development.[83] As Wood explains, "[c]ourts must constantly refresh their understanding of 'public concern' in order to determine the appropriate scope of the trust."[84] As a result, some courts modernize the scope of the trust while others keep it at its historic definition.[85] This also demonstrates how the reliance on property as the basis of the trust can be a problem, which leads us to the second theme of critiques: property rights.[86]

On the one hand, authors defending liberal theories of property argue that the doctrine is incompatible with private property rights, as it can limit these in favor of public property rights.[87] On the other hand, green property theorists also criticize the fact that the public trust doctrine is deeply rooted in the notion of private property, but for a different reason.[88] They believe classical liberal property theory is outdated, as it fails to take into account

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77. *Id.* at 485; Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 712–15 (1986).

78. *See, e.g.*, Ryan, *supra* note 74, at 487; Lazarus, *supra* note 77, at 712.

79. Lazarus, *supra* note 77, at 712.

80. *See* Ryan, *supra* note 74, at 488 (illustrating the vulnerabilities of the public trust doctrine to shifting ideas of what constitutes beneficial uses).

81. Joseph L. Sax, *The Limits of Private Rights in Public Waters*, 19 ENVTL. L. 473, 476 (1989) (stating that the public's claim to water depends on uses considered to be within the public's interests).

82. *Id.* at 478.

83. Ryan, *supra* note 74, at 488; *see, e.g.*, Empire Water & Power Co. v. Cascade Town Co., 205 F. 123, 125, 128–29 (8th Cir. 1913) (reasoning that the instream flow that produced a 30-foot waterfall with enough spray to turn a canyon three-quarters of a mile long into a lush haven of native vegetation was not a "beneficial use" protected under contemporary prior appropriation law though common law riparianism would have protected the natural flow of the falls).

84. WOOD, *supra* note 9, at 144.

85. *Id.* at 146.

86. Ryan, *supra* note 74, at 484 ("The most prominent concern is the relationship between the doctrine and theoretical constructions of property law.").

87. *Id.*; Nancie G. Marzulla, *State Private Property Rights Initiatives as a Response to "Envrionmental Takings*,*"* 46 S.C. L. REV. 613, 613–15 (1995).

88. Ryan, *supra* note 74.

the interconnectedness of humans and non-humans in favor of individual autonomy.[89] Lazarus was also of the opinion that a better framework for structuring our relationship with nature would not be dominated by property and ownership, nor by the concept of public interest, which he found too vague.[90] Rather, Lazarus's framework would include a formulation of competing values, based on private expectations in rights of use and subject to communal constraints.[91]

C. Room for Improvement

Critiques of the public trust doctrine have also suggested strategies for its betterment.[92] If some see judicial oversight to be a problem because judges are unaccountable, then channeling environmental decisions through the executive—assuming it has more expertise and is accountable to the public—is preferable.[93] However, our current institutional structure does not guarantee the protection of environmental interests.[94] Even if it did, when the executive is not pro-environment, then the judiciary is the branch most shielded from short-term majoritarian interests.[95] Thus, the judiciary is better placed to protect trust resources.[96] Governance of the environment seems to necessitate the contribution of all branches of government, which in turn needs structural change to govern more responsibly.

It also appears that "public property," as understood under the public trust doctrine, does not comprise sufficient environmental resources to effectively preserve nature for future generations.[97] Michael Blumm and Aurora Moses affirm that, so far, the doctrine has served as an antimonopoly doctrine, since it has protected against states' attempts to create private monopolies over natural resources.[98] It has undoubtedly had beneficial impacts on resource protection in past decades, but the rate of ecosystem degradation and species extinction prove that environmental law and the public trust doctrine are unsuccessful.[99] The public trust doctrine's

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89. *Id*. at 484.

90. Lazarus, *supra* note 77, at 703.

91. *Id.* at 706–10; Ryan, *supra* note 74, at 489.

92. Ryan, *supra* note 74, at 488.

93. *See id.* at 492–93 (expanding on competing ideas regarding whether the judiciary or executive is best equipped to handle natural resources concerns).

94. *Id.* at 493.

95. *Id.*

96. *Id.* at 492.

97. *Id.* at 488, 490 (lamenting that the public trust doctrine remains a formidable theme of natural resource law only in a rhetorical manner because "it has not made significant progress toward protecting natural resources unrelated to water").

98. Blumm & Moses, *supra* note 50, at 6.

99. Wildlife has declined by 58% since 1970 worldwide due to the excessive demand of humanity on planetary resources. WORLD WILDLIFE FUND, LIVING PLANET REPORT 2016: RISK AND

roots in liberal property law limit its scope.[100] However, modern use of the doctrine—or of another trusteeship theory—does not require a "backwards-looking appeal to a property law rationale."[101] As Erin Ryan eloquently put it, "the fact that the public trust [doctrine] is *in* the common law hardly requires that it be *of* the common law."[102] Because as long as the doctrine relies on concepts of property to preserve environmental resources, it does not reconsider the assumptions on which the law and the economy are based, which is necessary to find a sustainable approach to managing our planet.[103]

What are the necessary changes? Lazarus notes: "[B]etter solutions, suggested by critics of the judicial function in environmental matters, may reside in new modes of administrative decisionmaking that are less dependent on effective judicial oversight of agency action to ensure full representation of competing considerations."[104] This is exactly what Professors Wood and Bosselmann suggest in their work.[105]

D. Trusteeship 2.0

To improve the effectiveness of environmental law, Wood suggests a nature trust that involves judicial oversight and that rests on the idea that legislatures and agencies respect precise duties.[106] These duties are not clearly articulated under the public trust doctrine, which lacks "the precision necessary to apply it to a broad realm of practical conflicts arising before modern legislatures and agencies."[107] Wood endeavors to explain and describe substantive and procedural duties governments must carry out as trustees of public resources.[108] She identifies the six following substantive duties:

RESILIENCE IN A NEW ERA 6 (2016). A 2015 study has shown that the Earth has started its sixth mass animal extinction. Gerardo Ceballos et al., *Accelerated Modern Human-Induced Species Losses: Entering the Sixth Mass Extinction*, 1 SCI. ADVANCES, June 9, 2015, at 4. Forests are also under threat. The forest cover has declined by 30%, and the rest is either degraded (20%) or fragmented, leaving only 15% of forests intact. *Forests*, WORLD RES. INST., https://www.wri.org/our-work/topics/forests (last visited Apr. 14, 2019).

100. Terry Frazier, *The Green Alternative to Classical Liberal Property Theory*, 20 VT. L. REV. 299, 300–01 (1995) ("Classical liberalism lacks the balance that should produce the tension between individual autonomy and the interests of . . . communities.").

101. Ryan, *supra* note 74, at 496.

102. *Id.*

103. Lazarus, *supra* note 77, at 633.

104. *Id.* at 712–13.

105. WOOD, *supra* note 9, at 167, 193; BOSSELMANN, *supra* note 10, at 116.

106. WOOD, *supra* note 9, at 167, 240.

107. *Id.* at 337.

108. MICHAEL C. BLUMM & MARY CHRISTINA WOOD, THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW 7–8 (2d ed. 2015); WOOD, *supra* note 9, at 337.

> (1) [P]rotect the *res*; (2) conserve the natural inheritance of future generations (the duty against waste); (3) maximize the societal value of natural resources; (4) restore the trust *res* where it has been damaged; (5) recover natural resource damages from third parties that have injured public trust assets; and (6) refrain from alienating (that is, privatizing) the trust except in limited circumstances.[109]

She then identifies five procedural duties that both legislators and their agents should apply:

> (1) [M]aintain uncompromised loyalty to the beneficiaries; (2) adequately supervise agents; (3) exercise good faith and reasonable skill in managing the assets; (4) use caution in managing the assets; and (5) furnish information to the beneficiaries regarding trust management and asset health.[110]

In her framework, citizens are positioned as ethical actors who owe a duty to their community and the next generation to protect nature,[111] as she believes "only constant citizen vigilance will keep government corruption at bay."[112] Statutory law serves as a guide to structure and order the trust obligation for the executive.[113] The corpus of the trust is broader than that of the public trust doctrine and includes all ecosystems.[114] Consequently, rights of ownership should balance public and private rights, so that private property is subject to some communal constraints that are justified by the goal of ecological protection.[115] The judiciary still enforces fiduciary obligations towards nature and is therefore a cornerstone of the trust.[116] Wood also believes that the Earth's environment should be part of a planetary trust.[117] Under a planetary trust, nation-states would all stand as sovereign trustees of natural resources and be considered co-tenants of this planetary trust.[118] The trust would encompass resources of planetary concern such as the oceans and the atmosphere.[119] She specifies that "[t]here remains . . . the task of extrapolating general trust principles into a

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109. WOOD, *supra* note 9, at 167.
110. *Id.* at 189.
111. *Id.* at 275–76.
112. *Id.* at 141.
113. *Id.*
114. *Id.* at 143, 149.
115. *Id.* at 311.
116. *Id.* at 230–35.
117. *Id.* at 337–38.
118. *Id.*
119. *Id.*

more precise logical construct that can organize and enforce ecological duties among the nation-states."[120]

That is what Bosselmann achieved two years later when he published *Earth Governance: Trusteeship of the Global Commons*, in which he elaborates a trusteeship model of governance to manage the Earth common corpus of the trust.[121] According to Bosselmann, a global-governance model is necessary to manage the environment because environmental issues know no boundaries, and ecosystems are diffuse and interconnected, regardless of states' sovereignty.[122] Hence, this global problem cannot be solved at the state level, but rather must be solved at the international level.[123] Private property ownership of natural resources such as timber, minerals, or water leads private or corporate citizens to seek the enhancement of their personal benefits—at the expense of global well-being and long-term environmental health.[124] Private ownership is also a serious impediment to the global health of resources, their rates of renewal, and the fair and responsible consumption (in terms of management and conservation) of the Earth's ecosystems.[125] Indeed, science has already established thresholds that every Earth system (such as water, minerals, and carbon) should not reach, enabling environmental management that would allow us to calculate what can be exploited and what would need to be protected.[126] This knowledge could be integrated in the governance of the Earth's commons, which is currently unattainable in a global system where every state decides how to manage their resources on sovereign land without considering the environment as a whole.[127] In Bosselmann's vision of the trusteeship, the different components of the environment would be considered as commons of all citizens, so that no one could invoke a private right to exploit.[128]

Bosselmann's conception, focusing on global governance, nevertheless considers national issues regarding the role of the state and the definition of commons.[129] For example, he argues that property rights would still exist if

120. *Id.* at 209.

121. BOSSELMANN, *supra* note 10, at 29, 53.

122. *Id.* at 155–56.

123. *Id.* at 4–15 (explaining that globalization, economic crises, and liberalizing free trade agreements have weakened national in favor of international policy).

124. *Id.* at 52.

125. *See id.* at 64, 66 ("Indeed, many goods that were considered inexhaustible have begun to be threatened and to be subtractable, that is, depletable.").

126. Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, SCIENCE, Feb. 13, 2015, at 1259855-1.

127. *See* BOSSELMANN, *supra* note 10, at 155 ("[W]e operate in a 'cramped and mundane vista' wherein the earth in all its ecological wholeness has been artificially divided into a system of political territories.").

128. *Id.* at 53, 59.

129. *Id.* at 50, 57–61.

states were trustees, but landowners would have to act as stewards to protect resources on their land for the benefit of all citizens.[130] "Internationally, both states and non-state actors such as large multinationals would likewise become stewards, a role which would define their relationship with nature."[131]

At the international level, environmental resources located beyond states' boundaries—including the atmosphere, the biosphere, outer space, the high seas, and Antarctica—would also be included in the "commons" and be subject to the Earth's trusteeship.[132] The beneficiaries of the trust would be all living beings—including but not limited to humans—which would acknowledge their interconnectedness and allow for a holistic approach.[133] Such global governance would necessitate the contribution of all levels of governance—global, regional, national, and local.[134] These levels of governance would cooperate to assess, protect, and consume the environment with the best local practices and knowledge of local resources, and would commit to protect and share resources on a global level.[135] At the global level, Bosselmann proposes the creation of an international legal entity, the World Environment Organization (WEO), which would be responsible for protecting the global commons.[136] Such a global institution would not replace states or compete with them but would rather be complementary to them.[137] States would act as environmental trustees to protect resources on their sovereign land and would have to cooperate to protect the Earth's commons.[138] According to Bosselmann, the U.N. would provide fertile normative ground to act as trustee to protect the planet's ecological integrity.[139] The U.N. has experience acting as a trustee (including for the International Trusteeship System, the World Trade Organization, and the World Health Organization) and understands the importance of intergenerational equity and the sustainable development nexus.[140] The U.N. would mandate or create the WEO, but the WEO would function independently and with the assent of states in order to put the

130. *Id.* at 125.

131. *Id.*

132. *Id.* at 248–49, 260.

133. *Id.* at 152.

134. *Id.* at 31; *see also id.* at 35 (explaining that humanity cannot solve global problems without local solutions nor can humanity solve local problems without global awareness—interconnections are the key).

135. *Id.*

136. *See id.* at 257–67 (working with the proposed WEO as a model and discussing its creation, authority, legitimacy, funding, and governance).

137. *Id.* at 50.

138. *Cf. id.* at 200 (expressing concern that efforts by individual states will be ineffective unless states work together to implement global solutions to environmental problems).

139. *Id.* at 199.

140. *Id.* at 198–99.

global interest over sectoral or national interests.[141] Its functions would include "monitoring and promoting international environmental agreements, such as the proposed Draft People's Sustainability Treaty."[142] International law created current institutions to address environmental issues, which are piecemeal and negotiated by states.[143] According to Bosselmann, these institutions equal "the lowest common denominator" because "[t]he consensus-based system gives each country a veto."[144] Therefore, what he envisages is a governance framework that necessitates states to rethink their understanding of sovereignty.[145]

In their capacity as trustees, states would include other types of wealth and values in their management of public affairs,[146] which is currently focused on prosperity and economic growth, and which neglects ecological aspects.[147] Bosselmann argues that state sovereignty is already fundamentally a trust relationship between governments and their citizens.[148] If governments are trustees of their territories, and thus part of the global environment, then "they are, together, responsible for the global environment."[149] In order to protect the global commons adequately, states should act as agents of humanity as a whole, consider the public to be affected by their decisions, and "incorporate global interests into the formulation of national interests."[150] But how can we be sure that individual states will fulfill their fiduciary obligations to the global commons?

At the moment, there are already many countries that recognize their government has a special responsibility to protect the environment.[151] The constitutions of about 100 countries contain references to environmental protection, and half of these include environmental rights.[152] But the current state of the environment and global warming proves that these protections

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141. *Id.* at 259.

142. *Id.* at 239.

143. *Id.* at 245–46.

144. *Id.* at 246.

145. *See id.* at 246, 267 (explaining that his trusteeship framework will require states to shift their focus from self-interested competition to the common good of the Earth).

146. *See id.* at 156 (employing a broad concept of wealth, which includes ecological, social, democratic, and moral value).

147. *Id.* at 174–75.

148. *Id.* at 173.

149. *Id.* at 173, 196.

150. *Id.* at 245; *see also id.* at 175–76 (arguing that legitimate state sovereignty depends on promoting the interests of humanity broadly and not just those of the sovereign's citizens); Benvenisti, *supra* note 29, at 306 ("Why should a government be regarded as the trustee only of its people rather than of the whole of humanity?").

151. *See* BOSSELMANN, *supra* note 10, at 179 (identifying countries in the E.U. and South America that contain environmental provisions and rights in their constitutions).

152. *Id.*

are ineffective.[153] "What remains is for all these states to pragmatically realize their role as environmental trustee. Like a constitutional obligation, this needs to be a non-derogable function of government, to the extent that deviating from trusteeship would trigger the courts' jurisdiction to invoke trusteeship to halt contrary policy."[154] Like Wood, Bosselmann suggests that this can only happen if civil society and its citizens ask for the protection of our shared environment on which our future depends.[155] Bosselmann and Wood argue that to make citizens feel invested in protecting the environment and in holding their governments accountable, they have to be imbued with their role as stewards.[156] This includes realizing their "common 'ownership' of the commons is a kind of property holding that requires sustainability."[157]

This seems ambitious and is maybe idealistic, as it requires serious changes to our way of life and how we understand economic systems.[158] However, this view of citizenship is promising as it would allow for a necessary paradigm shift in our relationship with the Earth and would encourage us to recognize the interconnectedness of all species.[159] Furthermore, a trusteeship is coherent with other mechanisms already suggested to improve environmental law and could serve as an overarching framework to implement these mechanisms.[160] Along with the increased duties and responsibilities of the state towards the environment, a trusteeship provides an ethical foundation for public action that acknowledges the responsibility of humans towards nature and the Earth, as Aldo Leopold identified in 1949.[161] It is also consistent with Geoffrey Garver's suggestions, in his article *The Rule of Ecological Law*, that ecological law must be constrained by ecological considerations, must

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153. *See id.* at 1 (explaining that global climate change and ecological crises make plain the weakness of international law and governance).

154. *Id.* at 179.

155. *Id.* at 192–93.

156. *Id.* at 186–94; *cf.* WOOD, *supra* note 9, at 275–76 (noting the disconnect between environmental policy and individual consumerism and explaining that implementing environmental trusteeship necessitates citizen participation in the role of trustee).

157. BOSSELMANN, *supra* note 10, at 194.

158. Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316, 325–30 (2013).

159. *Id*. (proposing ten principles to create such a paradigm shift).

160. Sand, *supra* note 29, at 48.

161. *See* ALDO LEOPOLD, A SAND COUNTY ALMANAC 224–25 (Oxford Univ. Press 1966) ("[Q]uit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."); *see also* Peter G. Brown, *Are There Any Natural Resources?*, *in* WATER ETHICS: FOUNDATIONAL READINGS FOR STUDENTS AND PROFESSIONALS 203, 218 (Jeremy J. Schmidt & Peter G. Brown eds., 2010) ("The hallmark of our membership in the commonwealth of life should be the health of the ecosphere: what Aldo Leopold called 'land.'"); BOSSELMANN, *supra* note 10, at 133 (crediting Aldo Leopold as one of the first advocates for stewardship ethics).

integrate other disciplines in a systemic ways, and must be adaptive to science developing knowledge in relation to ecosystems.[162] Indeed, the government's duty under a trusteeship would mean that it would have to consider relevant data and science on matters relating to the environment in order to fully assess the impacts of its actions on ecosystems.[163] A trusteeship would also be coherent with the obligation to recognize rights to nature in a constitution because there would be a body (the trustee) able to enforce these rights.[164] In addition, increasing the government's duties and correlative recourses would lead to a stronger rule of law.[165] This would include more effective enforcement of established laws and greater accountability of governments, which has been correlated to superior environmental performance.[166] "While no legal approach offers a panacea,"[167] the trusteeship has the advantage of bringing together many legal solutions that have been proffered to solve the crisis, while giving effect to an ethic of responsibility and a reverence towards nature.[168] It is also compatible with a range of legal tools that favor individual initiatives to implement better technology and produce less waste,[169] while also implementing global, state, and local duties of environmental protection and sanctions for breaches of the law.

In my view, before we can implement a trusteeship approach at the national level, we must resolve two major theoretical and practical challenges. The first challenge is how do we move from a legal system where private property is considered an absolute right to one which recognizes a broader set of rights, uses, and obligations of owners to act as stewards to manage environmental resources? The second challenge relates to the scope and content of duties of protection at the domestic level. Wood has enumerated a number of substantive and procedural duties that states would have to respect.[170] But what would these duties imply for the executive on a day-to-day basis? The rest of this Essay focuses on this second challenge. Here, I endeavor to give concrete examples of

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162. Garver, *supra* note 158.

163. *Id.* at 319.

164. DAVID R. BOYD, THE RIGHTS OF NATURE: A LEGAL REVOLUTION THAT COULD SAVE THE WORLD 173–74 (2017).

165. *Id.*

166. Jessica Scott, *From Environmental Rights to Environmental Rule of Law: A Proposal for Better Environmental Outcomes*, 6 MICH. J. ENVTL. ADMIN. L. 203, 209, 230–37 (2016).

167. WOOD, *supra* note 9.

168. *See supra* notes 27–29, 161, 164–66 and accompanying text (reviewing the numerous legal solutions that trusteeship embraces and the value these approaches place on nature).

169. *See, e.g.*, WOOD, *supra* note 9, at 288–96 (discussing strategies to end fossil fuel consumption, eliminate waste, and other similar concerns within the trusteeship framework).

170. *See supra* text accompanying notes 109–10 (quoting Wood's list of the government's six substantive and five procedural duties as trustee).

environmental cases where courts have applied analogous duties in the Canadian context.

II. THE CANADIAN CASE LAW: JUDICIAL REVIEW OF ENVIRONMENTAL MATTERS

A. The Canadian Context and the Role of Public Law

On few occasions, Canadian courts have recognized the role of governments as trustees[171] or demonstrated an openness to recognize it.[172] For example, in the *Scarborough* case of 1979, the Ontario Superior Court recognized that the Borough was a trustee of the environment and was therefore entitled to claim damages for the destruction of trees on a road for the benefit of local citizens.[173] In a 2004 case, the Supreme Court of Canada acknowledged that Canadian common law had common roots with that of the U.S.[174] Therefore, there was "no legal barrier to the Crown suing for compensation as well as injunctive relief in a proper case on account of public nuisance, or negligence causing environmental damage to public lands, and perhaps other torts such as trespass."[175] In this case, British Colombia claimed damages for the loss of trees caused by a forest fire, for which Canadian Forest Products was held responsible.[176] However, the Supreme Court did not grant the damages claimed on this basis, as the claim was not fully argued in the first instance.[177] The Court mentioned that, if the Crown could sue for compensation for damages caused to the environment on public land, there are clearly important and novel policy questions raised by such actions.[178] These include: (1) the Crown's potential liability for *inactivity* in the face of threats to the environment; (2) the existence or non-existence of enforceable fiduciary duties owed to the public by the Crown in that regard; (3) the limits to the role, function, and remedies available to governments taking action on account of activity harmful to public enjoyment of public resources; and (4) the specter of

171. Scarborough (Borough) v. R.E.F. Homes Ltd., [1979] O.J. No. 78, para. 5 (Can. Ont. S.C.) (QL), *cited with approval in* 114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), 2001 SCC 40, para. 27 (Can.).

172. Colombia v. Canadian Forest Products Ltd., 2004 SCC 38, paras. 9, 79 (Can.); *see* Comeau's Sea Foods Ltd. v. Canada (Minister of Fisheries and Oceans), [1997] 1 S.C.R. 12, 25 (Can.) (demonstrating the Court's openness to considering the government as trustee in the context of fisheries); Saulnier v. Royal Bank of Canada, 2008 SCC 58, para. 14 (Can.) (holding that the Minister has a duty to manage fisheries as a common resource).

173. *Scarborough*, [1979] O.J. No. 78, paras. 5, 6.

174. *Canadian Forest Products Ltd.*, 2004 SCC 38, para. 81.

175. *Id.*

176. *Id.* para. 2.

177. *Id.* para. 82.

178. *Id.*

imposing on private interests an indeterminate liability for an indeterminate amount of money for ecological or environmental damage.[179]

These judicial developments did not impose a clear fiduciary obligation on governments to protect the environment, such as the public trust doctrine, nor did they suggest the implementation of a model of governance based on the idea of trusteeship.[180] Nevertheless, Canadian administrative and constitutional law does use concepts similar to those of trusteeship, such as accountability, acting in the best interest of citizens, and loyalty. In Canada, the executive branch of government is accountable to the legislative assembly (Parliament), so that the Executive must have the confidence of the legislative branch in order to stay in office.[181] If the Parliament withdraws its confidence from the government, then the cabinet must resign or advise the Governor General to call an election to form a new House of Commons.[182] Individually, ministers are also responsible for their actions.[183] They have the obligation to resign if their actions and omissions, or those of their ministries, are considered to be contrary to the public interest, the execution of the law, and an abuse of Parliament's trust.[184] As a representative assembly, the role of the Parliament is to ensure the transparency and justification of the acts of the Executive.[185] In addition to Parliament, other mechanisms and bodies were implemented to hold the government to account, such as judicial review, public inquiries, and the Auditor General.[186]

The Canadian government also has the obligation to act in the *public interest*, which refers generally to the common interests of the community.[187] The government's actions must be taken in the best interest of citizens, who are the beneficiaries of such actions.[188] According to public

179. *Id.*

180. Barbara von Tigerstrom, *The Public Trust Doctrine in Canada*, 7 J. ENVTL. L. PRACT. 379, 387–88 (1997) (describing limited developments of the public trust doctrine in Canada).

181. HOGG, *supra* note 23, at 9–2.

182. *Id.* at 9–2 to 9–3.

183. PIERRE ISSALYS & DENIS LEMIEUX, L'ACTION GOUVERNEMENTALE: PRECIS DE DROIT DES INSTITUTIONS ADMINISTRATIVES 343 (3d ed. 2009) (stating the responsibilities and obligations imposed on ministers).

184. *Id.*

185. *See* HOGG, *supra* note 23, at 9–2 (explaining that the Executive must continue to receive the confidence of Parliament to remain in office; in this way, Parliament holds the Executive responsible).

186. Carol Harlow, *Accountability and Constitutional Law*, *in* THE OXFORD HANDBOOK OF PUBLIC ACCOUNTABILITY 195, 203–04 (Mark Bovens, Robert E. Goodin & Thomas Schillemans eds., 2014); *see also* RICHARD MULGAN, HOLDING POWER TO ACCOUNT: ACCOUNTABILITY IN MODERN DEMOCRACIES 31 (2003) (detailing the different types of institutional accountability mechanisms).

187. *See generally* EVAN FOX-DECENT, SOVEREIGNTY'S PROMISE: THE STATE AS FIDUCIARY 29 (2011) [hereinafter SOVEREIGNTY'S PROMISE] (explaining the overarching fiduciary relationship between government and its citizens).

188. *Id.*

law, the government also has to act fairly and reasonably towards citizens.[189] Pursuant to their duty of procedural fairness, when taking any individual measure, public decision makers have to provide a fair hearing to individuals who are affected by their decisions and decide impartially.[190] These obligations entail hearing the arguments of individuals either orally or in writing, giving notice of the hearing, and allowing an individual the opportunity to respond to those facts and arguments that might ultimately lead to a decision.[191] In some cases (depending on the context) the duty of procedural fairness also compels a decision maker to give reasons for their decision.[192] Likewise, the duty to act reasonably refers to the way in which an agency exercises its statutory powers.[193] In *Roncarelli v. Duplessis*, Justice Rand established that any legal power must be exercised non-arbitrarily, taking into account not only the Legislature's intention in adopting a statute, but also its purpose and objectives.[194]

Professor Evan Fox-Decent advances the position that these obligations (procedural fairness and reasonableness) are the equivalent of the duty of loyalty in public law.[195] He argues that the duty of fairness owed by a government to its people is not a "free-floating moral principle," but rather one that is justified by an overarching fiduciary relationship between the state and each person subject to its authority.[196] This fiduciary relationship arises from sovereignty, which gives the state attributes such as the power to legislate, administer, and adjudicate.[197] These attributes, along with the power of the state to use coercive force to maintain legal order, point to a "non-consensual relationship of proclaimed authority between state and subject, notwithstanding democratic channels (in democratic states) through which the people's voice may be heard."[198] Further, the fiduciary nature of the relationship means that it is also legal in nature, and thus it generates legal duties for the state.[199] For Fox-Decent, the obligations of procedural fairness and reasonableness imposed on governments in Canada are

189. *Id.* at 25.

190. *Id.*; Evan Fox-Decent & Alexander Pless, *The Charter and Administrative Law Part I: Procedural Fairness*, *in* ADMINISTRATIVE LAW IN CONTEXT 238 (Colleen M Flood & Lorne Sossin eds., 3d ed. 2018).

191. Fox-Decent & Pless, *supra* note 190.

192. *Id.*

193. *Id.*

194. Roncarelli v. Duplessis, [1959] S.C.R. 121, 140 (Can.); SOVEREIGNTY'S PROMISE, *supra* note 187, at 25.

195. Evan Fox-Decent, *The Fiduciary Nature of State Legal Authority*, 31 QUEENS L.J. 259, 265 (2005) [hereinafter *Fiduciary Nature*].

196. SOVEREIGNTY'S PROMISE, *supra* note 187, at 29, 177.

197. *Fiduciary Nature*, *supra* note 195, at 286.

198. SOVEREIGNTY'S PROMISE, *supra* note 187.

199. *See Fiduciary Nature*, *supra* note 195, at 290 (arguing that legal authority flows from the state's fiduciary obligations).

therefore a public law translation of the fiduciary duty of loyalty in private law.[200]

However, the way the government has traditionally applied these obligations has proven to be detrimental to ecosystems.[201] Economic growth has often been interpreted as being synonymous with public interest, even though nature's resources are finite and cannot support constant growth.[202] Imposing stricter fiduciary duties in accordance with the trusteeship theory could contribute to the transition from an anthropocentric to a more holistic legal and governance system.[203] It draws on concepts that already exist in Canadian public law and takes them further by imposing a responsibility to protect nature and to identify environmental resources as common property.[204] Also, the trusteeship theory internalizes an ethic of mutually enhancing human-Earth relationship.[205] However, the question of determining what it would mean for an executive to apply fiduciary duties on a daily basis remains, at this stage, unanswered.

B. The Contribution of Case Law

The first sections of this Essay set out the known elements of the fiduciary duty of a trustee[206] and how to articulate this duty in a public setting.[207] However, it is challenging to determine how the adoption of fiduciary duties in this context would affect an executive's activities on a daily basis. This is particularly challenging in the Canadian context, where there has been no application of a public trust doctrine of any sort.[208] Thus, in an attempt to make the trusteeship theory more appealing for courts or legislatures to apply in practice, this Part of the Essay sets out some case examples where similar duties have been applied in a Canadian context. Studying the Canadian case law of judicial review in environmental law is a useful means to achieve this task, as courts often impose obligations in this context that can, in many cases, resemble fiduciary duties.[209]

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200. *Id.* at 267–68.

201. Peter A. Victor, *Living Well: Explorations into the End of Growth*, 5 MINDING NATURE 24, 25 (2012).

202. *Id.*

203. Garver, *supra* note 158, at 325.

204. *Id.*

205. *Id.*

206. *See supra* Part I.A (establishing the foundational principles of trusteeship theory).

207. *See supra* Part I.D (identifying six substantive duties governments must carry out as trustees of public resources).

208. von Tigerstrom, *supra* note 180, at 380.

209. *See supra* Part II.A (recounting instances where Canadian courts have imposed fiduciary-type obligations).

When performing judicial review, courts review the legality of the government's action, therefore ensuring respect of the rule of law.[210] In Canada, the Court verifies whether the government acted within its authority and in a fair and reasonable manner.[211] The extent of the legal authority of a given administrative body on a specific subject matter is determined through the "standard of review analysis,"[212] which will ultimately determine the strictness of review to apply to an administrative decision.[213] There are two standards of review: reasonableness (deferential) and correctness (not deferential).[214] An administrative body must exercise statutory powers that, at the very least, rely on the decision maker's reasonable interpretation of the statute.[215] This means that the decision reached should be justified, transparent, and intelligible within the decision-making process and "fall[] within a range of possible, acceptable outcomes which are defensible in respect of the facts and law."[216] When defining what is reasonable, the Court will study the legislative and factual context, the nature and expertise of the decision maker, and the nature of the question.[217] In carrying out this review, courts often impose duties on the State with regard to the environment.[218]

For the purpose of this Essay, I have selected Canadian Supreme Court cases reviewing environmental matters and two cases from Alberta and Quebec's appellate courts, as these decisions are made in two different political climates.[219] These cases illustrate how the work of judges can assist in defining the obligations of provincial and federal governments towards the environment when applying concepts—such as accountability, access to information, reasonableness, and fairness—in ways analogous to fiduciary duties and the duty of loyalty. Analyzing the application of these concepts in environmental law can also help to determine how to apply

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210. *Fiduciary Nature*, *supra* note 195, at 268.
211. Dunsmuir v. New Brunswick, 2008 SCC 9, paras. 29, 65 (Can.).
212. *Id.* para 29.
213. *Id.* para. 32.
214. *Id.*
215. *Id.* para. 141.
216. *Id.* para. 47.
217. *Id*. paras. 51–55.
218. *Id*. paras. 47–50.
219. In Alberta, the right-wing Conservative Party of the province has been in power from 1976 to 2017 and lost the elections in 2017 to the center-left New Democratic Party. *See* Evan Annett & Jeremy Agius, *The PC Dynasty Falls: Understanding Alberta's History of One-Party Rule*, GLOBE & MAIL (May 5, 2015), https://www.theglobeandmail.com/news/alberta/albertas-political-dynasties/article24255480/. In Quebec, the more centrist parties, Liberals and Parti Québécois, have alternatively been in power from 1970 to 2018. *Id.*; *see also Quebec Votes 2014*, CBC NEWS (Apr. 8, 2014), http://www.cbc.ca/elections/quebecvotes2014/. Note that a broader compilation of case law that encompasses decisions rendered in environmental judicial review after 1970 to clarify the application, content, and scope of these duties is the subject of future work by the author.

these fiduciary concepts in a more stringent and structured way in a future trusteeship framework.

1. The Supreme Court of Canada

There are two judicial review cases of the Supreme Court of Canada that raise the issue of state obligations towards the environment. In *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, landscaping and lawn care companies were charged with having used pesticides in violation of By-law 270, adopted by the Town.[220] The Town has the power to adopt by-laws to "secure peace, order, good government, health and general welfare in the territory of the municipality" under section 410(1) of the Cities and Towns Act.[221] The pesticides used by the companies were nevertheless allowed under federal law.[222] The landscaping companies brought a motion for declaratory judgment asking the Superior Court to declare the by-law "inoperative and *ultra vires* the Town's authority."[223] The question before the court was thus to determine whether the Town had the legal authority to enact By-Law 270 that regulated and restricted pesticide use.[224] Both the Superior Court and the Court of Appeal found that the by-law fell within the scope of the Town's powers.[225]

Before the Supreme Court, the landscaping companies raised various arguments against the by-law.[226] They argued that the by-law did not delegate to municipalities a specific power to regulate the use of pesticides.[227] They further argued that even if there was legislative authority, the by-law would be discriminatory as it would create impermissible distinctions that affected their commercial activity,[228] in this case, the distinction between essential and non-essential uses of pesticides.[229] Justice L'Heureux-Dubé, writing for the Court, concluded that the general provision of section 410(1) authorized the Town to regulate the use of pesticides to improve the health of its citizens.[230] As Justice LeBel explained, absent a specific grant of power, a general welfare provision like section 410(1) must be given some meaning.[231] The existing power must be

220. 114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), 2001 SCC 40, para. 6 (Can.).
221. *Id.* para. 23.
222. *Id.* para. 5.
223. *Id.* para. 7.
224. *Id.* paras. 2, 5–8; Cities and Towns Act, R.S.Q., c C-19, s. 410 (Can.) (repealed 2005).
225. *114957 Canada Ltée*, 2001 SCC 40, para. 8.
226. *Id*. paras. 25, 28.
227. *Id*. para. 25.
228. *Id*. para. 28.
229. *Id*. para. 27.
230. *Id.* paras. 22–29.
231. *Id*. para. 53 (LeBel, J., concurring).

exercised for issues that are related to the interest of the community and fall within the territory of the local government.[232] Thus, the Court held that the by-law concerned the use and protection of the local environment within the community and the realm of local government activity and was therefore valid.[233] Finally, the Court concluded that discrimination here was a necessary consequence of exercising the power delegated by the province to improve the health of the Town's citizens.[234]

In terms of fiduciary obligations, this case is helpful to understand the extent of the duty of loyalty that requires legislatures and governments to act in the best interest of their citizens.[235] It tells us that, when the provincial legislature delegates powers to municipalities, these powers must be interpreted broadly when it comes to the environment.[236] As "[l]aw-making and implementation are often best achieved at a level of government that is not only effective, but also closest to the citizens affected and thus most responsive to their needs, to local distinctiveness, and to population diversity."[237] The duty to act personally, adapted in a public setting, would therefore allow such delegation when it is the favorable means of managing local issues.[238]

The other case from the Supreme Court of Canada that is relevant to discuss is *Imperial Oil Ltd. v. Quebec (Minister of the Environment)*.[239] In this case, Imperial Oil operated a petroleum products depot from 1920 to 1973.[240] In the 1980s, a subsequent purchaser wanted to build a residential complex on the land, but discovered hydrocarbons in the soil.[241] The purchaser consulted the Ministry of the Environment, who required further studies and approved the decontamination method.[242] A few years later, the owners discovered other signs of hydrocarbons in the soil.[243] The owners filed three actions in court against the seller, against the City of Lévis (which had issued the building permits), and finally against the Ministry, alleging that the Ministry had been negligent in supervising and approving

232. *Id.*
233. *Id*. paras. 27, 43 (majority opinion).
234. *Id.* para. 29.
235. *See id.* para. 27 (viewing the municipalities' actions as an attempt to fulfill its role as trustee for the environment).
236. *Id.* para. 3.
237. *Id.*
238. *Id*.
239. Imperial Oil Ltd. v. Quebec (Minister of the Env't.), 2003 SCC 58, para. 8 (Can.).
240. *Id.* para. 3.
241. *Id.* paras. 3–4.
242. *Id.* para. 4.
243. *Id.* para. 5.

the decontamination work.[244] In trying to find solutions that would satisfy the owners and the public, the city initiated discussions with the Ministry.[245]

The Minister issued an order under section 31.42 of the Environment Quality Act (EQA), that required Imperial Oil, as the former owner and operator of the site, to have a soil characterization study done by an independent expert at its own expense and to submit a report.[246] Imperial Oil refused to do the characterization study and exercised its right of appeal to the Quebec Administrative Tribunal, provided for by the EQA.[247] Imperial Oil argued that the Minister's decisions and actions, including the order, had lost any appearance of impartiality because of his involvement in the failed decontamination and the potential legal and financial consequences of that involvement for him.[248] The Administrative Tribunal found that the legislation created overlapping functions for the Minister—to decontaminate the land and to issue orders of characterization and decontamination—that were exceptions to the rule of impartiality, and affirmed the Minister's order.[249] The Superior Court set aside the Tribunal's decision and the Minister's order finding that the Minister had a conflict of interest.[250] The Court of Appeal set aside the Superior Court's judgment and dismissed the application for judicial review, on the basis that the Minister alone could perform the functions and exercise the powers provided by the Act and had to ensure the obligations imposed upon the polluter were met.[251] This obligation created a state of necessity that justified an exception to the principle of impartiality applied to administrative decision makers.[252]

The Supreme Court of Canada affirmed this decision for different reasons.[253] After reviewing the statutory framework and the general rules of procedural fairness to determine whether they were breached by the order,[254] the Court emphasized that safeguarding the environment is a growing concern for society and legislatures.[255] The Court noted that there is an "emerging sense of inter-generational solidarity and acknowledgement of an environmental debt to humanity and to the world of tomorrow."[256]

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244. *Id.*
245. *Id.* paras. 5–6.
246. *Id.* para. 6; *see also* Environment Quality Act, R.S.Q., c. Q-2, s. 31.42 (Can.) (providing the Minister the statutory authority to require Imperial Oil to conduct a soil characterization study).
247. *Imperial Oil Ltd.*, 2003 SCC 58, para. 7.
248. *Id.* paras. 8, 30.
249. *Id.* para. 9.
250. *Id.* para. 11.
251. *Id.* para. 13.
252. *Id.*
253. *Id.* para. 39.
254. *Id.*
255. *Id.* para. 19.
256. *Id.*

The Court also explained that the duty of procedural fairness necessarily varies based on a decision maker's activities, functions, and the legislature's intent.[257] In this way, the extent of the duties imposed on the administrative decision maker will not necessarily be the same as those of an administrative tribunal, whose adjudicative functions are similar to those of a court.[258] The Court then examined the EQA to determine the nature and scope of procedural fairness rules to apply in the case.[259] The Court explained that "[t]he role assigned to the Minister by the legislation sometimes inevitably places the Minister in a conflict with those subject to the law he administers, in the course of the implementation of environmental legislation."[260]

According to the Court, the Minister had the obligation to carefully and attentively examine the observations submitted to him in order to make a decision, but this obligation was not equivalent to the impartiality that is required of a judge.[261] The Court recalled that "[t]he Minister has the responsibility of protecting the public interest in the environment, and must make his decisions in consideration of that interest."[262] The judges concluded that it was legitimate for the Minister to consider a solution that might save some public money.[263] Therefore, the Minister's attempt to recover costs and compel necessary cleanup by Imperial Oil appropriately represented the public interest to protect the environment, an interest that the State has a duty to uphold.[264] Hence, there was no conflict of interest or abuse of power.[265]

This case illustrates the extent of the duty to act fairly, which is a public component of the duty of loyalty.[266] Indeed, the case shows that, when a public decision maker makes an environmental administrative decision in the public interest and exercises a power granted by law, the decision maker does not have the same duty to act impartially as would a court in relation to a judicial decision.[267] Rather, the decision maker can act in order to protect the environment and save public money at the expense of a private actor.[268] In other words, the public interest takes precedence over the private interest of the private actor.[269] Here, it even took precedence

257. *Id.* para. 31.
258. *Id.*
259. *Id.* para. 33.
260. *Id.*
261. *Id.* para. 34.
262. *Id.*
263. *Id.* para. 39.
264. *Id.*
265. *Id.*
266. *Fiduciary Nature*, *supra* note 195.
267. *Imperial Oil Ltd.*, 2003 SCC 58, para. 34.
268. *Id.* para. 39.
269. *Id.* paras. 38–39.

over the interests of the Minister himself, who might have acted negligently and be sued personally.[270]

2. The Provincial Courts of Appeal

The jurisprudence of provincial appellate courts can also provide valuable lessons about the potential content of fiduciary duties. The *Wallot v. Quebec City* case of Quebec's Court of Appeal is interesting in this regard.[271] In 2006, the City was informed that chemical runoff in the river was causing blue algae—a proliferation of cyanobacteria—in some parts of Lake St. Charles, which is the principal potable water supply (with the River St. Charles) for Quebec City.[272] Quebec City thus adopted a by-law to limit the proliferation of algae and the pollution of the watercourse.[273] The by-law prohibited construction or cutting trees within a 20-meter zone along the high-water line of the lake.[274] It also required owners of land on the river's edge to plant a 10- to 15-meter-wide riparian strip on their property with plants, shrubs, and trees.[275] This buffer strip was meant to prevent pollutants from reaching the lake.[276] The lakeside residents asked the Superior Court and then the Court of Appeal to declare the by-law void and unenforceable on the grounds that their property rights over the land should take precedence in law.[277] They argued that the regulation should be considered illegal possession of part of their land.[278]

The Court of Appeal confirmed the Superior Court's judgment that dismissed their claim, on the basis that the City was empowered to adopt the by-law and that it did not have the effect of entirely suppressing the owners' use of the land.[279] Rather, the by-law's purpose was to control the use of property in the collective interest of Quebec City's residents.[280] Therefore, the by-law was valid and applicable, and the Court of Appeal concluded by reminding the owners that the by-law was in their interest—both private and collective.[281] This case also illustrates the duty of loyalty and shows how acting in the best interest of citizens and future generations

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270. *Id.*

271. *See* Wallot c. Québec (Ville de), 2011 QCCA 1165, para. 28 (Can.) (mentioning the respondent-City's responsibility to protect the environment).

272. *Id.* para. 4.

273. Ville de Quebec, Que., Règlement de l'agglomération sur la renaturalisation des berges du lac Saint-Charles, R.A.V.Q. 301 (June 3, 2008) (Can.).

274. *Wallot*, 2011 QCCA 1165, para. 5.

275. *Id.* para. 2.

276. *Id.* para. 10.

277. *Id.* para. 41.

278. *Id.*

279. *Id.* para. 60.

280. *Id.* para. 53.

281. *Id.* para. 62.

can imply a duty to limit property rights for the protection of watercourses.[282] Again, the public interest took precedence over the interest of private owners.[283]

The last case to be examined is *Castle-Crown Wilderness Coalition v. Alberta (Director of Regulatory Assurance Division, Alberta Environment)*, which was handed down by the Court of Appeal of Alberta.[284] In this case, a ski facility, Castle Mountain Resort, had a planned expansion project and consulted with the Director of Regulatory Assurance and Minister of Environment of Alberta about the need to submit an environmental impact assessment (EIA) report.[285] While the Director had the power to decide whether the project required submission of an EIA under the Environmental Protection and Enhancement Act, the Minister had an overriding discretion to direct the proponent of a project to prepare a report, even when the Director had not ordered such a report.[286]

After studying Castle Mountain's project, "the Director expressed a concern that some of the proposed expansion had a significant effect on the environment."[287] She proposed that the Deputy Minister of the Environment require an EIA because of the potential effects the project would have on fish and wildlife, cumulative effect issues, and the adequacy of water and wastewater facilities.[288] The Director later changed her mind after she consulted with the Department of Sustainable Resource Development.[289] She decided that the potential impacts were manageable under the Public Land Act (license of occupation) and the Environmental Protection and Enhancement Act approval process, as well as under the public review of the Detailed Forest Management Plan.[290] She concluded that the waterworks system and wastewater system should be exempt from the report, provided that they were subject to other regulations on potable water.[291] The Minister decided not to exercise his overriding discretion, explaining that a thorough review of environmental effects would be completed regardless of his determination.[292] Castle-Crown Wilderness Coalition challenged this decision through judicial review, asking the court to declare the Ministry's decision to be unreasonable and to force the

282. *Id.* paras. 59–60.
283. *Id.* paras. 53, 62.
284. Castle-Crown Wilderness Coal. v. Alberta (Dir. of Regulatory Assurance Div.), 2005 ABCA 283, paras. 1–3 (Can.).
285. *Id.* paras. 2, 17.
286. Environmental Protection and Enhancement Act, R.S.A. 2000, c. E-12, ss. 44(1)(b), 47(a) (Can.).
287. *Castle-Crown Wilderness Coal.*, 2005 ABCA 283, para. 19.
288. *Id.*
289. *Id.* para. 21.
290. *Id.*
291. *Id.* para. 35.
292. *Id.* para. 21; Public Land Act, R.S.A. 2000, c. P-40, s. 20(1) (Can.).

Director and the Minister to submit the expansion of the resort to an EIA.[293] The first judge quashed their applications.[294]

However, the Court of Appeal concluded both decisions were reasonable, as there were other regulatory authorities that could assess the impact of the proposed project.[295] The Director had taken all the relevant steps to verify whether the environmental impacts would be manageable, after concluding some of these steps were exempt from environmental assessment.[296] She did not conclude that concerns about environmental impacts would be eliminated with the other regulatory processes, and the court affirmed that she was not required to do so.[297] The court also concluded that the other processes identified by the Director to manage some environmental concerns had the ability to address them.[298] Finally, the purely discretionary nature of the Minister's decision commanded the highest level of deference, and the court concluded that the Minister's decision not to exercise his discretion was also reasonable.[299]

This decision is relevant to interpret the duty of loyalty and to act in the best interest of beneficiaries.[300] The Court of Appeal said that the public decision maker must take all the relevant steps to verify whether the environmental impacts would be manageable according to the statute's requirements.[301] Furthermore, the decision demonstrates that the court cannot intervene to compensate for the legislation's weaknesses.[302] Here, the Director could not submit the expansion project to an environmental assessment report for some environmental impacts that the legislation excluded from the list of those requiring a report.[303] Parliament could potentially have enacted a more protective statute, but the court cannot control the administration's action for Parliament's failure, unless the statute was deemed unconstitutional.[304] The only way courts could control Parliament's failure to respect fiduciary duties to protect the environment would be to include these duties in the Constitution and demonstrate that an action infringed those duties.[305]

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293. *Castle-Crown Wilderness Coal.*, 2005 ABCA 283, para. 22.

294. *Id.*

295. *Id.* para. 65.

296. *Id.* paras. 48, 65.

297. *Id.* para. 58.

298. *Id.* para. 59.

299. *Id.* paras. 57–66.

300. *Id.* para. 57.

301. *Id.*

302. *See id.* para. 35 (stating that the regulations establish what impacts are exempt from consideration).

303. *Id.* para. 54.

304. *Id.*

305. HOGG, *supra* note 23, at 15–1 (explaining the power of the judiciary to invalidate a statute contrary to the Canadian Constitution, whether on distribution of powers or Charter of Rights grounds).

3. Lessons on the Exercise of the Duty of Loyalty

The above four decisions teach us a number of things about the duty of loyalty. First, when the provincial legislature delegates powers to municipalities, these powers must be interpreted broadly when they relate to the environment, as law making and implementation are best achieved at a level of government that is closest to the citizens affected.[306] Second, when a public decision maker makes an environmental administrative decision in the public interest, exercising a power granted by law, she does not have the same duty to act impartially as a court would have when issuing a judicial decision.[307] Third, acting in the best interest of citizens and future generations can imply a limitation on property rights in order to protect a natural resource.[308] Fourth, the public interest of the citizens can take precedence over the interest of individuals or private owners.[309] Finally, loyalty requires the decision maker to take all relevant steps to ensure the impacts are prevented or manageable depending on the words of the statute.[310] If the latter is considered insufficient, there is no valid way for the court to intervene, unless those duties become constitutional.[311]

CONCLUSION

There is a growing literature discussing the trusteeship theory, how the public trust doctrine could be enhanced, and how the resulting model of governance could help achieve a paradigm shift from an anthropocentric to a more holistic legal system that internalizes an ethic of mutually enhancing human-Earth relationship.[312] The trusteeship theory is especially relevant to American and Canadian public law, as it draws on legal concepts already in use in this area, such as public interest, accountability, fairness, impartiality, and reasonableness.[313] The Canadian case law in judicial

306. *See supra* text accompanying note 237 (declaring that "law-making and implementation are often best achieved at a level of government . . . closest to the citizens affected" (quoting 114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), 2001 SCC 40, para. 3 (Can.))).

307. *See supra* text accompanying note 268 (identifying that when a public interest weighs on the side of one party it may lessen the need for adjudicators to show parties impartiality).

308. *See supra* text accompanying notes 282–83 (showing that private interests may often be outweighed by public interests).

309. *See* Wallot c. Québec (Ville de), 2011 QCCA 1165, para. 60 (Can.) (concluding that a by-law that restricted property rights for the benefit of the public was permissible).

310. *See supra* text accompanying note 282 (characterizing as loyalty "acting in the best interest of citizens and future generations").

311. *See supra* notes 303–05 and accompanying text (recognizing that Canada must amend its Constitution in order to impose fiduciary duties on Parliament and legislatures).

312. Garver, *supra* note 158, at 318–20 (surveying and summarizing various thinkers' conceptions of ecologically holistic legal regimes).

313. *See generally Fiduciary Nature*, *supra* note 195, at 264–65 (examining the interplay of public interest, accountability, fairness, impartiality, and reasonableness).

review of environmental matters can make a valuable contribution to the nature and content of potential fiduciary duties, because it demonstrates that courts already impose obligations on governments to realize environmental preservation and promotion when they interpret concepts of public law that are analogous to fiduciary duties, such as *reasonableness in the circumstances*.[314] The cases analyzed in this Essay have demonstrated components of the application of the duty of loyalty, such as interpreting the delegation to a local government broadly as law making, and realizing that implementation is best achieved at the level of governance closest to citizens affected.[315] A broader study of the case law has yet to be done to suggest a comprehensive definition of the application, content, and scope of the fiduciary duties. Nevertheless, it remains to be seen whether property rights would have to be redesigned in order to adapt to a trusteeship framework. This redesign could mean that owners would act as stewards to protect the resources on their land and environmental resources would be considered to be common to all. The answer to this question will certainly be a necessary aspect of any solution to the greatest challenges of our time, those of the Anthropocene.

314. *See supra* Part II.B (outlining how the cases examined "illustrate how the work of judges can assist in defining the obligations of . . . governments").

315. *See supra* text accompanying note 237 (drawing on the Supreme Court of Canada's holding and dicta).

EL SALVADOR'S MINING BAN AND MINING IN ONTARIO'S RING OF FIRE FROM THE LENS OF ECOLOGICAL LAW

Carla Sbert[*†]

INTRODUCTION

As the topic of the workshop at which this Essay was presented indicates, one of the challenges of the Anthropocene is to shift from environmental to ecological law. I understand ecological law as a new legal paradigm aimed at constraining economic activity within ecological limits and at promoting and supporting an ecologically just society. To better

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understand the challenges and opportunities for a shift to this new paradigm, I have proposed a *lens of ecological law* and here I apply this lens in two different cases concerning mining.

The Anthropocene would not have occurred without the Bronze Age and it will not unfold without minerals. Mineral extraction has greatly expanded with the Great Acceleration,[1] contributing to ecological degradation and grave social impacts.[2] We may be unable to imagine human civilization without minerals, but we have to reimagine their extraction and use to avoid harm to the landscape, water, wildlife, workers, women, and communities. Ecological law is one important lever to transform mining in the Anthropocene. Understanding how current laws differ from ecological law can contribute to this transition. To shed some light on this question, this Essay applies a *lens of ecological law* to two case studies: El Salvador's metal mining ban and the proposed mineral development in Ontario's Ring of Fire.

I. THE LENS OF ECOLOGICAL LAW

The *lens of ecological law* is an analytical tool for critiquing existing law to identify major obstacles and opportunities for a shift to ecological law.[3] It is comprised of three interconnected principles:

1. *Ecocentrism:* "[r]ecognize and [r]espect the [v]alue of all [b]eings" and the interconnectedness among them, equally "[p]romoting the [i]nterests of [h]uman and [n]on-[h]uman [m]embers of the Earth community."[4]

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1. MARINA FISCHER-KOWALSKI ET AL., UNITED NATIONS ENV'T PROGRAMME, DECOUPLING NATURAL RESOURCE USE AND ENVIRONMENTAL IMPACTS FROM ECONOMIC GROWTH 10 (2011); Will Steffen et al., *The Trajectory of the Anthropocene: The Great Acceleration*, 2 ANTHROPOCENE REV. 81, 89 (2015).

2. *See, e.g.*, CLIVE PONTING, A GREEN HISTORY OF THE WORLD: THE ENVIRONMENT AND THE COLLAPSE OF GREAT CIVILIZATIONS 325, 327–28 (1993) ("The massive increase in mining operations to produce metals . . . has inevitably made a major and highly visible impact on the environment."); THE GAIA FOUND., UNDER-MINING AGRICULTURE: HOW THE EXTRACTIVE INDUSTRIES THREATEN OUR FOOD SYSTEMS 9 (2014), https://www.gaiafoundation.org/wp-content/uploads/2015/11/UnderMiningAgriculture_Report_lowres.pdf ("Given the Earth's current ecological fragility, any further devastation and 'toxification' of lands, soils, waters and biodiversity by mining would be planetary suicide").

3. For a detailed discussion of ecological law, see Carla Sbert Carlsson, *Amparos Filed by Indigenous Communities Against Mining Concessions in Mexico: Implications for a Shift in Ecological Law*, 10 MEXICAN L. REV. 3, 7 (2017).

4. *Id.* at 8.

The principle of *ecocentrism* considers the view of the human-Earth relationship underlying the law; whether the interconnectedness of all members of the Earth community is recognized; and whether human and non-human beings are equally valued.[5]

2. *Ecological Primacy:* "[e]nsure that [s]ocial and [e]conomic [b]ehavior and [s]ystems are [e]cologically [b]ound, [r]especting Planetary Boundaries."[6]

The principle of *ecological primacy* involves several related elements: ensuring human development is pursued without irreversibly impairing ecological integrity[7] or crossing planetary boundaries;[8] constraining material and energy use within ecological limits;[9] and restoring and maintaining ecological integrity.[10] Some ecological law scholars argue that the "Holocene concept"[11] of ecological integrity should be aligned with the concept of the Anthropocene.[12] I use the Parks Canada Agency's definition of "ecological integrity," which states that "ecosystems have integrity when they have their native components (plants, animals and other organisms)

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5. *Id.*

6. *Id.* at 9.

7. *See, e.g.*, Stephen Woodley, *Ecological Integrity and Canada's National Parks,* 27 GEORGE WRIGHT F. 151, 158–59 (2010) ("In Canadian national parks, ecological integrity has evolved from a scientific idea into a management system."); Jack Manno, *Why the Global Ecological Integrity Group? The Rise, Decline and Rediscovery of a Radical Concept*, *in* CONFRONTING ECOLOGICAL AND ECONOMIC COLLAPSE: ECOLOGICAL INTEGRITY FOR LAW, POLICY AND HUMAN RIGHTS 36–37 (Laura Westra, Prue Taylor & Agnès Michelot eds., 2013) (recognizing how the industrial use of chemicals affects ecological integrity); Kate Turner & Karen Beazley, *An Exploration of Issues and Values Inherent in the Concept of Ecological Integrity*, 32 ENVIRONMENTS 45, 46 (2004) (exploring the "various controversies and perceptions associated with the definition of ecological integrity and of the roles of science and philosophy embodied in the concept"); ECOLOGICAL INTEGRITY: INTEGRATING ENVIRONMENT, CONSERVATION, AND HEALTH 22 (David Pimentel, Laura Westra & Reed F. Noss eds., Island Press 2000) ("[T]here is a growing body of policy and law that mandates the protection and restoration of ecological integrity.").

8. Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14 ECOLOGY & SOC'Y 32, 37, 52 (2009), https://www.ecologyandsociety.org/vol14/iss2/art32/.

9. Sbert Carlsson, *supra* note 3, at 11.

10. *Id.* at 20.

11. For example, Peter Burdon referred to ecological integrity as a "Holocene concept" during a question and answer session following an Economics for the Anthropocene Presentation. Carla Sbert, *The Ring of Fire and the El Salvador Mining Ban from the Lens of Ecological Law*, YOUTUBE (Jan. 17, 2018), https://www.youtube.com/watch?v=m_zuIVL4DqI&feature=youtu.be.

12. Geoffrey Garver, *A Complex Adaptive Legal System for the Challenges of the Anthropocene*, *in* ECOLOGICAL SYSTEMS INTEGRITY: GOVERNANCE, LAW AND HUMAN RIGHTS 232, 235 (Laura Westra et al. eds., 2015).

and processes (such as growth and reproduction) intact"[13] with the understanding that "ecosystems are inherently dynamic, and have a history of human intervention and even management."[14]

> 3. *Ecological Justice:* "[e]nsure [e]quitable [a]ccess to the Earth's [s]ustaining [c]apacity for [p]resent and [f]uture [g]enerations of [h]umans and [o]ther [l]ife [f]orms and [s]ystems, and [a]void the [i]nequitable [a]llocation of [e]nvironmental [h]arms."[15]

The principle of *ecological justice* is based primarily on Klaus Bosselmann's concept, which includes intragenerational, intergenerational, and interspecies equity.[16] The principle of ecological justice probes whether the law provides ethical grounding for decisions that lead to the equitable use of the planet's sustaining capacity and promotes taking only what one needs and the fair distribution of—and restraint on—wealth.[17] Finally, this principle asks whether environmental harms are equitably distributed among current and future generations of humans and other beings.[18]

In the case studies that follow, I use this *lens of ecological law* to reflect on the implications of a shift from environmental to ecological law in the context of mining. By looking to El Salvador, I consider whether the first attempt by a country to ban metal mining is a step in the direction towards ecological law.[19] In considering the mineral extraction proposed in Ontario's Ring of Fire—which is within one of the most ecologically intact regions of the world[20]—I search for elements of ecological law in a legal framework that purportedly ensures mineral extraction is sustainable.[21]

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13. PANEL ON THE ECOLOGICAL INTEGRITY OF CAN.'S NAT'L PARKS, UNIMPAIRED FOR FUTURE GENERATIONS?: CONSERVING ECOLOGICAL INTEGRITY WITH CANADA'S NATIONAL PARKS 2 (2000), publications.gc.ca/collections/Collection/R62-323-2000-1E.pdf.

14. Woodley, *supra* note 7, at 159.

15. Sbert Carlsson, *supra* note 3, at 11.

16. Klaus Bosselmann, *Ecological Justice and Law*, *in* ENVIRONMENTAL LAW FOR SUSTAINABILITY: A READER 150–52 (Benjamin J. Richardson & Stepan Wood eds., 2006) [hereinafter Bosselmann, *Ecological Justice and Law*]; Klaus Bosselmann, THE PRINCIPLE OF SUSTAINABILITY: TRANSFORMING LAW AND GOVERNANCE 102–04, 106 (2d ed. 2017) [hereinafter Bosselmann, THE PRINCIPLE].

17. *See* Bosselmann, *Ecological Justice and Law*, *supra* note 16, at 157 ("[R]esource distribution is determined by sustaining the potential of resources *in view* of future needs . . . .").

18. *See id.* ("[D]ecisions regarding the distribution of resources must sustain the needs of future generations.").

19. *See infra* Part II.B (evaluating El Salvador's Law Prohibiting Metal Mining through a *lens of ecological law*).

20. FAR N. SCI. ADVISORY PANEL, SCIENCE FOR A CHANGING FAR NORTH ii (2010) [hereinafter ADVISORY PANEL], www.ontla.on.ca/library/repository/mon/24006/302262.pdf.

21. *See infra* Part III.C (applying a *lens of ecological law* to mining law in Ontario's Ring of Fire).

II. EL SALVADOR'S MINING BAN

A. Brief Context

The Republic of El Salvador is the smallest country in Central America and the most densely populated, with approximately 6.5 million people living in an area of 21,040 square kilometers.[22] Between approximately 1980–1992, the country experienced a brutal civil war in which 70,000–80,000 people were killed and one-fifth of the population was displaced.[23] A mountainous country with high seismic activity and extreme weather events, El Salvador also suffers from serious environmental degradation, including minimal forest cover, high erosion, and water scarcity and contamination.[24] The country's high vulnerability is exacerbated by climate change and deforestation, which increase the likelihood of landslides and floods,[25] and by poverty, which aggravates the negative impacts of natural disasters.[26] Historian Christopher M. White describes El Salvador as a country "which simultaneously has endured great hardship while maintaining a vibrant culture and an optimistic outlook for the future."[27] El Salvador is also the first country in the world to enact a law prohibiting metal mining.[28]

Mineral extraction has occurred in El Salvador since the mid-18th century,[29] but mining has not been a major activity in the country.[30] Mining operations all but came to a halt in the 1980s mostly due to the civil war.[31]

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22. *See* René Santamaria Varela et al., *El Salvador*, ENCYCLOPAEDIA BRITANNICA, www.britannica.com/place/El-Salvador (last updated Feb. 4, 2019) [hereinafter *El Salvador*, ENCYCLOPAEDIA] (estimating the population of El Salvador at 6.5 million).

23. CHRISTOPHER M. WHITE, THE HISTORY OF EL SALVADOR 9, 109 (2009); *El Salvador*, ENCYCLOPAEDIA, *supra* note 22.

24. MINISTERIO DE ECONOMÍA DE EL SALVADOR (MINEC) [EL SAL. MINISTRY OF ECONOMY], SERVICIOS DE CONSULTORÍA PARA LA EVALUACIÓN AMBIENTAL ESTRATÉGICA (EAE) DEL SECTOR MINERO METÁLICO DE EL SALVADOR, INFORME FINAL 5–6, 9–10, 12 (2011) [hereinafter METAL MINING SECTOR SEA].

25. WHITE, *supra* note 23, at 5; *cf.* Kristin Stranc, Note, *Managing Scarce Water in the Face of Global Climate Change: Preventing Conflict in the Horn of Africa*, 39 HOFSTRA L. REV. 245, 259 (2010) ("Scholars have warned of the potential for increased natural disasters due to global climate change. The damage done by such disasters is exacerbated by deforestation and over-cultivation of land." (footnote omitted)).

26. METAL MINING SECTOR SEA, *supra* note 24, at 12.

27. WHITE, *supra* note 23, at xvi.

28. Nina Lakhani, *El Salvador Makes History as First Nation to Impose Blanket Ban on Metal Mining*, GUARDIAN (Mar. 30, 2017), https://www.theguardian.com/global-development/2017/mar/30/el-salvador-makes-history-first-nation-to-impose-blanket-ban-on-metal-mining.

29. METAL MINING SECTOR SEA, *supra* note 24, at 33.

30. WHITE, *supra* note 23, at 37.

31. METAL MINING SECTOR SEA, *supra* note 24, at 33.

Reconstruction in El Salvador after the war aligned with neoliberal trends throughout Latin America to encourage foreign investment.[32] El Salvador reformed its mining laws in 1996 and adopted mechanisms protecting foreign investors to attract mining companies.[33] From 1995 to 1999 there was modest industrial gold and silver production,[34] but currently only artisanal mining is ongoing.[35] By the early 2000s, approximately 29 companies had obtained exploration concessions in El Salvador, but no exploitation concessions were active.[36]

At the same time, environmental organizations, communities, and civil society groups began opposing metal mining due to the risks to water and health, especially given the grave water pollution and scarcity issues facing El Salvador. In 2006, the National Roundtable Against Metal Mining (La Mesa Nacional Frente a la Minería Metálica) submitted the first proposal to ban metal mining in the country.[37] In 2007, *La Mesa* gained the support of the influential Salvadoran Catholic Church for a permanent prohibition of metal mining,[38] and a poll found that almost 65% of the population opposed metal mining in their community.[39] A *de facto* moratorium was established in March 2008 when the President publicly said he would work with the legislature to reform the law to permit mining only once it had been shown

32. WHITE, *supra* note 23, at 112; *see* Daviken Studnicki-Gizbert, *Canadian Mining in Latin America (1990 to Present): A Provisional History*, 41 CAN. J. LATIN AM. & CARIBBEAN STUD. 95, 100 (2016) (explaining that in the 1990s, "[n]ew mining codes, new regulatory regimes, and new institutional arrangements between state and industry were developed to channel international capital into" Latin America's mineral sector).

33. Decreto No. 544, arts. 1, 3, Enero 24, 1996, DIARIO OFICIAL [D.O.], at 99 (El Sal.), https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/; *see also* Decreto No. 732, art. 1, Noviembre 11, 1999, DIARIO OFICIAL [D.O.], at 7 (El Sal.), https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/ (outlining a goal of promoting foreign investment); Michael L. Dougherty, *El Salvador Makes History*, N. AM. CONGRESS ON LATIN AM. (Apr. 12, 2017), https://nacla.org/news/2017/04/19/el-salvador-makes-history (explaining that in 1995, "El Salvador established a 3% royalty rate for mineral production" to "secure foreign direct investment").

34. Commerce Grp. Corp. v. Republic of El Salvador, ICSID Case No. ARB/09/17, Notice of Arbitration, ¶ 14 (July 2, 2009), https://www.italaw.com/cases/296.

35. METAL MINING SECTOR SEA, *supra* note 24, at 34.

36. *Id.*

37. *Nueva propuesta de Ley para prohibir la minería en El Salvador*, FUNDACIÓN DE ESTUDIOS PARA LA APLICACIÓN DEL DERECHO [Foundation of Studies for the Application of Law] (Sept. 18, 2013) (on file with *Vermont Law Review*).

38. Press Release, Conferencia Episcopal de El Salvador [Episcopal Conference of El Sal.], La Explotación Minera en El Salvador: Cuidemos la Casa de Todos (May 3, 2007), http://www.caritaselsalvador.org.sv/documentos/otros/65-cuidemos-la-casa-de-todos/file.

39. *See* INSTITUTO UNIVERSITARIO DE OPINIÓN PÚBLICA, ENCUESTA SOBRE CONOCIMIENTOS Y PERCEPCIONES HACIA LA MINERÍA EN ZONAS AFECTADAS POR LA INCURSIÓN MINERA EN EL SALVADOR (2007), www.uca.edu.sv/publica/iudop/Web/2008/finalmineria040208.pdf (reporting that when people were asked whether they agreed or disagreed that more mining projects should be opened, 49.5% responded they disagreed strongly, while 14.5% responded that the disagreed somewhat).

that "gold [could] be exploited to boost the economy without damaging resources."[40]

The government completed a Strategic Environmental Assessment (SEA) of the metal mining sector in September 2011, documenting multiple serious obstacles for effectively addressing the environmental impacts and risks of metal mining activities in El Salvador.[41] These obstacles included grave potential impacts to health and water resources and the government's insufficient capacity to manage them.[42] The fact that the country was being sued by foreign mining companies in two international investor–state disputes,[43] and the 2016 arbitration award in favor of El Salvador in one of them,[44] contributed to strengthening support to ban mining.[45] Finally, in March 2017, El Salvador became the first country to adopt a law prohibiting all surface and subsurface metal mining.[46]

B. The Law Prohibiting Metal Mining from the Lens of Ecological Law

The Law Prohibiting Metal Mining (LPMM) bans all metal mining activities as well as the use of toxic chemicals in metal mining; cancels all pending licensing procedures; and prohibits future politicians from passing laws that allow metal mining.[47] The LPMM charged the Ministry of Economy with closing all mines and coordinating the remediation of mining sites—the latter in collaboration with the Ministry of Environment

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40. Pac Rim Cayman LLC v. Republic of El Salvador, ICSID Case No. ARB/09/12, Award, ¶ 6.125 (Oct. 14, 2016), www.italaw.com/sites/default/files/case-documents/italaw7640_0.pdf.

41. METAL MINING SECTOR SEA, *supra* note 24, at 72.

42. *Id.*

43. In 2009, the mining companies Pacific Rim and Commerce Group, Inc. separately initiated investor–state disputes against El Salvador. *Pac Rim Cayman LLC*, ICSID Case No. ARB/09/12 ¶ 6.125; Commerce Grp. Corp. v. Republic of El Salvador, ICSID Case No. ARB/09/17, Award, ¶ 3 (Mar. 14, 2011).

44. *Pac Rim Cayman LLC*, ICSID Case No. ARB/09/12 ¶ 11.17. In the other case, the tribunal determined in March 2011 that it did not have jurisdiction because Commerce was pursuing the same matters in court within El Salvador (unsuccessfully, as it turned out). *Commerce Grp. Corp.*, ICSID Case No. ARB/09/17 ¶¶ 134, 138, 140. The Supreme Court of El Salvador decided two domestic cases against Commerce in 2010. PROCURADURÍA PARA LA DEFENSA DE LOS DERECHOS HUMANOS [ATTORNEY GENERAL'S OFFICE FOR HUMAN RIGHTS], INFORME ESPECIAL DE LA PROCURADURÍA PARA LA DEFENSA DE LOS DERECHOS HUMANOS – EL LEGADO DE LA MINA SAN SEBASTIAN Y SUS IMPACTOS EN LA POBLACIÓN 46 (Jan. 2016), issuu.com/pedrocabezas/docs/informe_especial_pddh__legado_de_la.

45. *See* Robin Broad & John Cavanagh, *El Salvador Votes for Water Over Gold*, NATION (Apr. 4, 2017), https://www.thenation.com/article/el-salvador-votes-for-water-over-gold (explaining how attempts by corporations to undermine El Salvador's mining ban "sparked renewed resistance" and support for the law).

46. Decreto No. 639, art. 1, Abril 4, 2017, DIARIO OFICIAL [D.O.], at 6 (El Sal.), https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/.

47. *Id.* at arts. 2–4.

and Natural Resources.[48] The ban includes artisanal mining and establishes a two-year period for those practicing it to transition to other economic activities with the support of the state.[49] The LPMM "is of public order and its provisions shall prevail over any other to the contrary."[50]

Given that ecological law aims to ecologically constrain economic activity, does this first law prohibiting metal mining signal a shift to ecological law? The analysis that follows reflects on the LPMM from the perspective of each of the principles comprising the *lens of ecological law*.

1. Ecocentrism

In the mining ban, there are no elements of *ecocentrism*. The preamble to the LPMM states an unambiguously anthropocentric vision underlying the Salvadoran legal system by noting that the Constitution of El Salvador "recognizes the human person as the origin and end of the activities of the State."[51] Moreover, the LPMM does not recognize the interconnectedness of humans with other beings or the interests of non-human members of the Earth community.[52]

2. Ecological Primacy

Ecological primacy implies that law should be informed by the scientific understanding of Earth systems, ecosystems, and their relation to human activities.[53] El Salvador's prohibition of metal mining is an example of *ecological primacy*, even though the LPMM does not use the term ecological integrity or make any reference to planetary boundaries. The LPMM decree notes that in establishing the ban, the legislature considered scientific knowledge concerning the ecological vulnerability of El Salvador (especially related to water), the impacts of metal mining on human and ecosystem health, and the environmental degradation problems facing El Salvador.[54] The law aims to avoid pushing the country's water resources

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48. *Id.* at art. 6.

49. *Id.* at art. 2.

50. *Id.* at art. 9 (translation provided by Carla Sbert).

51. *Id.* at pmbl. I (translation provided by Carla Sbert).

52. *See id.* (emphasizing that the law is designed to protect human persons).

53. *See* Sbert Carlsson, *supra* note 3, at 9 ("*Ecological primacy* provides clarity about the need to ensure human development is pursued without irreversibly impairing natural systems . . . .").

54. Decreto No. 639, at pmbl. IV–VI. The Preamble of the LPMM states:

> IV. That in 2010, the United Nations Environment Program ranked El Salvador as the country with the second worst environmental degradation in the Americas after Haiti. Because of this, metal mining due to its environmental

beyond ecological limits and acknowledges that metal mining involves an unacceptable risk of transgressing these limits.[55] As the campaign to ban mining called for,[56] the LPMM effectively prioritizes water (ecological values) over gold (short-term economic gain).[57] Also, the LPMM addresses at its source the problem of ecological degradation from mining.[58] Rather than attempting to mitigate the negative impacts of metal mining through "sustainable mining" standards,[59] El Salvador chose to prevent further potential harm to ecological values by prohibiting the activity altogether.[60]

At the same time, although the LPMM takes a precautionary approach in line with *ecological primacy*, the ban is not quite a shift in paradigm. Rather, it appears to be a rare example of the sustainable development calculation (whereby environmental, social, and economic concerns are balanced) turning out in favor of environmental concerns because the ecological and social costs of metal extraction were found to be so much greater than the potential economic benefits, especially given the absence of a strong mining tradition in El Salvador.[61]

Another concurrence with *ecological primacy* is that while the LPMM seems to narrowly focus on banning the extraction and production of metals

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> impact on water resources becomes a threat to the sustainable development and wellbeing of the Salvadoran family.
>
> V. That the activities of exploration and exploitation of metal mining, constitute a threat to the health of the inhabitants of the country, carry severe risks for the environment, characterized by endangering forests, soils and water resources, due to acid drainage, heavy metals and highly toxic wastes, like mercury, cyanide and others; and by consuming important amounts of water in all its operation phases, with the probability of destroying landscapes, polluting the air and generating social conflict.
>
> VI. That the Strategic Environmental Assessment of the Metallic Mining Sector conducted in 2011 by the Ministry of Environment and Natural Resources, concluded that the conditions of vulnerability in El Salvador imply an important barrier to the possibility that the country could guarantee metal mining that effectively controls its environmental and social risks and impacts, or achieve a positive contribution to social and economic development of the country.

Id. (translation provided by Carla Sbert).

55. *Id.*

56. *See* Broad & Cavanagh, *supra* note 45 (emphasizing water degradation as a motivation for the LPMM's passage).

57. *Id.* (explaining that El Salvador's mining ban chooses "water over gold").

58. Decreto No. 639, at pmbl. V.

59. METAL MINING SECTOR SEA, *supra* note 24, at 79. Pacific Rim vowed to apply "sustainable mining" standards in its El Dorado project. Pac Rim Cayman LLC v. Republic of El Salvador, ICSID Case No. ARB/09/12, Award, ¶ 3.8 (Oct. 14, 2016), www.italaw.com/sites/default/files/case-documents/italaw7640_0.pdf.

60. Decreto No. 639, at art. 1; Broad & Cavanagh, *supra* note 45.

61. Decreto No. 639, at pmbl. VI; METAL MINING SECTOR SEA, *supra* note 24, at 55.

within the country,[62] it also indirectly constrains material and energy use in El Salvador. Presumably, the consumption of energy and materials, and the generation of waste, that would have resulted directly and indirectly from metal mining will be averted.[63] Yet nothing indicates that El Salvador intends to use less metal or to substitute the foregone locally sourced metals with metals produced elsewhere with less ecological impact.[64] Indeed, the net effect of the ban could be worse for ecological sustainability if El Salvador's metal consumption does not decrease and the metals it could have produced locally are imported from a jurisdiction that has worse practices or involves additional ecological impacts from transport.[65] In contrast, a jurisdiction applying ecological law would arguably limit the consumption of metals to those required for basic needs within that jurisdiction, use recovered and recycled metals (from landfills and other existing stocks within that jurisdiction) to satisfy those needs, and only allow the import of metals that could not be obtained from these sources.[66]

Lastly, as noted, the LPMM also orders the remediation of areas affected by mining, which is consistent with *ecological primacy*.[67] However, the standard adopted—"to return to the population the conditions of a healthy environment"[68]—does not conform with ecological law, which would instead require restoring the health of the ecosystem as a whole—for

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62. Decreto No. 639, at art. 1 (providing that the purpose of the LPMM is "to prohibit surface and subsurface metal mining in the territory of the Republic [of El Salvador]" (translation provided by Carla Sbert)).

63. *See, e.g.*, Geoffrey Blight, *Mine Waste: A Brief Overview of Origins, Quantities, and Methods of Storage*, *in* WASTE: A HANDBOOK FOR MANAGEMENT 77 (Trevor M. Letcher & Daniel A. Vallero eds., 2011) (explaining that the "volumes of waste" produced from mining "are commensurately large"); *The Market Underestimates the Tremendous Energy Consumption by the Gold Mining Industry*, SRSROCCO REP. (Feb. 3, 2019), https://srsroccoreport.com/market-underestimates-tremendous-energy-consumption-gold-mining-industry (calculating the energy and production costs of various metals and materials).

64. *See* Decreto No. 639, at art. 1 (banning metal mining in El Salvador without explaining where the country would acquire metals).

65. *Cf.* Tiina Häyhä et al., *From Planetary Boundaries to National Fair Shares of the Global Safe Operating Space—How Can the Scales be Bridged?*, 40 GLOBAL ENVTL. CHANGE 60, 62 (2016) ("[I]nternational trade . . . allows a country's environmental impact to be externalized, for example by relocating resource-intensive or highly polluting industries in other countries. As a result, the production (and potential related environmental impacts) and consumption of goods increasingly happens in different locations and part of the territorially reduced environmental pressure in one country may come at the cost of increasing impact elsewhere.").

66. For a preliminary discussion of need-based minerals use, see Carla Sbert, *Re-imagining Mining: The Earth Charter as a Guide for Ecological Mining Reform*, 6 IUCN ACAD. ENVTL. L. EJOURNAL 66, 84 (2015) [hereinafter Sbert, *Re-imagining*] (explaining how society could extract non-renewable resources "based on the reasonable needs of living generations (equitably considered) without jeopardizing the ability of future generations to enjoy similar access to those resources").

67. Decreto No. 639, at art. 6.

68. *Id.* (translation provided by Carla Sbert).

its human and other inhabitants—as well as reestablishing ecological integrity to the greatest degree possible.[69]

3. Ecological Justice

The LPMM does not make any reference to intragenerational, intergenerational, or interspecies equity.[70] Yet the metal mining ban is the result of a social movement grounded in concerns regarding access to clean water, exploitation of the country's resources by foreign companies, and environmental degradation and pollution threatening health and livelihoods.[71] These concerns are all relevant to *ecological justice's* focus on equitable access to the planet's sustaining capacity and its questioning of unfair exposure to environmental harms; although, under ecological law they would not be limited only to humans.[72]

Also, as noted above, the LPMM bans the extraction of metals within El Salvador, but it does not address the use of metals generally,[73] which under ecological law would be based on needs and the fair distribution of wealth.[74]

Finally, an important aspect from the perspective of *ecological justice* is the commitment to support artisanal miners—known as *güiriseros*—to transition to other economic activities.[75] There are serious, yet insufficiently studied and diagnosed, health impacts related to artisanal mining for *güiriseros*, their families, neighbors, and others in nearby communities.[76] More broadly, the area's sustaining capacity is undermined by the pollution generated from mining, and thus not accessible to support the flourishing of humans and other beings today and in the future.[77] From the perspective of *ecological justice*, the transition of *güiriseros* to other activities would have

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69. Sbert Carlsson, *supra* note 3, at 11 ("Governments and individuals shall take all available measures to enhance and sustain the capacity of social and natural systems to maintain their integrity." (quoting Nicholas A. Robinson, *The Resiliency Principle*, 5 IUCN ACAD. ENVTL. L. E J. 19, 24 (2014))).

70. *See* Decreto No. 639, at arts. 1–11 (finding no reference to the terms intragenerational, intergenerational, and interspecies equity in the LPMM).

71. METAL MINING SECTOR SEA, *supra* note 24, at 26–27.

72. Sbert Carlsson, *supra* note 3, at 11.

73. *See* Decreto No. 639, at art. 1 (providing only that mining is prohibited in El Salvador); *see also supra* notes 62–66 and accompanying text (outlining how El Salvador's metal mining ban does not address metals consumption generally).

74. Sbert Carlsson, *supra* note 3, at 12.

75. VLADIMIR PACHECO CUEVA, AN ASSESSMENT OF MINE LEGACIES AND HOW TO PREVENT THEM: A CASE STUDY FROM LATIN AMERICA 28–31, 40–41 (2017).

76. *See id.* at 41 (speculating that "the handling of mercury may be affecting the long term health of the *Güiriseros*, their families and the environment" because "no toxicity pathway study [nor] serology of the region . . . ha[s] taken place").

77. *Id.*

to ensure the new activities are ecologically viable and consistent with the equitable sharing of the sustaining capacity of the region between current and future humans and other beings.[78] The transition should further be complemented by restoration of the sites, forests, and waterways that have been impacted, with the goal of restoring the greatest possible levels of ecological integrity.[79] Details are not yet available on how the government will support the transition away from artisanal mining, and there seems to be no progress on remediation of contaminated mine sites.[80] Instead, artisanal miners appear to be working to permanently exempt artisanal mining from the metal mining ban.[81]

In summary, the LPMM does not represent a full shift in paradigm towards ecological law, but it is an important step in this direction. By foreclosing metal extraction and ordering the restoration of El Salvador's stressed ecological systems, this law establishes a precedent that recognizes ecological sustainability as a precondition for flourishing societies and economies.[82] At the same time, however, because the ban is not grounded on an ecocentric worldview, it is more vulnerable to shifting short-term human interests.[83]

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78. Sbert Carlsson, *supra* note 3, at 7–11.

79. *Id.* at 9, 11–12.

80. The regulations implementing the LPMM, published in June 2017, only add that the Ministry of Economy will provide credit under preferential conditions and other types of support for *güiriseros* to "reconvert" to other productive activities. Decreto No. 25, art. 3, Junio 2, 2017, DIARIO OFICIAL [D.O.] at 7 (El Sal.); *see also* Alfredo Carías, *La minería aún es causa de disputas en El Salvador*, CONTRAPUNTO (Feb. 1, 2018), contrapunto.com.sv/sociedad/periodismociudadano/la-mineria-aun-es-causade-disputas-en-el-salvador/5784 (explaining that the uncertainty surrounding the transition from artisanal mining generates distrust among the *güiriseros*).

81. Andrés McKinley, *Cuidado El Salvador: la 'minería verde' es un mito*, NOTICIAS DE AMERICA LATINA Y EL CARIBE (June 14, 2018), https://www.nodal.am/2018/06/cuidado-el-salvador-la-mineria-verde-es-un-mito-por-andres-mckinley/.

82. Decreto No. 639, arts. 1, 6, Abril 4, 2017, DIARIO OFICIAL [D.O.], at 5–6 (El Sal.), https://imprentanacional.gob.sv/archivo-digital-del-diario-oficial/.

83. For example, environmental groups are calling for the metal mining ban to be constitutionally enshrined, fearing that changes in the legislature might lead to the repeal of the LPMM, especially given OceanaGold's attempts "to influence the population . . . with the idea of 'Responsible Mining.'" Mirina Garcia, *Threats to the Law Against Metallic Mining*, VARGUARDIA (May 7, 2018), www.stopesmining.org/news/salvadoran-mining-ban/532-threats-to-the-law-against-metallic-miningvanguardia; McKinley, *supra* note 81.

III. MINING IN ONTARIO'S RING OF FIRE

A. Brief Context

Ontario's Far North is a lightly populated region that covers about 40% of the province's territory.[84] First Nations make up more than 90% of the region's total population of 24,000.[85] The region is exceptional for its ecological features.[86] In 2008, mining companies discovered substantial mineral potential in an area of approximately 5,000 square kilometers in the central part of the Far North region, now known as the Ring of Fire.[87] This area lies within the traditional territories of nine Ojibway and Cree First Nations united under the Matawa Tribal Council.[88] Many companies and individuals hold mining claims in the area,[89] but only one is currently actively pursuing a mine there.[90] Despite the Ring of Fire's mineral potential, some question the feasibility of its development, primarily due to the lack of transport and energy infrastructure in the remote area and the challenge of negotiating with the area's First Nations.[91]

The Far North Act of 2010 was meant to establish a collaborative land use planning process for development of the Far North,[92] but it appears to have led to further disagreement between the province of Ontario and First

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84. *Far North of Ontario*, GOV'T ONT., www.ontario.ca/rural-and-north/far-north-ontario (last visited Apr. 14, 2019).

85. *Id.*

86. *See* ADVISORY PANEL, *supra* note 20, at xi (providing that "[l]arge intact landscapes like the Far North are rare").

87. JED CHONG, LIBRARY OF PARLIAMENT, PUBLICATION NO. 2014-17-E, RESOURCES DEVELOPMENT IN CANADA: A CASE STUDY ON THE RING OF FIRE 1–3 (2014); ADVISORY PANEL, *supra* note 20, at 65 (providing a history of diamond mining in the Far North).

88. Unity Declaration, Chiefs Council Mamow-Wecheekapawetahteewiin (2011), http://www.matawa.on.ca/wp-content/uploads/2013/12/Mamow-Wecheekapawetahteewiin-Unity-Declaration-Signed-July-13-2011.pdf. The member First Nations are Aroland, Constance Lake, Eabametoong, Ginoogaming, Long Lake #58, Marten Falls, Neskantaga, Nibinamik, and Webequie. *Id.*

89. *See* MINISTRY OF ENERGY, N. DEV. & MINES, ONTARIO MINERAL DEVELOPMENT STRATEGY 10 (2015) [hereinafter N. DEV. & MINES], https://www.mndm.gov.on.ca/sites/default/files/mndm_mds_english_2015.pdf.

90. *See* Letter from Mark Baker, Projects Eng'r, Noront Res. Ltd., to David Bell, Project Manager, Can. Envtl. Assessment Agency (Jan. 22, 2012), https://www.ceaa.gc.ca/050/documents/p63925/89363E.pdf (detailing the company's ongoing environmental assessment in preparation for mining).

91. Jody Porter, *Ring of Fire Mining Development Still Years Away from Delivering on a Decade of Hype*, CBC NEWS (Jan. 30, 2017), www.cbc.ca/news/canada/thunder-bay/ringof-fire-talks-1.3955236.

92. *See* Far North Act, S.O. 2010, c. 18, s. 5 (Can.) ("The following are objectives for land use planning in the Far North: 1. A significant role for First Nations in the planning.").

Nations[93] and is "viewed by First Nations in [the Nishnawbe Aski Nation] as an invalid law and a new form of colonialism."[94] Still, the 2014 Regional Framework Agreement between the Matawa First Nations and the Ontario government established a community-based negotiation process focusing on land management, revenue sharing, and capacity building.[95] Information on how the agreement will be implemented is scant,[96] but dissatisfaction among some First Nations is apparent.[97]

Mining and related development in the Far North will have multiple environmental impacts, including: loss and fragmentation of habitat, major rivers, wetlands and peatlands; impacts on groundwater flow and surface waters; pollution of the air, soil, and water; and disturbance of wildlife.[98] Mineral prospecting in the Ring of Fire has already impacted the region.[99]

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93. Holly L. Gardner et al., *The Far North Act (2010) Consultative Process: A New Beginning or the Reinforcement of an Unacceptable Relationship in Northern Ontario, Canada?*, INT'L INDIGENOUS POL'Y J., Aug. 2012, at 11–12; Peggy Smith, *A Reflection on First Nations in their Boreal Homelands in Ontario: Between a Rock and a Caribou*, 13 CONSERVATION & SOC'Y 23, 26 (2015) (explaining that certain environmental non-governmental organizations "negotiat[ed] behind the scenes with government and industry, while avoiding any direct negotiations with First Nations who might oppose their direction"); *see* Catie Burlando, Land Use Planning Policy in the Far North Region of Ontario: Conservation Targets, Politics of Scale, and the Role of Civil Society Organizations in Aboriginal–State Relations, at i (2012) (unpublished Ph.D. dissertation, University of Manitoba), https://umanitoba.ca/institutes/natural_resources/canadaresearchchair/thesis/PhD%20Thesis%20Burlando%202012.pdf ("Aboriginal organizations have condemned new comprehensive legislation for opening the Far North Region to development . . . .").

94. *See Ontario's Far North Act*, NISHNAWBE ASKI NATION, www.nan.on.ca/article/ontarios-far-north-act-463.asp (last visited Apr. 14, 2019) ("In spite of its Treaty and international obligations, the federal government of Canada did not intervene to protect First Nations in the process leading up to th[e] [Far North] Act.").

95. Regional Framework Agreement, First Nations-Ont., Mar. 26, 2014, Ministry of Energy, N. Dev. & Mines.

96. *See, e.g.*, Letter from Michael Gravelle, Minister of N. Dev. & Mines, to Kathleen Wynne, Premier of Ont. (Jan. 11, 2016), www.ontla.on.ca/library/repository/mon/30001/333372.pdf (providing scarce information on the Far North Act's implementation).

97. *See, e.g.*, Press Release, Nishnawbe Aski Nation, Neskantaga and Eabametoong Denounce Wynne Government's Failure on Ring of Fire Planning; Suggest it is Time to Re-set the Regional Process (May 31, 2018), www.nan.on.ca/article/may-31-2018-22595.asp (outlining the First Nations' criticism of how the government has implemented the agreement); Chief Cornelius Wabasse, *What Really Needs to Happen to Make the Ring of Fire a Reality*, HUFFINGTON POST (Feb. 22, 2015), https://www.huffingtonpost.ca/chief-cornelius-wabasse/ring-of-fire-development_b_6367606.html ("[D]evelopment in the Ring of Fire must be part of the ongoing process of Treaty implementation. No longer can our Treaty be ignored and violated. New agreements cannot be reached while existing ones are treated as if they don't exist.").

98. ENVTL. COMM'R OF ONT., SERVING THE PUBLIC: ANNUAL REPORT 2012/2013, at 66 (2013) [hereinafter ANNUAL REPORT], docs.assets.eco.on.ca/reports/environmental-protection/2012-2013/2012-13-AR.pdf.

99. *Compare* Wildlands League, *Flying Over the Ring of Fire in Canada*, VIMEO (Dec. 12, 2015), https://vimeo.com/148702660 (documenting the Ring of Fire Region prior to any mining activity), *with* Jody Porter, *Mining Exploration Causing Permanent Damage in Ring of Fire, Wildlands*

In July 2008, the Ontario government announced it would protect at least 225,000 square kilometers of the Northern Boreal region in an interconnected network of conservation lands[100] and later formalized this in the Far North Act of 2010.[101] Ontario's approach in practice to the regional development of this area has been deeply criticized by the Environmental Commissioner of Ontario[102] and others who had praised the conservation aims of the Far North Act of 2010.[103] One of the main concerns has been the government's failure to conduct a Regional Strategic Environmental Assessment (R-SEA) before any development in the Ring of Fire.[104]

B. Selected Rules Governing Mining in the Ring of Fire from the Lens of Ecological Law

In contrast to the concise Salvadoran LPMM reviewed earlier,[105] the legal framework governing mining in the Ring of Fire involves a suite of lengthy and complex laws and regulations.[106] Without attempting a comprehensive analysis, I review below—from the *lens of ecological law*—some key provincial rules that apply to mining in the Ring of Fire.

League Says, CBC NEWS (June 29, 2015), www.cbc.ca/news/canada/thunder-bay/miningexploration-causing-permanent-damage-in-ring-of-fire-wildlands-league-says-1.3129705 (describing how "mining activity is causing permanent damage in [the Ring of Fire's] fragile ecosystem").

100. Press Release, Office of the Premier, Protecting Ontario's Northern Boreal Forest (July 14, 2008), https://news.ontario.ca/opo/en/2008/07/protecting-ontarios-northern-boreal-forest.html.

101. Far North Act, S.O. 2010, c.18, s. 5 (Can.) (providing that one objective of the Far North Act is the protection of cultural values and ecological systems "by including at least 225,000 square kilometres of the Far North in an interconnected network of protected areas").

102. ANNUAL REPORT, *supra* note 98, at 63–75.

103. Cheryl Chetkiewicz & Justina Ray, *Ontario's Ring of Fire Development Plan Has Major Flaws*, TORONTO STAR (May 29, 2017), https://www.thestar.com/opinion/commentary/2017/05/29/ontarios-ring-of-fire-development-plan-has-major-flaws.html (criticizing how Ontario has implemented the Far North Act).

104. ANNUAL REPORT, *supra* note 98, at 72; *see also* CHERYL CHETKIEWICZ & ANASTASIA M. LINTNER, GETTING IT RIGHT IN ONTARIO'S FAR NORTH: THE NEED FOR A REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT IN THE RING OF FIRE [WAWANGAJING] 4 (2014), www.wcscanada.org/Portals/96/Documents/ RSEA_Report_WCSCanada_Ecojustice_FINAL.pdf ("R-SEA . . . is a decision-support tool and participatory process that addresses environmental sustainability at a regional scale."); Cole Atlin & Robert B. Gibson, *Lasting Regional Gains from Non-Renewable Resource Extraction: The Role of Sustainability-Based Cumulative Effects Assessment and Regional Planning for Mining Development in Canada*, 4 EXTRACTIVE INDUSTRIES & SOC'Y 36, 46–50 (2017) (explaining how sustainable decision making could be implemented in the Ring of Fire).

105. *See supra* Part II.B (analyzing El Salvador's LPMM).

106. *See infra* Parts III.B.1–3 (explaining the legal framework that regulates mining in the Ring of Fire).

1. Accessing Minerals and Land Use Planning

Under Canadian law, the province of Ontario owns the minerals in the Ring of Fire and has jurisdiction to regulate their extraction.[107] While not before the courts, this jurisdiction is contested. According to Ontario, the Matawa First Nations surrendered their traditional territories to the Crown under the James Bay Treaty (Treaty 9), but members of the First Nations maintained a right to use the lands "until [they] might be 'taken up' by the government for a variety of purposes including settlement, mining and lumbering."[108] For their part, the eight Matawa First Nations party to Treaty 9 (all except Long Lake #58 First Nation) "assert that they never gave up their land or their right to govern themselves . . . .[A]nd that they have shared jurisdiction with Ontario."[109] Recognizing this important difference of interpretation, the analysis below focuses primarily on the legal framework in place per Ontario's interpretation.

The Mining Act governs disposition of Crown-owned minerals in Ontario.[110] Consistent with the free entry system,[111] prospecting on Crown lands, which are not subject to rights held by others or excluded from mining, is open to anyone who obtains a prospecting license.[112] Licensees can then register mining claims.[113] The 2009 reform of the Mining Act[114]

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107. *See* Constitution Act, 1867, 30 & 31 Vict. c. 3, s. 92A(1) (U.K.) ("In each province, the legislature may exclusively make laws in relation to (a) exploration for non-renewable natural resources in the province . . . ."), *reprinted in* R.S.C. 1985, c. 40 (Can.); BARRY J. BARTON, CANADIAN LAW OF MINING 151–52 (1993) (describing the two main types of laws regulating mineral extraction in Canada).

108. Nigel Bankes, *The Implications of the Tsilhqot'in (William) and Grassy Narrows (Keewatin) Decisions of the Supreme Court of Canada for the Natural Resources Industries*, 33 J. ENERGY & NAT. RESOURCES L. 188, 208–09 (2015); *Treaty: James Bay Treaty No. 9*, MATAWA FIRST NATIONS MGMT., http://www.matawa.on.ca/66-2/ (last visited Apr. 14, 2019) [hereinafter *James Bay Treaty*].

109. *James Bay Treaty*, *supra* note 108; TRUTH AND RECONCILIATION COMM'N OF CAN., HONOURING THE TRUTH, RECONCILING FOR THE FUTURE 1 (2015) [hereinafter HONOURING THE TRUTH], http://caid.ca/TRCFinExeSum2015.pdf ("The negotiation of Treaties, while seemingly honourable and legal, was often marked by fraud and coercion, and Canada was, and remains, slow to implement their provisions and intent.").

110. Mining Act, R.S.O. 1990, c. M.14, ss. 18–19 (Can.). For purposes of the Act, "'minerals' means all naturally occurring metallic and non-metallic minerals, including coal, salt, quarry and pit material, gold, silver and all rare and precious minerals and metals, but does not include sand." *Id.* s. 1.

111. "The free entry system, also called the free miner or location system, permits the mineral operator to enter lands where minerals are in the hands of the Crown and obliges the government to grant exploration and development rights if the miner applies for them." BARTON, *supra* note 107, at 151.

112. Mining Act, c. M.14, ss. 18–19, 27, 30.

113. *Id.* s. 27.

114. The provisions of the Mining Act cited herein are those in force or that will enter into force following the completion of the modernization process. For critiques of the reform of the Mining Act and of the Far North Act of 2010, see Karen Drake, *The Trials and Tribulations of Ontario's Mining*

and the Far North Act of 2010 introduced limitations on mineral prospecting and extraction in the Far North. These acts bar prospecting and extraction in areas where community-based land use planning has not been completed or where mining is inconsistent with the corresponding community-based land use plan.[115] Also, no mining activity is allowed in protected areas.[116] However, the province has discretion to allow prospecting if it decides mining is in "the social and economic interests of Ontario," regardless of it being barred by a community-based land use plan or located in a protected area.[117] In addition, existing mining claims in the Ring of Fire predate these reforms and are protected by Section 205 of the Mining Act and Section 14(3) of the Far North Act of 2010.[118]

The Far North Act of 2010 further regulates the development of community-based land use plans in the Far North, including subjecting the plans to the guidance set in the Far North Land Use Strategy.[119] Under the Far North Act of 2010, there are two ecologically based objectives for land use planning in the Far North:

> 2. The protection of areas of cultural value in the Far North and the protection of ecological systems in the Far North by including at least 225,000 square kilometres of the Far North in an interconnected network of protected areas designated in community based land use plans.
>
> 3. The maintenance of biological diversity, ecological processes and ecological functions, including the storage and sequestration of carbon in the Far North.[120]

Act: The Duty to Consult and Anishinaabek Law, 11 MCGILL INT'L J. SUSTAINABLE DEV. L. & POL'Y 183, 185 (2015) ("This paper argues that, despite the[] [2013] amendments, the *Mining Act* is still unconstitutional, as it runs afoul of the Crown's obligations to consult Aboriginal peoples and accommodate their rights pursuant to section 35(1) of the *Constitution Act, 1982* . . . ." (footnote omitted)); *see also, e.g.*, Penelope Simons & Lynda Collins, *Participatory Rights in the Ontario Mining Sector: An International Human Rights Perspective*, 6 MCGILL INT'L J. SUSTAINABLE DEV. L. & POL'Y 177, 183 (2010) ("Although the [Mining] *Act* has recently been amended . . . it continues to under-emphasize public participation and privilege the rights of mining companies to explore and exploit mineral resources."); Bruce Pardy & Annette Stoehr, *The Failed Reform of Ont.'s Mining Laws*, 23 J. ENVTL. L. & PRAC. 1, 1 (2011) ("Ontario's mining reforms perpetuate and extend a regime of political management in which discretion reigns, uncertainty persists and a politically-driven hierarchy of interests is pursued.").

115. Mining Act, c. M.14, ss. 30(g), 204(2); Far North Act, S.O. 2010, c. 18, ss. 12, 14(1) (Can.).

116. Mining Act, c. M.14, s. 31; Far North Act, c. 18, s. 14.

117. Mining Act, c. M.14, s. 204(3); Far North Act, c. 18, s. 14(4).

118. Mining Act, c. M.14, s. 205; Far North Act, c. 18, s. 14.

119. Far North Act, c. 18, s. 8.

120. *Id.* s. 5(2)–(3).

2. Consultation and Free Prior and Informed Consent

The Environmental Bill of Rights establishes mechanisms to inform and allow the public to comment on decisions by the Ontario government that may affect the environment, including many regarding mining.[121] If an Environmental Assessment is carried out for a mining project, the process involves some form of public consultation.[122] Consultation with indigenous communities is governed by Section 35 of the Constitution Act of 1982; whereby, the Crown has a duty to consult indigenous communities when considering decisions or actions that may affect treaty and Aboriginal rights—including mineral extraction projects, but not prospecting and registering mining claims.[123] The 2009 Mining Act amendments require the government to consult indigenous communities before certain steps in the mining process and "delegated certain procedural aspects of the consultation process to project proponents through its statutory scheme."[124]

For its part, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) establishes the need to obtain the free prior and informed consent (FPIC) of indigenous peoples to carry out activities affecting their territories, including mining.[125] Although Canada has signed and promised to implement the UNDRIP, as per Recommendation 43 of the Truth and Reconciliation Commission,[126] it recognizes FPIC only as a

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121. *See* Environmental Bill of Rights, S.O. 1993, c. 28, s. 3(1) (Can.) ("This Part sets out minimum levels of public participation that must be met before the Government of Ontario makes decisions on certain kinds of environmentally significant proposals for policies, Acts, regulations, and instruments."); Classification of Proposals for Instruments, O. Reg. 681/94, s. 12 (Can.) (detailing regulations under the Environmental Bill of Rights for developing mining projects).

122. Environmental Assessment Act, R.S.O. 1990, c. E.18, s. 6(1), (3) (Can.) (providing that "[t]he proponent shall give the Ministry proposed terms of reference governing the preparation of an environmental assessment," which "shall give public notice of the proposed terms"). Provincial environmental assessments are not required for mining but could be carried out on a voluntary basis. Far North Act, c. 18, s. 8(4) ("[T]he Far North land use strategy is not an undertaking as defined in the *Environmental Assessment Act*."); Environmental Assessment Act, c. E.18, s. 5(1) ("Every proponent who wishes to proceed with an undertaking shall apply to the Minister for approval to do so."); *see also* MININGWATCH CAN., THE BIG HOLE: ENVIRONMENTAL ASSESSMENT AND MINING IN ONTARIO 6 (2014) (explaining that environmental assessments have "extremely limited public consultation and an assumption that impacts will be minimal and only routine mitigation measures may be applied").

123. MINISTRY OF ENERGY, N. DEV. & MINES, MNDM POLICY: CONSULTATION AND ARRANGEMENTS WITH ABORIGINAL COMMUNITIES AT EARLY EXPLORATION 2, 5–8 (2012) [hereinafter MNDM CONSULTATION POLICY], www.mndm.gov.on.ca/en/mines-and-minerals/mining-act-policies-and-standards. *But see id.* at 4 ("Aboriginal communities and provincial and federal governments do not always share the same perspective which can create challenges in consultation processes."); Drake, *supra* note 114, at 186 (arguing that in "some areas in Ontario . . . recording a mining claim does in fact satisfy the test for triggering the duty to consult").

124. MNDM CONSULTATION POLICY, *supra* note 123, at 2.

125. G.A. Res. 61/295, art. 28, United Nations Declaration on the Rights of Indigenous Peoples (Sept. 13, 2007).

126. HONOURING THE TRUTH, *supra* note 109, at 20, 191 (outlining recommendation 43, which "call[s] upon federal, provincial, territorial, and municipal governments to fully adopt and implement

guiding principle that does not amount to the ability of indigenous peoples to deny consent to an extractive project in their territories.[127] The province of Ontario has a similar position.[128] In contrast, the Chiefs-in-Assembly of Nishnawbe Aski Nation (NAN), including the Matawa First Nations, passed a resolution establishing that "[p]roposed private development or Canadian government policy that affects any part of the NAN territory cannot proceed without the FPIC of the affected NAN First Nation or First Nations."[129] Despite Canada's adoption of UNDRIP, the constitutional duty to consult is, as Martin Papillon and Thierry Rodon describe it, "at best a weak version of FPIC."[130]

For their part, Bruce Pardy and Annette Stoehr argue that the Far North Act and Mining Act amendments—which restrict mining to areas consistent with community-based land use plans—effectively amount to a requirement of consent from those communities for mining in their territories, establishing an "Aboriginal 'planning veto.'"[131] Yet as Wapshkaa Ma'iingan observes,[132] the government ultimately controls the land use planning process and can approve a mining project and other developments that are in the interest of Ontario, despite a conflicting community-based land use plan.[133]

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the United Nations *Declaration on the Rights of Indigenous Peoples* as the framework for reconciliation").

127. *See, e.g.*, Philippe Hanna & Frank Vanclay, *Human Rights, Indigenous Peoples and the Concept of Free, Prior and Informed Consent*, 31 IMPACT ASSESSMENT & PROJECT APPRAISAL 146, 151 (2013) (explaining Canada's reluctance to support the UNDRIP); *see also* Tara Ward, *The Right to Free, Prior, and Informed Consent: Indigenous Peoples' Participation Rights Within International Law*, 10 NW. J. INT'L HUM. RTS. 54, 54–55, 70 (2011) (exploring the evolution of indigenous peoples' development rights in Canada).

128. *See* MNDM CONSULTATION POLICY, *supra* note 123, at 4 ("Canadian courts have generally not recognized a legal right of First Nations to . . . require First Nation consent to proposed activities.").

129. *Requirement for Free, Prior and Informed Consent in NAN*, NISHNAWBE ASKI NATION, www.nan.on.ca/article/requirement-for-free-prior-andinformed-consent-in-nan-496.as (last visited Apr. 14, 2019).

130. Martin Papillon & Thierry Rodon, *Proponent-Indigenous Agreements and the Implementation of the Right to Free, Prior, and Informed Consent in Canada*, 62 ENVTL. IMPACT ASSESSMENT REV. 216, 218 (2016).

131. Pardy & Stoehr, *supra* note 114, at 8.

132. *See* Wapshkaa Ma'iingan (Aaron Mills), *Aki, Anishinaabek, Kaye Tahsh Crown*, 9 INDIGENOUS L.J. 107, 113 n.15 (2010), https://ilj.law.utoronto.ca/volume-9-issue-1-2010 ("The [Far North] Act gives the Minister of Natural Resources absolute discretion over the terms of reference and over final approval of a land use plan and requires that land use plans be developed pursuant to the Far North land use strategy . . . .").

133. Mining Act, R.S.O. 1990, c. M.14, s. 204(3) (Can.) (providing the Lieutenant Governor in Council with the power to approve a new mine "if the project is in the social and economic interests of Ontario"); Far North Act, S.O. 2010, c. 18, s. 14(4) (Can.).

3. Minimizing and Redressing Harm

A number of statutes and regulations—including the Mining Act, the Ontario Environmental Protection Act (OEPA), the Ontario Water Resources Act, and the Species at Risk Act—aim to minimize environmental harm and establish liability during and after mining operations.[134] Generally, persons carrying out mining activities are responsible for making notifications; submitting documentation; obtaining authorizations; and complying with the substantive requirements in the different statutes, regulations, and their approved plans and permits.[135] Government officials grant, deny, or amend authorizations; investigate compliance; issue orders requiring or stopping certain actions; and otherwise carry out work to prevent harm, as established in the regulations.[136] I will touch only on two examples: rehabilitation obligations under the Mining Act and effluent discharge limits under the OEPA.

The Mining Act requires progressive rehabilitation upon closure of mining sites, including for advanced exploration.[137] "'[R]ehabilitate' means measures, including protective measures, taken in accordance with the prescribed standards to treat a site or mine hazard so that the use or condition of the site, (a) is restored to its former use or condition, or (b) is made suitable for a use that the Director sees fit."[138] Rehabilitation must comply with the standards established in the Mine Rehabilitation Code of Ontario or higher standards that may be specifically authorized (for example, in a closure plan).[139] However, as Pardy and Stoehr note, no substantive standards actually exist, and the rehabilitation required depends on it being "practicable" for the proponent.[140]

For its part, the OEPA generally prohibits the discharge of contaminants into the natural environment in amounts greater than the regulations allow or if the discharge "causes or is likely to cause an adverse effect."[141] Specific regulations implementing the OEPA apply to mining of

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134. Pardy & Stoehr, *supra* note 114, at 9–11.

135. *See, e.g.*, Mining Act, c. M.14, s. 19(1) ("Any person who is 18 years or older may obtain a prospector's licence online through the mining lands administration system if the person has successfully completed the prescribed *Mining Act* awareness program . . . ."); *id.* s. 26(7) (allowing a Tribunal to cancel a mining claim upon finding "a willful contravention of any of the provisions of this Act or the regulations").

136. *See, e.g.*, *id.* s. 26(1) (authorizing the Tribunal to revoke a license); *see also infra* notes 139–42 and accompanying text (describing mandatory rehabilitation measures).

137. Mining Act, c. M.14, ss. 139.1(1), 140(1).

138. *Id.* s. 139(1).

139. Mine Development and Closure Under Part VII of the Act, O. Reg. 240/00, s. 4 (Can.).

140. Pardy & Stoehr, *supra* note 114, at 12–13.

141. Environmental Protection Act, R.S.O. 1990, c. E.19, s. 15(1) (Can.).

metals and industrial minerals.[142] These regulations establish effluent discharge limits for a number of parameters;[143] lethality limits;[144] and sampling, monitoring,[145] assessment, and reporting requirements.[146]

C. Lens of Ecological Law Analysis

In contrast to El Salvador's conclusions that mining could not be carried out without causing serious harm to people and transgressing ecological limits,[147] Ontario has developed a legal framework that purportedly ensures mineral extraction in Ontario's Ring of Fire will be sustainable.[148] However, as the analysis below shows, some of the elements of Ontario's framework are far from an example of ecological law. Generally speaking, the Ring of Fire's framework has no elements of *ecocentrism*;[149] contains important obstacles for *ecological primacy* and *ecological justice*;[150] and opens only a few modest opportunities for ecological law from the perspective of the these three principles.[151]

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142. *See, e.g.*, Effluent Monitoring and Effluent Limits — Industrial Minerals Sector, O. Reg. 561/94, s. 2 (Can.) (providing that "[t]he purpose of this Regulation is to monitor and control the quality of effluent discharged from" plants that produce, among other things, cement, lime, magnesium, graphite, and gypsum); Effluent Monitoring and Effluent Limits — Metal Mining Sector, O. Reg. 560/94, s. 3(1) (Can.) ("This Regulation applies with respect to every plant that is a metal mining plant and that . . . discharges a total volume of process effluent . . . of more than 50 cubic metres.").

143. *See, e.g.*, Effluent Monitoring and Effluent Limits — Metal Mining Sector, O. Reg. 560/94, s. 18(1) (Can.) ("Each discharger shall ensure that each analytical result obtained for each limited parameter from each sample collected from a process effluent monitoring stream at the discharger's plant does not exceed the daily concentration limit specified for the parameter . . . .").

144. *See, e.g.*, *id.* s. 19 (providing that "each rainbow trout acute lethality test and each *Daphnia magna* acute lethality test performed on any grab sample collected at a process effluent sampling point . . . at the plant results in mortality for no more than 50 per cent of the test organisms in 100 per cent effluent").

145. *See, e.g.*, *id.* ss. 20–30 (providing a detailed set of monitoring and sampling requirements).

146. *See, e.g.*, *id.* ss. 20–30 (describing requirements for collecting and reporting effluent samples).

147. *See supra* Part II.B.2 (summarizing how El Salvador banned mining due to numerous environmental and health concerns).

148. *See* N. DEV. & MINES, *supra* note 89, at 18 (explaining that Ontario adopted a "comprehensive mineral development strategy" with the goal of being a "global leader in sustainable mineral development and production").

149. *See infra* Part III.C.1 (contrasting the principle of ecocentrism with Ontario's mining framework).

150. *See infra* Parts III.C.2–3 (considering whether Ontario's mining framework contains elements of ecological primacy and justice).

151. *See supra* Part I (summarizing the three principles of ecological law, which are ecocentrism, ecological primacy, and ecological justice).

1. Ecocentrism

The legal framework governing mining in Ontario is anthropocentric and utilitarian. Land and minerals are the property of humans—either directly or through the state and corporations.[152] Regulation of mineral extraction focuses on the interests of people; land and other beings are not legal persons.[153] The human-Earth relationship underlying the Mining Act is about ownership and use of the land by humans with no reciprocal responsibilities owed to the land.[154]

In contrast, the principle of *ecocentrism* has some resonance with indigenous legal traditions that may be relevant in the Ring of Fire. For example, the Chief of Webequie First Nation has noted that at the core of his nation's laws is a belief in the interconnectedness of beings.[155] Also, legal scholar John Borrows has described Anishinabek beliefs concerning the Earth as a living being and the agency of rocks,[156] both of which resonate with *ecocentrism*.[157]

Among the specific rules noted, the mine effluent regulations under the OEPA stand out as incompatible with *ecocentrism*. Effluent monitoring requires routinely submerging rainbow trout and *Daphnia magna* in mine effluent to test its toxicity, with an acceptable mortality rate of "no more than 50 per cent of the test organisms in 100 per cent effluent."[158] Under the principle of *ecocentrism*, it would not be justified for a law to require the routine killing of other beings to determine compliance with an acceptable limit of toxic discharge into the environment.[159] These provisions reflect an

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152. Constitution Act, 1867, 30 & 31 Vict., c. 3, s. 92A(1) (U.K.), *reprinted in* R.S.C. 1985, c. 40 (Can.).

153. *See, e.g.*, Mining Act, R.S.O. 1990, c. M.14, s. 2 (Can.) ("The purpose of this Act is to encourage . . . the development of mineral resources, in a manner consistent with the recognition and affirmation of existing Aboriginal and treaty rights . . . and to minimize the impact of these activities on public health and safety and the environment.").

154. *See, e.g.*, *id.* s. 19 (authorizing "[a]ny person" over 18 years of age to obtain a prospector's license provided certain criteria are met); *see also id.* s. 1 (defining "owner" as "every current owner, lessee or occupier of all or part of a mine, mine hazard or mining lands").

155. *See* Wabasse, *supra* note 97 ("We believe that all things in creation are connected. As part of our responsibilities to the Creator, we work to protect and nurture these connections and relationships.").

156. *See* JOHN BORROWS, CANADA'S INDIGENOUS CONSTITUTION 244–45 (2010) ("The active nature of rocks means that they have an agency of their own that must be respected when Anishinabek people use them.").

157. Sbert Carlsson, *supra* note 3, at 8.

158. Effluent Monitoring and Effluent Limits — Metal Mining Sector, O. Reg. 560/94, s. 19 (Can.).

159. *See* Sbert Carlsson, *supra* note 3, at 8–9 ("*Ecocentrism* primarily illuminates the law's ability to support and promote a worldview in which humans are part of nature and no more important than other life forms and systems.").

anthropocentric and utilitarian view of the human-Earth relationship, where the environment is a receptacle for toxic effluent and fish and crustaceans are disposable "test organisms."[160] These tests are also unacceptable from an *ecological justice* perspective, as they negate interspecies equity.[161] Ecological law would, instead, allow only the generation of recycled or neutralized effluent before discharge and require testing procedures that do not involve destroying living beings.[162]

2. Ecological Primacy

To recall, restoring and maintaining ecological integrity is a key element of the principle of *ecological primacy*.[163] Because of the relative intactness of the Far North, the standard of ecological integrity seems particularly appropriate in this case; although, much remains to be learned to establish proper baselines for monitoring ecosystem responses to changing conditions in the Far North (including those linked to climate change and human activities) and to understand the potential impacts of different types of development.[164]

A Draft Far North Land Use Strategy (Draft FNLUS) was released in September 2015, which explicitly refers to ecological integrity in its description of the Far North as "one of the world's largest, most intact ecological systems, reflecting a high level of ecological integrity and providing ecosystem services of global significance far beyond its borders."[165] The Draft FNLUS provides some support for prioritizing ecological values, even though it does not establish constraints on development in the Far North to maintain its ecological integrity.[166] For example, the Draft FNLUS's guidance for community-based land use plan development in areas where mining is a desired land use recognizes

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160. *See, e.g.*, Effluent Monitoring and Effluent Limits — Metal Mining Sector, O. Reg. 560/94, s. 19 (Can.) (allowing fish and crustaceans to be used as test organisms for effluent monitoring).

161. *See* Sbert Carlsson, *supra* note 3, at 12 (explaining that ecological law is based on the notion that "humans and other species hav[e] equal intrinsic value").

162. *See id.* at 20 ("The challenge of incorporating *ecological primacy* into law involves setting benchmarks for ecological integrity and mechanisms to measure whether ecological integrity is being maintained and restored.").

163. *Id.*

164. *See, e.g.*, ANNUAL REPORT, *supra* note 98, at 75 (expressing concerns with impacts from mining in the Ring of Fire).

165. ONT. MINISTRY OF NAT. RES. & FORESTRY, FAR NORTH LAND USE STRATEGY: A DRAFT 7 (2015) [hereinafter DRAFT FAR NORTH LAND USE STRATEGY], www.ontario.ca/page/far-north-land-use-strategy.

166. *See id.* at 25 (identifying "[c]aring for the land," protecting water sources, and sustainability as guiding principles).

ecological constraints may render areas that have mineral potential off limits (except for areas where there are existing rights).[167]

Another opportunity for *ecological primacy* is the Far North Science Advisory Panel recommendation to use a "conservation-matrix model" for land use planning in the Far North.[168] As described elsewhere:

> The Conservation Matrix Model represents a paradigm shift from reactive conservation planning in degraded systems to proactive conservation planning in large, intact systems. Rather than addressing "how much is enough?" with regards to protection, this model addresses "how much is too much?" with regards to human development on the landscape.[169]

Despite these opportunities to favor ecological considerations in determining how land may be used, the Far North Act of 2010 also includes provisions that are inconsistent with *ecological primacy*. In particular, as already noted, it prioritizes mining interests by granting government discretion to allow mining in areas subject to a community-based land use plan—that does not allow mining—and in protected areas if the mining "is in the social and economic interests of Ontario."[170] Also, the Act provides processes to amend community-based land use plans, including the boundaries of planning areas, independent of ecological considerations.[171] *Ecological primacy* would require all amendments to consider the impact on ecological integrity (taking into account cumulative effects).[172]

I now turn to the rehabilitation requirements applicable to mining in the Far North. From the perspective of *ecological primacy*, rehabilitation measures for new, ongoing, and abandoned mines (like those required by the Mining Act[173]) would be important tools for restoring and maintaining ecological integrity, if they were tied to substantive, rather than procedural,

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167. *Id.* at 42.

168. ADVISORY PANEL, *supra* note 20, at xv. The Draft Far North Land Use Strategy proposes a "stewardship" approach that it deems similar to this model. DRAFT FAR NORTH LAND USE STRATEGY, *supra* note 165, at 28.

169. *Conservation Matrix Model*, CAN. BEACONS PROJECT, www.beaconsproject.ca/cmm (last visited Apr. 14, 2019) [hereinafter *Conservation Matrix Model*].

170. Far North Act, S.O. 2010, c. 18, s. 14(4) (Can.); Mining Act, R.S.O. 1990, c. M.14, s. 204(3) (Can.).

171. *See* Far North Act, c. 18, s. 10(3) (allowing the Minister to amend "the boundaries of a planning area after a community based land use plan is approved" provided certain criteria are met, including First Nations approval).

172. Sbert Carlsson, *supra* note 3, at 11.

173. *See* Mining Act, c. M.14, s. 139–139.1 (outlining the requirements for rehabilitating mining sites).

standards.[174] Also, the standards for remediation should be based, not on what is achievable by the proponent, but on what is needed for functioning ecosystems to retain their integrity.[175] However, while some heavily contaminated former mining sites have been reclaimed,[176] actually restoring them is a different matter: "'Restoration', especially of mining disturbances, is essentially impossible. No matter how much money is spent on the 'reclamation', the complete restoration of the previous ecosystem is impossible."[177] Instead, the best to be expected is "a productive and suitable ecosystem that will replace the pre-mine ecosystem and achieve the desired post-mining land use (PMLU)."[178] Clearly, if fully restoring a mined site is deemed impossible, then—from the perspective of *ecological primacy*—mining should not be allowed in areas with high levels of ecological integrity.[179] Under the current legal framework within the Ring of Fire, however, even areas critical to ecological integrity may not be excluded from mining because they are covered under pre-existing mining claims.[180]

3. Ecological Justice

Community participation in mineral extraction is a critical element of *ecological justice* because it allows those impacted to influence decisions on whether to disrupt the land and how to distribute the benefits and harms

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174. *Compare* Pardy & Stoehr, *supra* note 114, at 13 ("The purpose of the [Mining] Act is not to protect against environmental impact or provide for public safety, but to facilitate mining."), *with supra* notes 165–69 and accompanying text (outlining substantive standards based on *ecological primacy* for authorizing mining and restoring old mines).

175. *Compare* Pardy & Stoehr, *supra* note 114, at 12–13 (explaining that the Mining Act "does not contain standards for rehabilitation of mining sites" and that the regulations only apply to mines if "they are found to be 'practicable'"), *with* Sbert Carlsson, *supra* note 3, at 10–11 (providing that one of the purposes of ecological law is to restore and maintain ecological integrity); *see also supra* notes 6–14 and accompanying text (describing how ecological primacy focuses on promoting ecological integrity).

176. *See* NAT'L ORPHANED/ABANDONED MINES INITIATIVE, NOAMI PERFORMANCE UPDATE 2009-2015, at 13 (2015), www.abandoned-mines.org/wp/wp-content/uploads/2015/08/NOAMI-2015-UPDATE-ENG-WEB.pdf ("[Ontario's Abandoned Mine Rehabilitation Program] has conducted rehabilitation projects on more than 80 of the highest priority abandoned mines sites located throughout Ontario.").

177. Subijoy Dutta, Raj Rajaram & Bonnie Robinson, *Mineland Reclamation*, *in* SUSTAINABLE MINING PRACTICES – A GLOBAL PERSPECTIVE 179 (Vasudevan Rajaram et al. eds., 2005) (citation omitted).

178. *Id.*

179. *See* Sbert Carlsson, *supra* note 3, at 11 (explaining that ecological primacy requires governments to "forego non-essential benefits that may be harmful to the Earth community").

180. *See* Far North Act, S.O. 2010, c. 18, s. 14(3) (Can.) ("If a community based land use plan is made or amended after a mining claim . . . is recorded, issued, or granted in an area to which the plan applies . . . [it] shall [not] affect, (a) the validity of the mining claim . . . .").

the disruption entails.[181] In the Ring of Fire, this means, at a minimum, requiring the FPIC of Indigenous communities. But, as described above, the rules and practices currently in place in Canada do not meet this standard.[182]

Another aspect of the framework that is not consistent with *ecological justice* is the protection of existing mining claims because it favors extraction of resources mostly for the short-term gain of mining companies and their shareholders, instead of promoting the equitable use of the Far North region by present and future humans and other beings.[183] Considering the importance of the region for (pre-existing) biodiversity,[184] no mineral extraction should be carried out in the Ring of Fire, regardless of pre-existing mining claims.[185] More fundamentally, from the perspective of *ecological justice*, if mining draws on the Earth's sustaining capacity by extracting non-renewable minerals and destroying the land, there should be a very good reason to undertake it.[186]

Yet a question rarely posed of a mining project is what are the minerals for? This question is key from the perspective of *ecological justice*.[187] If it is impossible to mine without causing harm to other beings and restoring mined sites is deemed impossible,[188] then mining can only be justified to obtain minerals to satisfy basic human needs and when there are no

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181. *See* Sbert Carlsson, *supra* note 3, at 12 (explaining that ecological justice requires fair distribution of benefits and harms and "includes the concept of environmental justice"). *Cf.* Gabriela Ratulea & Daniel Sorea, *Ecological Justice and the Matter of Fair Distribution*, *in* LEGAL PRACTICE & INTERNATIONAL LAWS 297, 298 (2011) ("'[S]ocial justice focuses on distribution but is also concerned with individual recognition, participation and the functioning of the community', which means that social justice equally applies to ecological problems. Hence we can extrapolate and speak about an 'ecological justice', as subset of social justice which is a distributive one." (footnote omitted) (quoting DAVID SCHLOSBERG, DEFINING ENVIRONMENTAL JUSTICE 8 (2007))).

182. *See supra* Part III.B.2 (describing how Canada has implemented the concept of FPIC into its regulations governing mining).

183. *See* Far North Act, c. 18, s. 14(3) (exempting existing mining claims from community-based land use planning); ANNUAL REPORT, *supra* note 98, at 149 (commenting that "the environmental sensitivity of an area" and "the potential for environmental impacts" "play no role in determining whether a permit is required"). *Cf.* MINING ASS'N OF CAN., FACTS AND FIGURES OF THE CANADIAN MINING INDUSTRY 12 (2017) ("The extractive industry, which combines mineral extraction with oil and gas extraction, contributed $124.8 billion, or 7.5%, to Canada's GDP in 2016.").

184. *See* ADVISORY PANEL, *supra* note 20, at xi (detailing the Far North's unique natural landscapes).

185. Sbert Carlsson, *supra* note 3, at 11.

186. *See supra* notes 15–18 and accompanying text (explaining how ecological justice is centered around fair distribution and taking of the Earth resources for necessary reasons).

187. *See* Sbert, *Re-imagining*, *supra* note 66, at 84–85 (articulating a needs-based approach to mining, which would only permit the extraction of non-renewable resources to satisfy "the reasonable needs of living generations").

188. *See supra* notes 176–79 and accompanying text (explaining why fully restoring mines is basically impossible).

alternative means of obtaining them.[189] Under the current system, the reason for mining is that companies and their shareholders profit from extracting minerals for a wide array of uses, including speculation that may or may not relate to the satisfaction of basic needs.[190]

This is true in the Far North, where commodity markets—not community needs—drive extraction,[191] and the benefits accrue to mining companies.[192] Many basic needs are not met in the communities of the Far North, including safe drinking water,[193] and some argue that mineral extraction in the region will contribute resources to address these basic needs.[194] However, the wealth from mineral extraction usually benefits corporations and their shareholders, rather than the communities, despite arrangements that could be put in place for mines to be "bridges to more desirable and sustainable futures," as Professor Robert Gibson suggests.[195] Moreover, there are other sources of wealth that could be more easily tapped to satisfy these basic needs; for example, corporations and the extremely rich could be taxed more effectively.[196] Proponents argue that mining contributes to economic growth; provides revenue to governments and communities; and provides minerals that are needed for infrastructure,

189. Sbert Carlsson, *supra* note 3, at 11.

190. *Id.* at 20 ("Globally, the [mining] sector is driven by the demand for commodities and the pursuit of profit . . . .").

191. Under the Far North Act of 2010, for example, community needs are not the starting point for the land use planning process, but only a consideration in a decision to allow some types of development in the absence of a land use plan. *See, e.g.*, Far North Act, S.O. 2010, c. 18, s. 14 (Can.) (allowing the Lieutenant Governor to approve mining in both protected areas and when mining would be inconsistent with a community-based land use plan).

192. *Cf.* MINING ASS'N OF CAN., *supra* note 183 (highlighting that mining makes up a significant portion of the Canadian economy).

193. Most Matawa First Nations communities are under boil water advisories. *See Advisories for Ontario*, WATERTODAY, www.watertoday.ca/maptest4.asp?province=8 (last visited Apr. 14, 2019) (indicating the communities that lack access to safe drinking water). Neskantaga has been under a boil water advisory since 1995. *Advisory for Neskantaga First Nation, Ontario*, WATERTODAY, http://www.watertoday.ca/textm-a.asp?province=8&advisory=989 (last visited Apr. 14, 2019).

194. CHONG, *supra* note 87, at 7–8.

195. Robert B. Gibson, *Turning Mines into Bridges: Gaining Positive Legacies from Non-renewable Resource Projects*, J. ABORIGINAL MGMT., Oct. 2014, at 4, 7; *see also* Atlin & Gibson, *supra* note 104, at 49 ("While it is challenging for mining developments to generate sustainable outcomes . . . mining development can be designed and undertaken in ways that enhance prospects for lasting regional wellbeing.").

196. *See, e.g.*, MAX LAWSON ET AL., OXFAM INT'L, REWARD WORK, NOT WEALTH 8 (2018), https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-reward-work-not-wealth-220118-summ-en.pdf (reporting that the 2017 increase in wealth of the "2,043 dollar billionaires worldwide" could "end extreme poverty seven times over"); *see also id.* ("82% of all of the growth in global wealth in the last year went to the top 1%, whereas the bottom 50% saw no increase at all."); *see also* Atlin & Gibson, *supra* note 104, at 49 (explaining how the Canadian Government should allocate a portion of its funds to creating sustainable mining features).

goods, and services that maintain and increase wellbeing.[197] The Library of Parliament estimates that "[t]he chromite in the Ring of Fire could meet North American needs for two centuries."[198] Also, the minerals discovered in the Ring of Fire include copper and nickel[199]—which are used in lithium-ion batteries for electric vehicles[200]—and copper and titanium, which are needed for solar panels.[201] These metals are supposedly needed for the fight against climate change.[202] The question is whether solar panels and electric cars are basic needs that should be satisfied to ensure wellbeing or mere wants, which are the result of demand generated by commodity markets and consumer preferences, including for individually owned (electric) cars. What would the *need* for chromite and the other metals in the Ring of Fire look like in a degrowth economy? Overcoming profit-based extraction is one of the major challenges in a shift to ecological law and an ecologically sustainable economy.[203] But developing an alternative framework for needs-based extraction requires much further research, debate, and experimentation.

In summary, the framework governing mining in the Ring of Fire region is largely inconsistent with ecological law.[204] However, tools that various groups have recommended to guide development in the region, like the conservation matrix and sustainability-based regional assessments, provide an opportunity to further *ecological primacy*.[205] Moreover, if

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197. *See, e.g.*, CHONG, *supra* note 87, at 5, 7–8 (discussing multiple ways mining in the Ring of Fire could benefit First Nations); N. DEV. & MINES, *supra* note 89, at 11, 18 (proclaiming that mining in the Ring of Fire "presents a multi-generational economic opportunity" that will "[a]ttract jobs and investment").

198. CHONG, *supra* note 87, at 3.

199. ADVISORY PANEL, *supra* note 20, at 16.

200. Mark Burton & Eddie van der Walt, *Electric-Car Revolution Shakes Up the Biggest Metals Markets*, BLOOMBERG NEWS (Aug. 2, 2017), www.bloomberg.com/news/articles/2017-08-02/electric-car-revolution-is-shaking-up-the-biggest-metals-markets.

201. CLEAN ENERGY CAN., MINING FOR CLEAN ENERGY: TRACKING THE CLEAN ENERGY REVOLUTION 4 (2017), http://cleanenergycanada.org/wp-content/uploads/2018/03/MiningCleanEnergy2017.pdf.

202. *See* WORLD BANK GRP., THE GROWING ROLE OF MINERALS AND METALS FOR A LOW CARBON FUTURE 26 (2017) (identifying copper, nickel, and titanium as "commodities assumed to play a potentially prominent role in the energy shift to a carbon constrained future").

203. *See* Sbert Carlsson, *supra* note 3, at 12 (positing that ecological law "implies a society that aims to attain sufficient—not maximum—wealth").

204. *See* supra Parts III.C.1–3 (describing how the elements of ecological law are absent from Canada's framework).

205. *See supra* notes 168–69 and accompanying text (describing how the Far North Science Advisory Panel recommended the use of the conservation-matrix model in the Far North); *see also supra* note 104 and accompanying text (explaining the idea of Regional Strategic Environmental Assessments).

demands for indigenous jurisdiction over the Ring of Fire succeed,[206] indigenous laws might foster values that resonate with ecological law[207] or present different obstacles.[208] But as it stands today, the Ontario framework that purportedly ensures that mining in the Ring of Fire is sustainable is anthropocentric; prioritizes economic interests over ecological integrity; and favors a few mining claims over current and future generations of humans—the majority of whom are First Nations on whose traditional territories the mining would occur regardless of their FPIC—and other beings.

CONCLUSION

This paper uses the *lens of ecological law* to consider aspects of two very different legal frameworks governing mining to consider some of challenges and opportunities associated with a shift to ecological law.

El Salvador's mining ban provides an example of an opportunity to adopt ecological law that arises in the context of critical environmental problems, such as water pollution and scarcity.[209] However, it is questionable whether these openings provide solid foundations for a transition to ecological law. Although the decision to ban metal mining was based in great part on the need to avoid breaching ecological limits, especially regarding water, it does not appear that this derived from an understanding of sustainability as ecological sustainability. Rather, the decision to ban metal mining seems to have resulted from a calculation in which the government determined that the negative ecological and social impacts of mining were not worth the economic benefits.[210] Thus, this calculation might have led to a different result if El Salvador had a tradition

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206. *See supra* notes 107–09 and accompanying text (discussing indigenous jurisdictional claims to land in the Ring of Fire).

207. For example, Patrick Glenn argues that under indigenous–chthonic–law: "You don't simply have to repair damage to the environment; you and your kind have to live entire lives which accord as much respect to the natural world as to yourself." H. PATRICK GLENN, LEGAL TRADITIONS OF THE WORLD: SUSTAINABLE DIVERSITY IN LAW 76 (Oxford University Press 5th ed. 2014).

208. At the same time, other scholars caution that indigenous legal traditions should not be assumed to be either ecologically based or inherently sustainable. *See, e.g.*, Benjamin J. Richardson, *The Ties that Bind: Indigenous Peoples and Environmental Governance*, *in* INDIGENOUS PEOPLES AND THE LAW: COMPARATIVE AND CRITICAL PERSPECTIVES 337, 340–44 (Benjamin J. Richardson, Shin Imai & Kent McNeil eds., 2009) (arguing that indigenous law does not always result in environmentally sustainable outcomes).

209. *See supra* Parts II.A–B (describing some of the reasons why El Salvador decided to ban metal mining).

210. *See supra* Parts II.B.1–3 (outlining how El Salvador's metal mining ban lacks the elements of ecocentrism, ecological primacy, and ecological justice).

of mining and if profitable mines were operating at the time.[211] Still, choosing "water over gold" and the role of science in enacting this ban are important precedents for ecological law.[212]

The Ring of Fire case study focuses on opportunities for an ecological law framework which promises sustainable mining in one of the planet's last remaining areas with ecological integrity.[213] Despite some tools that could promote *ecological primacy* and *ecological justice*,[214] this framework ultimately prioritizes economic interests over both ecological imperatives and First Nations' consent for activities that might impact their traditional territories.[215] Finally, the case study also demonstrates that the framework, and various environmental laws, governing mining in the Ring of Fire have anthropocentric and utilitarian characteristics that are incompatible with *ecological justice*.[216]

The underlying question is under what circumstances would ecological law allow mineral extraction. These two case studies show that mining would not be permitted in areas where ecological limits are being pushed to the brink (as in El Salvador) and in areas where ecological integrity remains high (as in the Far North of Ontario). Yet a mining ban cannot be the only possible way to observe *ecological primacy*. Some form of mining could be allowed in already disturbed sites with ecological conditions determinative in each case. In addition, another decisive element is what purpose the extracted minerals are used for, which is a question current law does not address.[217] Minerals are used directly and as part of goods and services to satisfy basic human needs and will likely always be required for this to some extent.[218] Thus, key questions for ecological law and democratic

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211. *See supra* Part II.B.3 (arguing that the metal mining ban is subject to shifting interests because it is based on an anthropocentric worldview).

212. Broad & Cavanagh, *supra* note 45; *see also supra* Part II.B.2 (discussing some of the ways El Salvador used science in deciding to ban metal mining).

213. *See supra* Part III.A (describing Canada's efforts to balance mineral development with environmental protection).

214. *See supra* notes 104, 168–69 and accompanying text (discussing tools such as conservation-matrix model and Regional Strategic Environmental Assessments).

215. *See supra* Parts III.C.1–3 (explaining how Canada's framework governing mineral development prioritizes the economic interests of corporations); *see also supra* Part II.B.2 (criticizing the Far North Act and Mining Act because they fail to require the FPIC of First Nations over decisions that may affect their lands).

216. *See supra* Parts III.C.1–3 (concluding that the laws governing mineral development in the Ring of Fire are neither ecocentric nor based on ecological justice).

217. *See, e.g.*, Far North Act, S.O. 2010, c. 18, s. 14(4) (Can.) (allowing the Lieutenant Governor to approve mines that are "in the social and economic interests of Ontario").

218. *See* WORLD COMM'N ON ENV'T AND DEV., OUR COMMON FUTURE, FROM ONE EARTH TO ONE WORLD, CH. 8: INDUSTRY: PRODUCING MORE WITH LESS, ¶ 2 (1987) ("Many essential human needs can be met only through goods and services provided by industry.").

debate are: (1) what a needs-based extraction framework would look like and (2) the specific conditions under which ecological law would allow for mineral extraction to satisfy basic needs.

I have suggested elsewhere that needs-based mining implies reducing mineral demand; relying primarily on existing stocks and landfill mining; and only allowing new extraction in exceptional circumstances and under strict measures to avoid serious harm.[219] Ecological law would require the consent of potentially impacted people and the FPIC of indigenous peoples if extraction would affect their traditional territories.[220] Ecological law also considers the implications for the ability of other beings to access the sustaining capacity of the Earth.[221] Perhaps by limiting extraction to small volumes over long periods of time and using low impact technologies, mining is possible without diminishing the ecological integrity of the ecosystem in which minerals are located.[222] However, this is unthinkable under the current capitalist logic that drives mining—a reminder that a shift to ecological law is part of a much broader shift in worldview and socio-economic paradigm.[223]

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219. Sbert, *Re-imagining*, *supra* note 66, at 85.

220. *See supra* notes 125–33 and accompanying text (discussing the concept of FPIC of indigenous peoples).

221. Sbert Carlsson, *supra* note 3, at 11.

222. Sbert, *Re-imagining*, *supra* note 66 (outlining how mining could promote "sustainability and equity").

223. JOEL KOVEL, THE ENEMY OF NATURE: THE END OF CAPITALISM OR THE END OF THE WORLD? 97 (2007); *see, e.g.*, Geoffrey Garver, *The Rule of Ecological Law: The Legal Complement to Degrowth Economics*, 5 SUSTAINABILITY 316, 317 (2013) (claiming that "contemporary environmental law is deficient as a means to enclose and regulate the human enterprise" and advocating instead for a "degrowth movement," which "provides a specific context for the emergence of the rule of ecological law"); CORMAC CULLINAN, WILD LAW: A MANIFESTO FOR EARTH JUSTICE 59–61 (2d ed. 2011) ("Shifting the paradigm of the homosphere to an Earth-centred worldview will take the efforts of many people in many fields . . . ."); Michael M'Gonigle & Paula Ramsay, *Greening Environmental Law: From Sectoral Reform to Systemic Re-formation*, 14 J. ENVTL. L. & PRAC. 333, 335 (2004) (developing a "green legal theory," which "examine[s] the role of law . . . in both creating systemic unsustainability, and in impeding or facilitating its resolution").

U.S. FRESH WATER LAW & GOVERNANCE IN THE ANTHROPOCENE: A CRITIQUE OF THE RIPARIAN RIGHTS LEGAL FRAMEWORK AS A BASIS FOR WATER GOVERNANCE IN VERMONT

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INTRODUCTION

The era of the Anthropocene[1] will challenge governments, legal frameworks, and resource management regimes to reexamine underlying

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1. The "Anthropocene" is a proposed term to describe the current geological epoch to capture "the central role of mankind in geology and ecology." It was first suggested as a new geological epoch by P. J. Crutzen & E. F. Stoermer's *The "Anthropocene." See* Paul J. Crutzen & Eugene F. Stoermer, *The "Anthropocene*," GLOBAL CHANGE NEWSL. (Int'l Geosphere-Biosphere Programme (IGBP),

structures and assumptions from the perspective of environmental limits.[2] One such system that will challenge these structures is the global hydrologic cycle.[3] Within the U.S., issues of water use are traditionally viewed as relating to the concepts of ownership and property rights, and water use is primarily allocated to achieve economic development.[4] As such, the legal framework and policy for addressing issues of water allocation, use, and quality is inadequate in the face of the ecological crises of the Anthropocene, and in fact played a direct role in creating these same crises.[5]

In this Essay, I examine the legal system of riparian rights, one of the primary doctrines in the U.S. for governing water rights, and its evolution to the regulated riparian system.[6] Through an investigation into the current state of the riparian water rights system in Vermont, I examine how, in practice, the doctrine and corresponding statutory law do not adequately protect water resources. The system does not accurately account for the ecological limits embedded in the hydrologic cycle in deciding questions of water allocation, use, and quality in Vermont.[7] Instead, the principle of "reasonable use" is employed to weigh economic development more heavily than ecological limits.[8] I suggest that the riparian doctrine in Vermont, and in the U.S. more broadly, requires restructuring based on the principles of an environmental ethic in order to face the challenges of the Anthropocene to the hydrologic cycle.[9]

I. THE CHALLENGE OF THE ANTHROPOCENE TO FRESH WATER LAW

"Sic utere tuo, ut non alienum lædas."

–Justice Story, Circuit Justice[10]

Stockholm, Swed.), May 2000, at 17 (discussing the reasoning behind coining and using the term "Anthropocene").

2. *See* Mary Christina Wood, *Nature's Trust: A Legal, Political and Moral Frame for Global Warming*, 34 B.C. ENVTL. AFF. L. REV. 577, 577–78 (2007) (articulating how the current climate crisis requires humans to redefine the government's obligations to protecting the environment).

3. *See id.* at 577 (stating that climate change will have detrimental effects on water resources).

4. *See infra* Part III (overviewing water law and its origins in the U.S.).

5. *See infra* Part II (analyzing the effect of the current legal regime on water issues).

6. *See infra* Part III.A (examining the evolution of riparian rights in U.S. jurisdictions).

7. *See infra* Part II (discussing the changing hydrologic cycle in the Anthropocene); *infra* Part IV (describing the current problems Vermont faces regarding water quality).

8. *See infra* notes 132–36 and accompanying text (noting that Vermont has long used a "reasonable use" standard when allocating water use permits).

9. *See infra* Part VI.A (explaining the foundational elements of a land ethic); *see also infra* Part VI.B (proposing to modify riparianism to support a land ethic).

10. Tyler v. Wilkinson, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827) (No. 14,312).

As the global community begins to comprehend the social, political, and environmental challenges of the Anthropocene,[11] we must bring into question the ability of traditional natural resource laws to allocate resources in a way that respects and restores the ecological boundaries of Earth's biophysical systems.[12] The above quote, *so use your own as not to injure another's property*, is the defining principle of one such set of laws, those based on the riparian doctrine in U.S. water law.[13] According to the doctrine, a riparian landowner is given certain rights to the use of water abutting the landowner's land, but can only use water to the extent that it does not degrade the quality or quantity of the resource for any other riparian landowner.[14] Due to the global nature of the hydrologic cycle and the fact that water is an essential resource for life, the entire human population, as well as the millions of species making up life on Earth, have a stake in the quantity and quality of fresh water.[15]

In this Essay, I explore the question of whether or not the riparian doctrine is capable of facing the threats to the hydrologic cycle—and therefore the threats to humanity's fresh water resources—in the Anthropocene.[16] As I describe in Part II, this challenge consists of two general issues: current and historical levels of environmental degradation, such as water pollution or over-allocation, and increasing risk of extreme weather events and uncertainty in water supplies due to climate change.[17]

Through examining the historical foundations of the riparian doctrine and the modern day system of regulated riparianism, I argue that the riparian doctrine will need amendments to protect our water systems in the

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11. *See, e.g.*, Will Steffen, Paul J. Crutzen & John R. McNeill, *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature*, 36 AMBIO: J. HUM. ENV'T, Dec. 2007, at 614 (stating that "[i]nterest in [the Anthropocene] has escalated rapidly").

12. *See* Wood, *supra* note 2, at 592, 595 (discussing how to reframe traditional environmental laws to protect natural resources).

13. *See infra* Part III.A (overviewing the principles of riparian rights in the U.S.).

14. *See* DAN A. TARLOCK ET AL., WATER RESOURCES MANAGEMENT: A CASEBOOK IN LAW AND PUBLIC POLICY 111, 116 (5th ed. 2002) (quoting Meng v. Coffey, 93 N.W. 713, 717–18 (Neb. 1903)) (discussing the rights of owners of lands abutting waterways and noting that "[t]he law does not regard the needs and desires of the person taking the water solely to the exclusion of all other riparian proprietors").

15. *See infra* Part II (analyzing the effects of the Anthropocene on the hydrologic system and the U.S. system of government).

16. *See infra* Part II.B (listing requirements for water legislation in the Anthropocene to address climate change).

17. KENNETH D. FREDERICK & PETER H. GLEICK, PEW CTR. ON GLOB. CLIMATE CHANGE, WATER & GLOBAL CLIMATE CHANGE: POTENTIAL IMPACTS ON U.S. WATER RESOURCES 2–4 (1999), https://www.c2es.org/site/assets/uploads/1999/09/clim_change.pdf.

Anthropocene. I will begin Part II by exploring the challenges of environmental degradation and deterioration to the global hydrologic system in the Anthropocene. In Part III, I provide an overview of fresh water law and the riparian doctrine in the U.S. In Part IV, I trace the evolution of the riparian doctrine to the current, modern-day system of regulated riparianism, using the fresh water legal system in Vermont as a case study. In Part V, I draw upon evidence—again from Vermont—to demonstrate flaws in implementation of this system for protecting fresh water resources in the State. Finally, in Part VI, I suggest modifications to the doctrine of riparian rights based on legally instating an environmental ethic that prioritizes ecological boundaries and enforces consequences when economic ends are pursued to the detriment of ecosystems.

II. THE HYDROLOGIC CYCLE IN THE ANTHROPOCENE

Humans are now the primary force altering the global freshwater cycle.[18] This manipulation has dramatic impacts, affecting biodiversity, ecological functioning, food production, human health, and the regulation of the global climate system.[19] The human interruption of the hydrologic cycle is one of the primary pieces of evidence cited for the formal recognition of the Anthropocene as the current geological epoch in Earth's history.[20] Humans are modifying both the terrestrial water cycle—through altering stream flow—and changing patterns of water evaporation and transpiration—through land use and land cover change.[21] More specifically,

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18. *See generally* Will Steffen et al., *Planetary Boundaries: Guiding Human Development on a Changing Planet*, SCIENCE, Feb. 13, 2015, at 1259855-3, 1259855-7 [hereinafter Steffen et al., *Planetary Boundaries*] (depicting models of fresh water boundaries due to human consumption). The USGS provides a concise but important summary of the water cycle. *The Water Cycle: Summary, From USGS Water Science Basics*, U.S. GEOLOGICAL SURV., https://water.usgs.gov/edu/watercycletouzbek.html (last visited Apr. 14, 2019). The energy of the sun moves all of Earth's water through the global hydrologic cycle. *Id.* Though the cycle has no end or beginning, a proper explanation has a first step, so we begin with bodies of water, like the ocean or freshwater lakes. *Id.* Evaporation removes water particles from these bodies of water and transforms the water into vapor. *Id.* Then, as water precipitates in the form of rain or snow, it either enters a stream as surface runoff, infiltrates the ground, or solidifies into a snowpack, which may eventually melt as spring runoff or stay frozen as a glacier. *Id.* The water that infiltrates the ground may enter groundwater, or will be taken up by plants. *Id.* Next, water molecules either reenter the atmosphere through evaporation from a water body or the soil, or reenter the atmosphere through evapotranspiration. *Id.* Finally, gaseous water in the atmosphere condenses into clouds and the precipitation cycle begins anew. *Id.* The key point of this cycles is that it is global and it is not restricted to political boundaries. *Id.*

19. *See* Steffen et al., *Planetary Boundaries*, *supra* note 18, at 1259855-2 (explaining the changes in the Earth system and their various impacts).

20. Will Steffen et al., *The Anthropocene: Conceptual and Historical Perspectives*, 369 PHIL. TRANSACTIONS ROYAL SOC'Y A 842, 843 (2011) [hereinafter Steffen et al., *The Anthropocene*].

21. *Id.*

human development modifies the quantity and quality of runoff, infiltration rates of water into groundwater, general flow of water, and the spatial and temporal patterns of evapotranspiration of water back into the atmosphere.[22] Humans are also significantly altering the nitrogen and phosphorous biogeochemical cycles, which are intricately tied to the water cycle and have dramatic effects on the health of lake ecosystems.[23]

In the context of the Anthropocene, it is important to recognize that current and historical governance regimes allowed for the actions that significantly altered the planet's biophysical processes, such as the hydrologic cycle.[24] Therefore, to face the challenge of the Anthropocene to the hydrologic cycle, water governance regimes must restore the health of rivers, streams, and lakes to allow ecosystems to function. Furthermore, they must curtail current actions that continue to degrade water quality and quantity.[25] In addition to these issues, climate change exacerbates ecosystem degradation and deterioration in the Anthropocene due to increased concentrations of greenhouse gases in the atmosphere.[26]

Climate Change and the Hydrologic Cycle

The most recent assessment report of the International Panel on Climate Change states that changes in precipitation and snow melt are altering the quantity and quality of hydrological systems.[27] According to a report on climate change and U.S. water resources, climate change will have large impacts on the spatial and temporal variability of precipitation, evapotranspiration, and runoff.[28] This translates into changes in the frequency, intensity, and cost of extreme events, such as a potential increase in the occurrence of and devastation due to flooding.[29] As temperature rises, rates of evapotranspiration will increase, which could lead to changes in

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22. FREDERICK & GLEICK, *supra* note 17, at 7.

23. *See* Johan Rockström et al., *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, 14 ECOLOGY & SOC'Y, no. 2, 2009, Article No. 32, http://www.ecologyandsociety.org/vol14/iss2/art32/ (explaining the effect that altering the nitrogen and phosphorus cycles has on lakes).

24. *Id.*

25. *See id.* (outlining the consequences of what happens when the hydrologic cycle is allowed to degrade).

26. *Climate Change and Environmental Degradation*, EUROPEAN COMM'N, https://ec.europa.eu/knowledge4policy/foresight/topic/climate-change-environmental-degradation_en (last visited Apr. 14, 2019).

27. Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2014: Impacts, Adaptation, and Vulnerability, Part A: Global and Sectoral Aspects* 4 (Christopher B. Fields et al. eds., 2014).

28. FREDERICK & GLEICK, *supra* note 17, at 4.

29. *Id.* at 23.

patterns of precipitation, runoff, and, paradoxically, an increase in both drought and flooding throughout the country.[30] With regard to water quality, climate change could contribute to warmer water temperatures and increased storm events.[31] Warmer water temperatures threaten aquatic ecosystems.[32] Additionally, the increase of urban and agricultural runoff from storm events increases pollution and sediment runoff into water bodies, which also threatens aquatic ecosystems.[33] Uncertainty in climate models makes it difficult to predict precise regional impacts of climate change, but it is clear that runoff is sensitive to variation in both temperature and precipitation.[34]

Therefore, in the Anthropocene, we require water legislation that: (1) acts to curtail current environmental degradation; (2) acts to restore deteriorated ecosystems; and (3) addresses the potential increase of extreme events and water quality issues due to climate change.[35] Therefore, the question that I will explore in the remainder of this Essay is: Will the riparian doctrine, and the modern regulated riparian system of statutory permitting, be capable of protecting our fresh water resources and ecosystems in the Anthropocene?

III. BRIEF SURVEY OF FRESH WATER RESOURCE LAW IN THE U.S.

Water governance regimes are diverse and highly contextualized within historical, geographical, and political contexts.[36] In the U.S., water law was born out the increase of water-driven mills during the Industrial Revolution and the need to apply consistent law to disputes over access to water and the flow of the stream.[37] With a relatively sparse early population in the Eastern U.S. and abundant water sources, most states had few restrictions on water use as long as the diversion or use did not obstruct the natural flow of the river.[38] The doctrine of riparian rights emerged in this water abundant region, which gives certain rights under law to riparian

30. *Id.* at 7.
31. *Id.* at 29.
32. *See id.* (explaining that warm water holds less oxygen, which threatens aquatic life).
33. *Id.* at v.
34. *Id.*
35. *Id.* at 22, 29.
36. Joseph W. Dellapenna, *United States: The Allocation of Surface Waters*, *in* THE EVOLUTION OF THE LAW AND POLITICS OF WATER 189 (Joseph W. Dellapenna & Joyeeta Gupta eds., 2009) [hereinafter *The Allocation of Surface Waters*] (providing context for the state of U.S. governance regimes).
37. DAVID GETCHES ET AL., WATER LAW IN A NUTSHELL 16 (5th ed. 2015).
38. *Id.* at 18.

landowners bordering a watercourse.[39] The riparian doctrine is the basis of water law in twenty-nine states.[40]

This stands in contrast to the other dominant water governance doctrine in the U.S.: prior appropriation.[41] Under the doctrine of prior appropriation, water rights are afforded to an individual when that person puts a quantity of water to a "beneficial" use, landowner or not.[42] The doctrine of prior appropriation follows the principle of "first in time, first in right," giving superiority of rights to the earliest, or earlier users, whereas riparian rights treats all riparian landowners as equal in terms of right to water quality and quantity.[43]

In all water governance regimes in the U.S., the nature of water as a moving resource challenges the traditional legal notions of property.[44] Tarlock, Corbridge, Jr., and Getches suggest that "[b]ecause of the physical nature of water, all water rights—riparian or appropriative—are correlative; the use of water must be shared among a wide class of claimants and water rights have a greater dimension of non-exclusivity compared to rights to land or to personal property."[45] The courts invented these original doctrines to meet society's needs at the time and place where they were needed.[46] Over the last century, as society's needs changed, U.S. water law evolved.[47] Water law has transitioned from a basis in customary law and judicial decisions to a system of statutory law governing water allocation.[48] As legislatures started passing statutory law to govern water, building on the original common law doctrines, the systems of riparian rights and prior appropriation have become more difficult to discern.[49]

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39. *Id.* at 19.

40. *See id.* at 5–8 (describing the states' varied implementations of the riparian doctrine).

41. *See id.* at 4. The doctrine of prior appropriation was developed in the Western states during the 19th century as miners and farmers expanded into an arid territory made up mostly of federally held lands. *Id.* at 4–6. Riparian rights, besides restricting rights to property owners, also restricted rights to those lands bordering a stream, river, or lake. *Id.* These restrictions did not make sense in the West with less water available and less private property. *Id.* This led to the development of a different set of governing principles. *Id.*

42. *Id.* at 5.

43. *Id.*

44. *Id.* at 1.

45. TARLOCK ET AL., *supra* note 14, at 388.

46. *See id.* at vii (addressing why the various states have developed different water regimes).

47. *See* GETCHES ET AL., *supra* note 37, at 1 (explaining how water law is a dynamic and ever-changing field).

48. *Id.* (highlighting how agencies and legislatures are the driving forces behind water law).

49. TARLOCK ET AL., *supra* note 14, at 262–63.

A. The Nature of Riparian Rights and the Principle of Reasonable Use

The riparian rights doctrine developed into a uniquely American doctrine primarily through tort cases in the eastern states.[50] The doctrine is a form of common property in which all individuals with legal access, based on riparian land ownership, are entitled to use the resource so long as they do not impinge on another riparian land owner's right to do the same.[51]

The nature of the riparian rights doctrine is well established.[52] A riparian landowner's rights to water use include:

> [T]he right to the flow of the stream; the right to make a reasonable use of the waterbody, provided reasonable uses of other riparian users are not injured; the right of access to the waterbody; the right to fish; the right to wharf out; the right to prevent erosion of the banks; the right to purity of the water; the right to claim title to the beds of non-navigable lakes and streams.[53]

Theoretically, the right to the flow of the stream prescribes the American doctrine of riparian rights to a rule of "natural flow."[54] This declares that every riparian has the right to undiminished quantity and quality of water that flows past a given property.[55] Therefore, embedded within a riparian landowner's rights to use water is the duty to respect other riparian landowners' rights.[56] Additionally, because of the historical importance of navigation to commerce, the public has the right to use any navigable waters.[57] A landowner's riparian rights are subject to the landowner's duty to the public's common needs.[58]

The principle of natural flow and the duty to respect other riparian landowner's rights would presumptively ban any development or use of the

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50. *See* Joseph W. Dellapenna, *The Evolution of Riparianism in the United States*, 95 MARQ. L. REV. 54, 57–58, 60 (2011) [hereinafter *The Evolution of Riparianism*] (describing the tort case, *Merritt v. Parker*, 1 N.J.L. 460 (1795), and subsequent cases that defined riparianism in the U.S.).

51. *The Allocation of Surface Waters*, *supra* note 36, at 192.

52. GETCHES ET AL., *supra* note 37, at 21.

53. *Id.* at 21–22.

54. *See The Allocation of Surface Waters*, *supra* note 36, at 193 (explaining the theoretical and historical basis for "natural flow" in American jurisprudence).

55. *Id.*

56. *See id.* (inferring that permission must be given by all who have riparian rights, because A's riparian rights cannot "compel" B to submit B's riparian rights to A's riparian rights).

57. Merritt Starr, *Navigable Waters of the United States—State and National Control*, 35 HARV. L. REV. 154, 154 (1921).

58. *Id.* at 162.

water.[59] However, even in early expression of the riparian doctrine, as courts defined water law in response to the burgeoning number of new industrial uses of water in the 19th century, the "natural flow" principle was subject to exceptions on the basis of economic development.[60]

A case in 1827, *Tyler v. Wilkinson*, remedied this issue by introducing the principle of "reasonable use."[61] In this dispute, a number of riparian mill owners claimed that the construction of an upstream dam diminished the quantity of water available to them.[62] In deciding the case in favor of the defendants, Justice Joseph Story stated:

> There may be, and there must be allowed of that, which is common to all, a reasonable use. The true test of the principle and extent of the use is, whether it is to the injury of the other proprietors or not. There may be a diminution in quantity, or a retardation or acceleration of the natural current indispensable for the general and valuable use of the water, perfectly consistent with the existence of the common right. The diminution, retardation, or acceleration, not positively and sensibly injurious by diminishing the value of the common right, is an implied element in the right of using the stream at all . . . . The maxim is applied, "Sic utere tuo, ut non alienum lædas."[63]

The principle of reasonable use is a deliberate departure from the natural flow principle, but an essential element of the U.S.'s riparian rights doctrine.[64] Therefore, owners of land abutting a watercourse are entitled to make "reasonable use" of the water, so long as the use does not cause unreasonable harm to another riparian landowner.[65]

The American Restatement Second of Torts formalizes the standard principles applicable to defining "reasonableness" in riparian tort cases today, which are as follows:

> (a) The purpose of the use,

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59. *See* GETCHES ET AL., *supra* note 37, at 19 (explaining the natural-flow-uses effect on riparianism during the industrial revolution).

60. Anthony Scott & Georgina Coustalin, *The Evolution of Water Rights*, 35 NAT. RES. J. 821, 891–92 (1995).

61. Tyler v. Wilkinson, 24 F. Cas. 472, 474 (C.C.D.R.I. 1827) (No. 14,312).

62. *Id.* at 472.

63. *Id.* at 474.

64. *See* GETCHES ET AL., *supra* note 37, at 18–19 (overviewing the transition from natural flow to reasonable use).

65. *Id.*

(b) the suitability of the use to the watercourse or lake,
(c) the economic value of the use,
(d) the social value of the use,
(e) the extent and amount of the harm it causes,
(f) the practicality of avoiding the harm by adjusting the use or method of use of one proprietor or the other,
(g) the practicality of adjusting the quantity of water used by each proprietor,
(h) the protection for existing values of water uses, land, investments and enterprises, and
(i) the justice of requiring the user causing harm to bear the loss.[66]

In the application of the reasonable use principles—the purpose, the suitability, the economic value, and the social value of the use (principles (a) through (d))—are used to determine if a use is reasonable.[67] However, as evidenced in principles (e) through (i), reasonableness is also determined in relation to other riparian land owners and competing uses of water.[68] All riparian states follow some form of the reasonable use principle today.[69]

B. Riparian Rights Today: Regulated Riparianism

Around the middle of the 20th century, increased demand on water due to urbanization and industrialization challenged the judicial-based enforcement and limitation of water rights solely for riparian landowners.[70] Additionally, in the 1970s, recognition of water's instream and ecological needs forced states to amend the traditional riparian doctrine.[71] In response, many eastern states began to implement a new form of the riparian doctrine: regulated riparianism.[72] Regulated riparianism takes a public property approach to allocating water systems that allows for more comprehensive water management.[73] Under regulated riparianism, water is allocated through a collective decision-making process; typically a state agency or

66. TARLOCK ET AL., *supra* note 14, at 124 (quoting RESTATEMENT (SECOND) OF TORTS: REASONABLENESS OF USE OF WATER § 850A (AM. LAW INST. 1979)).
67. GETCHES ET AL., *supra* note 37, at 34.
68. *Id.* at 34–35.
69. *The Allocation of Surface Waters*, *supra* note 36, at 194.
70. GETCHES ET AL., *supra* note 37, at 60–61.
71. *The Evolution of Riparianism*, *supra* note 50, at 83.
72. *Id.*
73. *See id.* at 87 (highlighting that states have moved from a common property approach to a public property approach).

department issuing permits for time-limited uses based on the reasonableness of the proposed use.[74] These permit systems are founded upon the principles of riparian rights and adopted the principle of reasonable use as an essential criteria for allocating a permit.[75]

Another important evolution in this regime is that regulated riparianism determines the reasonableness of a use before a use is granted.[76] This is in contrast to the traditional structure of the riparian doctrine, where courts determine reasonableness of use only after use is challenged.[77] In a system of regulated riparianism, the state holds water in trust for the public.[78] State agencies enact this responsibility in planning for and protecting the public interest in waters and provisioning the water for public use.[79] In provisioning a body of water for public use, the State relies on the key principles of reasonable use: the purpose, the suitability, the economic value, and the social value of the use.[80]

In 1997, the American Society of Civil Engineers published *The Regulated Riparian Water Code* to provide a blueprint for a modernized riparian system.[81] The Society developed the Code specifically to face the challenges of population growth, environmental degradation, climate change, and increased water demand—without the availability of new water sources—in the 21st century.[82] About half of the country's riparian states now allocate water using regulated riparianism, but most riparian states have implemented some degree of regulated riparianism through statutory permitting systems.[83]

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74. *The Allocation of Surface Waters*, *supra* note 36, at 200.

75. *Id.*; GETCHES ET AL., *supra* note 37, at 62.

76. *See* GETCHES ET AL., *supra* note 37, at 62 (explaining that states have shifted from common law, which is retroactive, to statutory law, which is adopted ahead of time).

77. *See The Evolution of Riparianism*, *supra* note 50, at 87 (emphasizing that reasonableness is determined ahead of time rather than at the time of a challenge in court).

78. *Id.*

79. *The Allocation of Surface Waters, supra* note 36, at 200.

80. *See* RESTATEMENT (SECOND) OF TORTS: REASONABLENESS OF USE OF WATER § 850A (AM. LAW INST. 1979) (setting out the listed factors as well as five other considerations).

81. *See* THE REGULATED RIPARIAN MODEL WATER CODE: FINAL REPORT OF THE WATER LAWS COMMITTEE OF THE WATER RESOURCES PLANNING AND MANAGEMENT DIVISION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS iii–iv (Joseph W. Dellapenna ed., 1997) (stating that the goal of the Model Water Code Project "was to develop proposed legislation for adoption by state governments" and attempting to, as much as possible, standardize the disparate language used by Eastern and Western states).

82. Robert E. Beck, *The Regulated Riparian Model Water Code: Blueprint For Twenty First Century Water Management*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 113, 113 (2000).

83. *The Allocation of Surface Waters*, *supra* note 36, at 200.

IV. THE CURRENT LEGAL AND REGULATORY FRAMEWORK FOR WATER RIGHTS IN VERMONT

As shown in the previous section, the traditional riparian doctrine and the evolving system of regulated riparianism consider public value, economic value, and suitability of a use in allocating water. As compared to private property systems, where a proprietor has nearly unlimited freedom in determining whether or not to develop an owned resource, both a common property (traditional riparian doctrine) and public property (regulated riparianism) system appear better suited for tackling the social and ecological challenges of the Anthropocene.[84] In order to better understand the modern day riparian system and the mechanisms through which water in the Anthropocene is allocated in the U.S., this section looks at the current state of the riparian doctrine in Vermont.

The State of Vermont abides by the riparian rights doctrine and allocates water today through a form of regulated riparianism.[85] Notably, in an 1827 Vermont Supreme Court decision, the State played a key role in the formation of the early riparian doctrine.[86] In *Martin v. Bigelow*,[87] the Vermont Supreme Court found that the need to develop the economy superseded the protection of prior uses of water.[88] Today, the Agency of Natural Resources and the Agency of Agriculture, Food and Markets share the governing of water allocation in Vermont through statutory permitting systems.[89] Additionally, federal legislation and acts affecting the environment are important components of water law in Vermont.[90]

The Vermont Statutes prescribe the State to both the principle of natural flow and reasonable use in governing the regulation of stream

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84. *See The Evolution of Riparianism*, *supra* note 50, at 86 (discussing the acceleration of pressure on water systems due to climate change and the shortcomings exhibited by traditional riparian systems).

85. *See* Johns v. Stevens, 3 Vt. 308, 315–16 (1830) (establishing that the State of Vermont would follow the riparian rights doctrine).

86. *See* Martin v. Bigelow, 2 Aik. 184, 197 (Vt. 1827) (defining Vermont's jurisprudence in favor of riparian rights and rejecting the common law approach).

87. *Id.*

88. *The Allocation of Surface Waters*, *supra* note 36, at 194 (citing *Martin v. Bigelow*, 2 Aik. at 187).

89. *See* Gail Osherenko, *Understanding the Failure to Reduce Phosphorus Loading in Lake Champlain: Lessons for Governance*, 15 VT. J. ENVTL. L. 97, 128 (2013) (stating that the Vermont Agencies of Natural Resources and Agriculture, Food and Markets are responsible for enforcement under a memorandum of understanding).

90. *See* L. Kinvin Wroth, *Six Flags Over Champlain: Starting Points for a Comparative Analysis*, 38 J. GREAT LAKES RES. 167, 167–68 (2012) (discussing the six legal regimes and various federal frameworks that affect water quality in Vermont).

flow.[91] The State then enforces this policy through a permit system, certified by the Agency of Natural Resources, for any artificial regulation or alteration of stream flow.[92] Prior to granting a permit, the Agency of Natural Resources determines if the permit is warranted by weighing whether the change will adversely affect public safety, significantly damage fish or wildlife, significantly damage the rights of riparian owners, or adversely affect those waters designated as outstanding resource waters.[93] Title 10 of the Vermont Statutes describes a similar permitting process for other water uses and creates the Department of Conservation at the Agency of Natural Resources to establish the State's water management policy.[94]

With regard to water quality, Chapter 47 of the Vermont Statutes defines the State's water quality policy and the statutory permitting system for water pollution control.[95] The water quality policy of Vermont is to:

> (1) protect and enhance the quality, character and usefulness of its surface waters and to assure the public health;
> (2) maintain the purity of drinking water;
> (3) control the discharge of wastes to the waters of the State, prevent degradation of high quality waters and prevent, abate or control all activities harmful to water quality;
> (4) assure the maintenance of water quality necessary to sustain existing aquatic communities;
> (5) provide clear, consistent, and enforceable standards for the permitting and management of discharges;
> (6) protect from risk and preserve in their natural state certain high quality waters, including fragile high-altitude waters, and the ecosystems they sustain;

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91. VT. STAT. ANN. tit. 10, § 1001 (2018).

92. *Id.* § 1022.

93. *Id.* § 1023.

94. Lara D. Guercio, *Struggle Between Man and Nature—Agriculture, Nonpoint Source Pollution, and Clean Water: How to Implement the State of Vermont's Phosphorous TMDL Within the Lake Champlain Basin*, 12 VT. J. ENVTL. L. 455, 493–94 (2010) (discussing Vermont's Title 10 in the context of the State's stormwater management program).

95. *See* VT. STAT. ANN. tit. 10, § 1250 (detailing Vermont's water quality policy); *Id.* §§ 1263, 1265, 1267–68 (detailing Vermont's permitting system).

> (7) manage the waters of the State to promote a healthy and prosperous agricultural community, to increase the opportunities for use of the State's forest, park, and recreational facilities, and to allow beneficial and environmentally sound development.
>
> It is further the policy of the State to seek over the long term to upgrade the quality of waters and to reduce existing risks to water quality.[96]

Vermont's water quality policy can be seen as a reinterpretation of the principle of reasonable use.[97] It is evident from the above policy that the water legislation in the State seeks to accomplish the following: protect the usefulness and quality of water for societal use; control pollution of waterways for ecological communities; and regulate pollution to promote economic value through "environmentally sound development."[98] Furthermore, the policy explicitly goes above and beyond the principle of reasonable use to improve water quality over the long term.[99]

To enforce the State's water quality policy, the Agency of Natural Resources has the power to grant discharge permits.[100] The Agency of Natural Resources vets and grants applications based on an investigative process similar to the previously described stream-flow-alteration permit.[101] The applications are also subject to the federal Clean Water Act's National Pollution Discharge Elimination System.[102]

Current State of Water in Vermont

As illustrated in the previous sections, the statutory language defining Vermont's modern regulated riparianism suggests that it is well equipped to balance the needs of ecosystems, society, and the economy in the Anthropocene. However, if we shift our perspective from the legislation and language defining the system to the actual functioning of the system in

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96. *Id.* § 1250.

97. *See supra* Part III.B (exploring the modern changes to the reasonable use doctrine).

98. *See* VT. STAT. ANN. tit. 10, § 1250 (describing the goals of Vermont's water quality policy, including the ability to provide standards for permitting and managing discharges).

99. *Compare* note 96 and accompanying text (quoting Vermont's water quality policy), *with* notes 65–69 and accompanying text (summarizing the reasonable use principle).

100. VT. STAT. ANN. tit. 10, § 1263.

101. *See supra* notes 91–94 and accompanying text (describing Vermont's stream-flow-alteration permitting system).

102. *See, e.g.*, 33 U.S.C. § 1313 (2012) (discussing the National Pollution Discharge Elimination System permitting system and the requirements it places on states).

practice, we see a different picture emerge of regulated riparianism in the Anthropocene.

The State of Vermont has a serious water quality problem in the Lake Champlain Basin due to excessive phosphorous loading.[103] Lake Champlain is located on the northwestern border of Vermont and spans the international boundary between the U.S. and Canada, and, within the U.S., between Vermont and New York.[104] The lake is one of Vermont's most prized natural resources, but for the last few decades it has faced major environmental threats, including mercury pollution, invasive species, and, most notably, eutrophication from phosphorous pollution.[105] Eutrophication is the process in which excess phosphorous in a lake leads to an increase in plant and algae growth, producing algae blooms.[106] Algae blooms, in turn, negatively affect other aquatic life as the decomposition of the plant and organic matter decreases oxygen and sunlight levels in the lake.[107] This process continues to cause seasonal beach closures and threatens or kills fish throughout lake segments.[108] The primary sources of phosphorous in the Basin are discharges from wastewater treatment facilites, stormwater runoff from developed areas, and agricultural runoff.[109]

On top of the statutory laws governing water pollution in the State, multi-party efforts have been made to tackle the issue of excess phosphorous in Lake Champlain.[110] In 1988, the U.S. and Canada signed a Memorandum of Understanding to develop a joint approach to environmental protection of the Basin.[111] Then, in 1996, the Lake Champlain Basin Program was established to facilitate a basin-wide management approach to reducing phosphorous pollution.[112] Ultimately, in 2002, Vermont and New York created a joint phosphorous Total Maximum Daily Load (TMDL), or nutrient budget, for Lake Champlain as required by

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103. LAKE CHAMPLAIN BASIN PROGRAM, 2018 STATE OF THE LAKE AND ECOSYSTEM INDICATORS REPORT 1 (2018), http://lcbp.org/sol18dev/wp-content/uploads/2018/06/2018-State-of-the-Lake_web.pdf.

104. Osherenko, *supra* note 89, at 97–98.

105. Daniel D. Dutcher & David J. Blythe, *Water Pollution in the Green Mountain State: A Case Study of Law, Science, and Culture in the Management of Public Water Resources*, 13 VT. J. ENVTL. L. 705, 712 (2012).

106. William Bowden, *Background Facts: Role of Phosphorus in Lake Champlain Pollution*, 17 VT. J. ENVTL. L. 501, 502 (2016) (explaining that high phosphorous content can lead to algae blooms).

107. Osherenko, *supra* note 89, at 99.

108. *Id.* at 98.

109. *Id.* at 99.

110. *See* Wroth, *supra* note 90, at 172 (discussing the multiple players on the federal, state, and international levels, involved in lowering the phosphorous levels in Lake Champlain).

111. *See id.* (describing the 1988 Memorandum of Understanding).

112. *See id.* (reviewing the establishment of the Lake Champlain Basin Program).

the Federal Clean Water Act.[113] Then, in 2011, the Environmental Protection Agency, which oversees implementation of the Clean Water Act, disapproved Vermont's portion of the TMDL for Lake Champlain over concerns that it did not provide sufficient reasonable assurances that the plan would achieve its target reductions in phosphorus runoff levels.[114] Finally, in 2016, the State produced a new TMDL to achieve a clean Lake Champlain, and also passed legislation in 2015—Act 64: the Vermont Clean Water Act—to achieve the targets in the new TMDL.[115] In Act 64, there are a number of new permits for water quality, such as a general permit for stormwater discharges from municipal roads[116] and a general stormwater permit for discharges from impervious surfaces three acres or larger in area.[117] It should also be noted that a recent 2018 update to the Title 10 statue includes revisions to the Department of Environmental Conservation's permitting process, such as standards for public notice, public meetings, and other forms of transparency in permitting decisions.[118] However, these new permits, permitting procedure revisions, and the legislation do not alter the principles upon which permits are approved and allocated.[119]

With multiple decades of work, and millions of dollars of investment, many of Lake Champlain's thirteen lake segments still have average phosphorous concentrations in excess of established targets.[120] We expect this to be the case for many years, even if land management improves, due to time lags in the movement of phosphorus throughout the watershed.[121] Additionally, flooding in 2011 caused phosphorous levels to spike to some of the highest concentrations observed since 1990.[122]

Despite Vermont's efforts to create socially, ecologically, and economically sound legislation, the regulated riparian system has been failing Vermont in protecting the State's water from phosphorous

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113. *Id.*

114. Kari Dolan, *The Importance of Inter-Agency Collaboration and Public Engagement in the Development of the Implementation Plan for the Nonpoint Source-Focused Vermont Lake Champlain Phosphorus TMDL*, 17 VT. J. ENVTL. L. 663, 664, 667 (2016).

115. *Id.* at 676–77.

116. VT. STAT. ANN. tit. 10, § 1264(g)(1)–(2) (2018).

117. *Id.* § 1264(g)(3).

118. *See id.* § 7701 (detailing permitting procedures for the Department of Environmental Conservation).

119. *See* Osherenko, *supra* note 89, at 111 (giving an example of an agency issuing permits based on compliance with technological standards rather than based on the receiving water conditions).

120. LAKE CHAMPLAIN BASIN PROGRAM, *supra* note 103, at i, 10–11.

121. Donald W. Meals et al., *Lag Time in Water Quality Response to Best Management Practices: A Review*, 39 J. ENVTL. QUALITY 85, 85 (2010).

122. N.Y. STATE DEP'T OF ENVTL. CONSERVATION, LAKE CHAMPLAIN PHOSPHORUS REDUCTION PLAN NEW YORK 11 (2014), http://www.dec.ny.gov/docs/water_pdf/lcbprp2014draft.pdf.

pollution.[123] This suggests that regulated riparianism—as implemented in Vermont—is not yet capable of protecting freshwater resources in the State given the challenges of the Anthropocene.[124] I explore this further in the following section.

V. DECONSTRUCTION OF THE PRINCIPLE OF REASONABLE USE IN VERMONT

Recall the three necessities introduced earlier for water law in the Anthropocene: (1) curtailing current environmental degradation; (2) restoring deteriorated ecosystems; and (3) addressing the potential increase of extreme events and water quality issues due to climate change.[125] The regulated riparian system in Vermont is struggling to meet these three requirements.[126] Vermont statutory permitting systems have yet to significantly decrease the current level of phosphorous entering Lake Champlain (requirement 1).[127] The permitting systems have not restored deteriorated lake ecosystems from the damage of historical phosphorous pollution (requirement 2).[128] Finally, the system has yet to protect against the potential impacts of climate change, including increased eutrophication from rising lake temperatures and increased stormwater runoff from extreme weather events (requirement 3).[129] Although there have been significant updates, both in legislation to protect clean water and in increased capacity of agencies to track and enforce the State's clean water laws, there have not been significant changes to the regulated riparianism permitting process in the State.[130]

Daniel Dutcher and David Blythe suggest that in Vermont, the legal structure for regulating water use and pollution is sound, but the implementation of the regulatory framework is flawed.[131] This flaw in implementation, they suggest, is due to the fact that the development policy of the State heavily influences decision making regarding water policy:

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123. *See* Wroth, *supra* note 90, at 172 (discussing how Vermont state law still allows an excess of phosphorous to enter into Lake Champlain).

124. *See infra* Part V (analyzing the effects of regulated riparianism in Vermont and its effectiveness in protecting freshwater resources).

125. *See supra* note 35 and accompanying text (listing three requirements to fix the water system in the Anthropocene).

126. *See infra* notes 127–29 and accompanying text (examining limitations in Vermont's efforts to prevent degradation, restore ecosystems, and prepare for issues caused by climate change).

127. LAKE CHAMPLAIN BASIN PROGRAM, *supra* note 103, at 11.

128. *Id.* at 14.

129. Dutcher & Blythe, *supra* note 105, at 713, 715.

130. *See supra* Part VI (analyzing the current state of Vermont's water laws).

131. Dutcher & Blythe, *supra* note 105, at 723.

"For a generation, government officials have been telling Vermonters what they have wanted to hear—that the state is working to bring Vermont's waters back, but that, at the same time, government regulation and planning will not stand in the way of anyone's economic interest."[132]

This preference can be traced back to the early riparian doctrine in the State of Vermont.[133] In the case of *Martin v. Bigelow*, the Vermont Supreme Court defined economic value as a key component of the principle of reasonable use.[134] As shown in Part IV above, the statutory permitting system regulating water quality in Vermont employs the principle of reasonable use to determine whether or not to allocate a water use or discharge permit.[135] Theoretically, the four core considerations of the principle of reasonable use (the purpose, suitability, and economic and social values of the use) are to be weighed equally in determining if a given use is reasonable.[136] However, if a state agency, elected official, or administration favors economic development over the ecological boundaries and public interest in a water body, the test of reasonable use is the legal tool through which the permit granting authority can legally enforce this bias.[137]

During Vermont Governor Jim Douglas's 2003–2011 administration, a very heated time for water quality policy in the State, the governor promoted a "Third Way" of managing environmental problems in the State.[138] Douglas's "Third Way" is one in which "protecting the environment would not interfere with economic growth."[139] Dutcher and Blythe[140] and Gail Osherenko[141] both point to a series of court cases in the early 2000s that clearly demonstrate this preference for economic development over the purpose, suitability, and social value of water uses on behalf of the administration. While this series of lawsuits occurred a number of years ago and should not be taken as an example of the current administration in Vermont, it does clearly demonstrate the challenges in

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132. *Id.* at 754.

133. *See, e.g.*, Martin v. Bigelow, 2 Aik. 184, 185, 187 (Vt. 1827) (reasoning that the right to operate a mill was within "the ordinary purposes of life").

134. *The Allocation of Surface Waters*, *supra* note 36, at 194 (citing *Martin v. Bigelow*, 2 Aik. at 187).

135. VT. STAT. ANN. tit. 10, § 1001 (2018).

136. *See supra* text accompanying note 68 (explaining how these principles of reasonable use are weighed by a decision maker when determining reasonable use).

137. *See* VT. STAT. ANN. tit. 10, § 1011 (stating that administration of water policy is to be consistent with reasonable use of riparian rights).

138. Dutcher & Blythe, *supra* note 105, at 738.

139. *Id.*

140. *Id.* at 724, 728, 732.

141. Osherenko, *supra* note 89, at 111.

applying the reasonable use principle in a regulated riparianism system to protect water resources.[142]

In the 2001 *In re Hannaford* case, the Conservation Law Foundation sued the Vermont Agency of Natural Resources over a stormwater discharge permit issued for a proposed commercial shopping development in South Burlington.[143] The Conservation Law Foundation contended that the new development would discharge into stormwater impaired waters that did not have cleanup plans in place, as required under the Clean Water Act.[144] The Water Resources Board decided in favor of the Conservation Law Foundation and no new discharges permits would be allowed that discharge into impaired streams in the absence of a TMDL.[145] In response, developers went up in arms claiming that the decision would shut down all new development.[146]

Following the *Hannaford*[147] decision, the Vermont Legislature created new stormwater laws to allow the Agency of Natural Resources to issue Watershed Improvement Permits.[148] This permit process bypasses the need for a cleanup plan or TMDL for impaired streams and allows continued issuing of stormwater discharge permits to new developments.[149] Then in 2002, again environmental groups challenged the Agency of Natural Resources in the case *In re Morehouse Brook*, this time with regard to issuance of Watershed Improvement Permits.[150] The environmental groups claimed that Watershed Improvement Permits essentially allowed the Agency to issue discharge permits into impaired waters without a cleanup plan.[151] Again, the Water Resources Board sided with environmental groups and required the Agency of Natural Resources to develop TMDLs.[152]

The Agency of Natural Resources finally agreed to undertake the time-consuming process of developing TMDLs for stormwater-impaired

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142. *See* Dutcher & Blythe, *supra* note 105, at 724–25, 728 (discussing the *Hannaford Bros.* and *Morehouse Brook* decisions by the Vermont Water Resource Board); *see also* Osherenko, *supra* note 89, at 112 (examining the Conservation Law Foundation's attempt to force the Vermont Water Resource Board to adopt a TMDL).

143. *In re* Hannaford Bros. Co., No. WQ-01-01, at 1 (Vt. Water Res. Bd. June 29, 2001).

144. *Id.* at 2; *see* 33 U.S.C. § 1313(d) (2012) (discussing the TMDL requirements in the Clean Water Act that were at the heart of the Conservation Law Foundation's suit).

145. Dutcher & Blythe, *supra* note 105, at 725.

146. Osherenko, *supra* note 89, at 111–12 .

147. *In re Hannaford Bros. Co.*, No. WQ-01-01, at 1.

148. Dutcher & Blythe, *supra* note 105, at 727.

149. *Id.*

150. *In re* Morehouse Brook, Nos. WQ-02-04, WQ-02-05, WQ-02-06, WQ-02-07, at 1 (Vt. Water Res. Bd. Dec. 19, 2002).

151. *See id.* at 3–4 (discussing how the State issued Watershed Improvement Permits without the required compliance plans).

152. Osherenko, *supra* note 89, at 112.

streams.[153] Ever conscious of shutting down the development process, the Agency immediately set to work developing an interim permitting process during TMDL development.[154] The Legislature agreed to allow permits to be issued and allowed for the use of offsets to maintain the standard of no new or increased pollution.[155] Essentially, the Agency of Natural Resources achieved the goal of allowing stormwater discharge permits for new development at the expense of water quality.[156]

Under regulated riparianism, it is illegal for a landowner to discharge stormwater into polluted waters or to degrade the quality of a watercourse without proving "reasonable use."[157] In these two cases, the judicial system acted in an effort to uphold the social and ecological principles of reasonable use, but the Agency of Natural Resources and the legislative branch continued to create work-arounds to favor economic development.[158] With the weight of "reasonableness" first in the hands of agencies issuing permits, society must pay greater attention to how reasonable use is applied in practice in order to prevent ecological degradation before it begins.[159]

Reasonable Misuse

The current articulation of riparian rights in Vermont allows agencies to use a broad range of interpretations in deciding what constitutes a reasonable use.[160] This flexibility of interpretation—if the State's goal is environmental protection and restoration combined with, but never at the cost of, economic development—allows agencies to continue to grant permits that increase discharges into the State's impaired waters.[161]

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153. *See* Dutcher & Blythe, *supra* note 105, at 731 (stating that the Agency of Natural Resources agreed to develop TMDLs).

154. *See id.* (explaining that the Agency of Natural Resources had to develop interim permitting while developing TMDLs); *cf.* VT. STAT. ANN. tit. 10, § 1264c (2010) (providing for the interim nature of § 1264c by including a date of repeal).

155. Dutcher & Blythe, *supra* note 105, at 731.

156. *Id.*

157. *See The Evolution of Riparianism*, *supra* note 50, at 85–87 (explaining how reasonable use works in regulated riparianism).

158. *See* Dutcher & Blythe, *supra* note 105, at 728–29 (discussing how the Agency of Natural Resources attempted to work around environmental law requirements in favor of economics).

159. *See* GETCHES ET AL., *supra* note 37, at 4 (highlighting how agencies have the authority to allocate permits in most riparian systems).

160. Evan Mulholland, *Groundwater Quantity Regulation in Vermont: A Path Forward*, 8 VT. J. ENVTL. L. 1, 1–12 (2006).

161. *See id.* (noting the leniency in Vermont's water permitting system); *see also* Wood, *supra* note 2, at 592 (examining the issues with today's permitting system).

Discharge permits are in essence the right to pollute.[162] In the context of the Anthropocene, this right to pollute must be determined by the hydrologic cycle's ability to absorb and dilute nutrients or pollutants to a degree that it is not harmful to the ecosystems or the social systems dependent on the water.[163] The right to pollute should also include consideration of the potential alterations in the hydrologic cycle due to climate change.[164]

This preference for economic development is not new in water resource policy, nor is it unique to regulated riparianism in Vermont.[165] In the 1990s, water policy analyst David Lewis Feldman defined the nation's water resource problems as "caused by a reliance upon narrow and often inappropriate acquisitive values that are harmful to nature and to the satisfaction of a wide range of human needs, including biological exigency and living in harmony with nature and in community with other people."[166] Therefore, the current model of regulated riparianism and the principle of reasonable use must be modified in order to create a water doctrine appropriate for protecting our global freshwater resources in the Anthropocene.[167]

VI. ALTERNATIVE DIRECTIONS FOR VERMONT WATER LAW IN THE ANTHROPOCENE

Mary Christina Wood suggests that rather than create new environmental legislation to face our climate crisis, we reframe the role of government into a trust framework.[168] In doing so, we could utilize the current legal framework to transition the government's discretion to destroy the environment into an obligation to protect nature under the auspices of collective property rights.[169] In a similar way, Cormac Cullinan, in his book *Wild Law*, expresses a need to reframe our whole perception of the legal

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162. *See* Clean Water Act, 33 U.S.C. § 1342 (2012) (describing the structure of the National Pollutant Discharge Elimination System).

163. *See supra* Part VI (explaining the importance of shifting legal frameworks in the Anthropocene).

164. *See supra* Part VI (discussing the importance of these considerations within the context of the Anthropocene).

165. *See* Jarret C. Oeltjen & Loyd K. Fisher, *Allocation of Rights to Water: Preferences, Priorities, and The Role of the Market*, 57 NEB. L. REV. 245, 247, 254–55 (1978) (detailing the theory of choosing economic development over water rights).

166. DAVE FELDMAN, WATER RESOURCES MANAGEMENT: IN SEARCH OF AN ENVIRONMENTAL ETHIC 2 (1995).

167. *See* Wood, *supra* note 2, at 594–95 (arguing that the future of the nation's resources depends on reframing the government).

168. *Id.*

169. *See id.* at 595 (arguing that by drawing on ancient trust concepts in property law, rather than statutory law, the government can more easily focus on protecting nature's rights).

system and society.[170] Cullinan advocates shifting focus from the welfare of humans to the welfare of the Earth Community.[171]

As a public property system, regulated riparianism is already imbued with a stronger sense of public trust than the traditional private property regimes, as referred to by Mary Christina Wood.[172] The legal framework exists in Vermont to support water allocation that balances social, ecological, and economic well-being.[173] But in practice, the principle of reasonable use is vulnerable to interpretation by economically biased decision makers.[174] This economic preference has led to the current state of environmental degradation and continuing deterioration that we see in Lake Champlain.[175] To resolve this flaw in the doctrine, I propose two modifications that seek to reframe the role of water law in riparian states, while working within the existing regulatory structure: (1) legally define and enforce an environmental ethic, and (2) reintroduce the expanded concept of riparian into regulated riparianism.

A. Implementing an Environmental Ethic

To reframe regulated riparianism into a doctrine that reduces pollution, restores degraded ecosystems, and decreases vulnerability to climate change, the State of Vermont should implement an environmental ethic and enforce it with an anti-environmental degradation law. To begin, the State could define an environmental ethic based on Aldo Leopold's land ethic.[176]

Leopold's foundational principle for guiding a land ethic is: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."[177] Leopold's land ethic reflects a responsibility for the health of the land—a sharp departure from thinking solely based upon economic terms.[178] Instead, the ethic encourages an examination of questions "in terms of what is ethically and

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170. CORMAC CULLINAN, WILD LAW: A MANIFESTO FOR EARTH JUSTICE 117 (2d ed. 2011).

171. *Id.*

172. Wood, *supra* note 2, at 601–02 (explaining how the trust framework is a property concept, and how the property concepts support environmental protection while affirming one's property rights).

173. *See supra* notes 92–94 and accompanying text (outlining the statutory framework in Vermont that allows reasonable use principles to be applied by agency discretion).

174. *See supra* notes 158–59 and accompanying text (discussing various practices used by Vermont agencies that have enabled the deteriorated lake conditions).

175. *See supra* Part IV (discussing the flexibility in administration of water laws and the historical preference for economic development).

176. *See* ALDO LEOPOLD, A SAND COUNTY ALMANAC 239 (Oxford Univ. Press 1966) (proposing that ethics be extended to include the land as well as humans).

177. *Id.* at 262.

178. *Id.* at 262–63.

esthetically right, as well as what is economically expedient."[179] This is not to say that there is no room for economic thought in the evaluation of a water use: in fact, Leopold recognizes that it is an important consideration.[180] However, economic value should be evaluated in conjunction with, and secondarily to, the impact of a use on the integrity, health, and functioning of the broader ecological community. Leopold suggests that "a system of conservation based solely on economic self-interest is hopelessly lopsided."[181] The current system in Vermont demonstrates the lopsidedness of a system driven by economic value.[182]

However, an environmental ethic will take time and reinforcement to gain legitimacy within society.[183] To ensure that citizens and corporations act in accordance with the environmental ethic, Vermont could draw from Polly Higgins's Ecocide Act to legally define a crime against the environment.[184] Higgins proposes to add ecocide as a fifth international Crime Against Peace, joining the already existing crimes of genocide, crimes against humanity, war crimes, and crimes of aggression.[185] Higgins's Ecocide Act creates a legal framework through which parties can be held accountable and prosecuted for environmental destruction and degradation.[186] Additionally, Higgins has drafted the full text of a legal act to define, describe, and prosecute ecocide.[187] Vermont can draw from Higgins's Ecocide Act to create a state level anti-degradation act. Such an act would enforce the use of an environmental ethic in defining reasonable use in regulated riparianism and punish individuals that degrade water resources.[188]

Finally, to enforce a state-level anti-degradation act, the State must define environmental destruction and degradation based on ecological

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179. *Id.* at 262.

180. *Id.* at 263.

181. *Id.* at 251.

182. *See* Osherenko, *supra* note 89, at 111 (discussing how the Agency of Natural Resources favors technology-based effluent limitations over environmental improvement).

183. *See generally* POLLY HIGGINS, EARTH IS OUR BUSINESS: CHANGING THE RULES OF THE GAME XI (2012) (explaining all of the steps that are necessary for an environmental ethic to take place in the present economic-oriented legal landscape).

184. *Id.* at 159.

185. *Id.* at XI.

186. *See generally id.* at 171–78 (laying out the sentencing guidelines for those convicted of ecocide).

187. *See generally id.* at 157–78 (outlining how the Ecocide Act defines, describes, and prosecutes Ecocide).

188. *See generally id.* (suggesting various methods the State of Vermont could potentially draw on to craft better anti-degradation legislation).

boundaries.[189] Here, Vermont can refer to planetary boundaries, which include global limits for, among others, climate change, biodiversity loss, the phosphorous cycle, the nitrogen cycle, and global freshwater use.[190] Researchers in the State can work to adapt these global system boundaries to state-level and watershed-level limits. This work is already underway in Vermont under the Clean Water Act.[191] The research into the assimilative capacity of water bodies, as mandated under the Clean Water Act, can be used to legally define environmental degradation.[192]

This three-part proposition—environmental ethic, anti-degradation law, and regional ecological-boundaries research—may seem unrealistic in the current political context.[193] However, small steps can be taken now to initiate a change in course towards a water doctrine that prioritizes the ecological challenges of the Anthropocene and an environmental ethic over economic development.[194] One such change would be to implement a two-stage test for reasonable use that enforces ecological boundaries as the first step in determining reasonable use.[195] In this two-stage test, the first test of reasonable use would be to investigate whether the proposed permit contributes to ecological degradation or inhibits ecological restoration. The test proceeds to the second stage if the permit would not contribute to ecological harm. In the second stage, the Agency considers the remaining three standard principles of reasonable use (the purpose and economic and social values) and determines the permit allocation. This initial change to a two-step test for reasonable use could start the process of transforming the Vermont permitting system into one based on an environmental ethic. Eventually, Vermont will require a legally enforced environmental ethic, anti-degradation law, and clear regional ecological boundaries to support life in the Anthropocene.[196]

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189. *See id.* (defining environmental destruction and degradation based on ecological boundaries within the context of the Ecocide Act).

190. Rockström et al., *supra* note 23; Steffen et al., *Planetary Boundaries*, *supra* note 18, at 860.

191. *See supra* Part IV (describing and analyzing Vermont's permitting system and how this system complies with the Clean Water Act).

192. *Id.*

193. *See supra* notes 177–88 and accompanying text (discussing Leopold's land ethic and suggesting the Ecocide Act as an enforcement mechanism); *see also supra* notes 187–92 and accompanying text (arguing for the establishment of anti-degradation laws and ecological boundaries).

194. *See supra* Part VI.A (proposing two-stages that can be used to address balancing water quality and the principles of reasonable use in the era of the Anthropocene).

195. *See supra* Part VI.A (proposing a two-stage test for determining reasonable use of water resources).

196. *See supra* Part V (showing the deterioration of reasonable use principles in Vermont that will need to be addressed in the era of the Anthropocene).

B. Expanding the Concept of Riparianism

The second modification I propose to the principle of reasonable use is to reintroduce the concept of a riparian landowner into regulated riparianism and expand the definition to include the whole of Earth's commonwealth of life. This modification works in conjunction with enforcing an environmental ethic.[197]

In the transition from the traditional riparian doctrine to regulated riparianism, the concept of a riparian landowner was lost.[198] Although riparian rights still exist in their traditional sense for landowners in riparian states, the rights and duties of a riparian landowner are now embedded in a permit for most water uses.[199] The duty to respect other riparian landowners' rights and the rights of the public is replaced by the threat of a fine.[200] As Higgins suggests, "[p]ermits to pollute protect the polluter, not the earth. Fines levied after the event, when caught exceeding acceptable levels of destruction, can be sidestepped, litigated or paid-off."[201] By reintroducing the concept of a riparian landowner into the regulated riparian system, the State could reinstate a sense of duty and responsibility for the water user. However, the narrow definition of riparian landowner needs to be expanded to accurately account for the full range of life invested in the fresh water system.[202]

According to Peter Brown and Geoffrey Garver, the idea of a political commonwealth, "established to promote the common good," can be extended to the whole of life on Earth to promote the principles of mutual respect and fairness.[203] As water is an essential element for much of life on Earth, if the riparian concept were expanded to include Earth's commonwealth of life, the concept would more accurately reflect the vested interest of all life forms in water as a resource and the global nature of the hydrologic cycle.[204] When the expanded riparian notion of Earth's

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197. *See supra* Part VI.A (expanding the discussion on potential enforcement of environmental ethic legislation).

198. *See The Evolution of Riparianism*, *supra* note 50, at 85 (describing regulated riparianism).

199. *Id.* at 85, 87.

200. *See id.* at 87 (noting how regulated riparianism involves administrative processes and local government).

201. HIGGINS, *supra* note 183, at 6.

202. *See supra* Part V (discussing the "right to pollute" in the context of maintaining healthy ecosystems).

203. PETER BROWN & GEOFFREY GARVER, RIGHT RELATIONSHIP: BUILDING A WHOLE EARTH ECONOMY 6 (2009).

204. *Cf. id.* (stating that the "commonwealth stresses the shared features of the community and interdependence of its members," and the hydrologic cycle is a shared feature of Earth's biological community).

commonwealth of life is applied to the foundational maxim of the riparian doctrine—*so use your own as not to injure another's property*—the maxim transforms into an environmental ethic.[205]

Through implementing an expanded riparian concept to regulated riparianism and legally enforcing an environmental ethic, Vermont could create a new context in which state agencies prioritize ecological boundaries and the Earth's commonwealth of life over economic development. With these changes in place, the State could work within the existing legal structure for regulated riparianism to appropriately allocate water for the challenges of the Anthropocene.

CONCLUSION

Despite a well-written legal framework for balancing ecological, social, and economic needs in allocating water, the regulated riparianism regime in Vermont ultimately falls short of meeting the ecological priorities necessary for the Anthropocene.[206] Vermont provides just one example of the challenges faced by the regulated riparianism doctrine in the Anthropocene, and it is likely that many other states face similar or even more dramatic challenges.[207] The fact that, in practice, such environmentally sound legislation defers to economic, anti-ecological decisions, suggests that regulated riparianism as a doctrine needs to be revised.[208] To update the doctrine, Vermont, and other riparian states, should reframe the role of government—and the riparian regime—around an environmental ethic that prioritizes respect for ecological boundaries over economic growth and development. From this re-grounded riparian regime, the current legal framework is well equipped to curtail current environmental degradation, restore deteriorated ecosystems, and protect against increased vulnerability to climate change in the Anthropocene.[209]

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205. *See id.* (stating that a commonwealth promotes the interests of the common good rather than the individual); *see also supra* Part IV (discussing the principles of a land ethic); *supra* Part III.A (discussing the principles of riparian rights).

206. *See supra* Part IV (overviewing the current legal and regulatory framework for water rights and describing the current state of water in Vermont).

207. *See supra* Part IV (showing the shortcomings of Vermont's statutes at creating ecologically sound legislation for water resources).

208. *See supra* Part VI (explaining issues in Vermont under the riparian system).

209. *See supra* Part IV (describing the current legal framework in Vermont); *see also supra* Part V (applying a new theory of reasonable use to Vermont's framework).

CHARGING ONWARDS: REMOVING BARRIERS TO ENERGY STORAGE IN RESTRUCTURED NEW ENGLAND STATES

INTRODUCTION

Unchecked climate change will have disastrous consequences for humanity and the global environment.[1] The world's current greenhouse gas (GHG) emissions pathway will likely lead to 3–4˚C of global warming.[2] That level of warming could make over half of all living species extinct, sink hundreds of coastal cities beneath the ocean, render parts of the Earth virtually uninhabitable, and kill billions of people.[3] Curbing climate change is imperative and requires substantial reductions in Carbon Dioxide (CO_2) emissions from burning fossil fuels.[4]

Replacing fossil-fuel power plants with zero-emission sources of renewable energy—such as wind and solar—is a cost-effective way to reduce CO_2 emissions.[5] Increasing the use of wind and solar energy will also reduce air pollution that kills tens of thousands of Americans every

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1. James Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE 1, 5 (2013).

2. The standard projection is "four degrees of warming by the beginning of the next century, should we stay the present course." David Wallace-Wells, *The Uninhabitable Earth*, N.Y. MAG. (July 9, 2017), http://nymag.com/daily/intelligencer/2017/07/climate-change-earth-too-hot-for-humans.html. However, at least one analysis suggests that recent and continuing cost declines in solar and electric vehicle technology will likely limit global warming to 2.8–3.1˚C, even with weak climate policy. CARBON TRACKER INITIATIVE & GRANTHAM INST. CLIMATE & THE ENV'T, EXPECT THE UNEXPECTED: THE DISRUPTIVE POWER OF LOW-CARBON TECHNOLOGY 3, 34 (2017), https://www.carbontracker.org/reports/expect-the-unexpected-the-disruptive-power-of-low-carbon-technology/. If all countries also take the climate mitigation actions they pledged to do in their nationally determined contributions, such cost declines would likely limit global warming to 2.4–2.7˚C. *Id.*

3. Hansen et al., *supra* note 1, at 6–7; Wallace-Wells, *supra* note 2; Paddy Manning, *Too Hot to Handle: Can We Afford a 4-Degree Rise?*, SYDNEY MORNING HERALD (July 9, 2011), http://www.smh.com.au/environment/too-hot-to-handle-can-we-afford-a-4degree-rise-20110708-1h7hh#ixzz2LyOvFCeo (noting that possibly less than one billion humans could survive on an Earth that is 4˚C warmer).

4. *See* IPCC, Summary for Policymakers (2014), *in* CLIMATE CHANGE 2014: MITIGATION OF CLIMATE CHANGE: CONTRIBUTION OF WORKING GROUP III TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 10–12 (Ottmar Edenhoferet et al. eds., 2014) [hereinafter INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE], https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_frontmatter.pdf (prophesizing future mitigation pathways and the importance of reducing CO_2 emissions to promote sustainable development); *see* Hansen et al., *supra* note 1, at 1 (noting that CO_2 emissions from burning fossil fuels are the principal driver of climate change and arguing that humanity must reduce these emissions).

5. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 4, at 20 (discussing that using more renewable energy is a cost-effective way to reduce emissions); *Wind Explained: Wind Energy and the Environment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.cfm?page=wind_environment (last updated Dec. 19, 2018) (stating that wind is a zero-emission source of energy); *Energy Explained: Solar Energy and the Environment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.cfm?page=solar_environment (last updated Aug. 31, 2018) (stating that solar is a zero-emission source of energy).

year.[6] However, renewable energy sources are also intermittent sources of energy: they are only available when the sun shines or the wind blows.[7] Intermittency limits the share of electricity demand that wind and solar can feasibly meet without energy storage.[8] Thus, energy storage will play a key role in mitigating climate change.[9] Energy storage can also replace the most polluting power plants that only run when demand for electricity is at its highest.[10] Likewise, energy storage can help existing power plants to operate more efficiently, thereby reducing their emissions.[11] Energy storage thus provides numerous environmental benefits by reducing fossil-fuel emissions.[12]

Energy storage can make electricity cheaper by avoiding the need to build expensive new power lines and power plants to satisfy periods of high electricity demand.[13] In doing so, energy storage could collectively save consumers hundreds of millions of dollars annually.[14] Recognizing these benefits, the Federal Energy Regulatory Commission (FERC) recently promulgated Order 841 to enable energy storage to fairly compete with traditional power plants.[15] However, maximizing these savings—and the

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6. *See* Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States*, 8 ENERGY & ENVTL. SCI. 2093, 2105, 2107 (2015) (asserting that converting to a 100% renewable energy system would save at least 45,800 American lives annually).

7. KEVIN B. JONES ET AL., THE ELECTRIC BATTERY: CHARGING FORWARD TO A LOW-CARBON FUTURE 9 (2017).

8. *Id.* This is not to say electric grids cannot accommodate significant amounts of renewable energy without storage. *Id.* at 122. In practice, grid operators have successfully integrated renewable energy by using traditional power plants that can alter their output on demand to compensate for fluctuating renewable output. *Id.* at 9. Most analyses indicate that existing grids can handle intermittent renewable generation providing 25–40% of the electricity supply on average. *Id.* at 122. Still, integrating higher levels of intermittent renewables will probably require energy storage. *Id.* at 9, 122.

9. *Id.* at 4.

10. Janice Lin & Giovanni Damato, *How Storage Can Help Get Rid of Peaker Plants*, GREENTECH MEDIA (June 28, 2010), https://www.greentechmedia.com/articles/read/energy-storage-vs-peakers [hereinafter Lin & Damato].

11. MASS. DEP'T OF ENERGY RES. ET AL., STATE OF CHARGE: MASS. ENERGY STORAGE INITIATIVE 94–95 (2016), http://www.mass.gov/eea/docs/doer/state-of-charge-report.pdf.

12. *See id.* at 3 ("[E]nergy storage is an economically and technically viable solution for alleviating . . . environmental challenges . . . .").

13. JUDY CHANG ET AL., THE BRATTLE GRP., THE VALUE OF DISTRIBUTED ELECTRICITY STORAGE IN TEXAS: PROPOSED POLICY FOR ENABLING GRID-INTEGRATED STORAGE INVESTMENTS 9–11 (2014), http://files.brattle.com/files/7589_the_value_of_distributed_electricity_storage_in_texas.pdf.

14. *Id*. at 13; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 77 ("[T]he total value of storage over 10 years could be around $3.4 billion.").

15. *See* Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, 83 Fed. Reg. 9580, 9582 (Mar. 6, 2018) (to be codified at 18 C.F.R. pt. 35) [hereinafter Order 841] (explaining that the Order remedies how current wholesale electricity market rules meant for traditional resources unjustly and unreasonably limit the services energy storage resources can provide).

environmental benefits of energy storage—requires that energy storage projects receive payment both for the value of the power lines and the power plants they replace.[16] If energy storage projects only receive compensation for one and not the other, investors will build only a small fraction of the energy storage projects they otherwise would.[17]

However, most New England states have passed electricity restructuring statutes that create legal barriers to electric utilities owning or controlling both power plants and power lines.[18] This Note will show that—absent mechanisms that compensate non-utility energy storage projects for avoiding transmission and distribution (T&D) costs—these laws create significant legal barriers to energy storage projects receiving compensation for the full range of services they can provide.[19] Moreover, removing such state-level barriers to energy storage would greatly magnify the impact of Order 841.[20] Although Order 841 will enable 7,000 megawatts (MW) of energy storage deployment by itself, national deployment levels could reach 50,000 MW if states ensure energy storage projects receive compensation for all the benefits they offer.[21] State restructuring laws as currently written thus place significant constraints on energy storage economics that severely limit the amount of energy storage private actors can deploy.[22]

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16. CHANG ET AL., *supra* note 13, at 17.

17. *Id.* at 2.

18. *See, e.g.*, ME. REV. STAT. ANN. tit. 35-A, § 3204 (2018) (prohibiting investor-owned utilities that deliver electricity from owning non-nuclear power plants, except for those it needs to perform its delivery functions "in an efficient manner"); N.H. REV. STAT. ANN. § 374-F:1 (2018) (targeting "functional separation" of electricity delivery from electricity generation); MASS. GEN. LAWS ch. 164, § 1A (2018) (prohibiting utilities that deliver electricity from owning or controlling non-nuclear power plants).

19. *See infra* Part IV.B (explaining how the lack of mechanisms to compensate non-utilities for avoided T&D costs combined with restructuring laws create barriers to energy storage investment). Technically the *combination* of restructuring laws and the lack of such mechanisms create the barriers for energy storage. However, this Note will at times refer to such barriers as *restructuring barriers* for the sake of brevity. This Note's use of that term, however, should not be read as an implicit critique of restructuring or its goals.

20. ROGER LUEKEN ET AL., GETTING TO 50 GW?: THE ROLE OF FERC ORDER 841, RTOS, STATES, AND UTILITIES IN UNLOCKING STORAGE'S POTENTIAL 19 (2018), http://files.brattle.com/files/13366_getting_to_50_gw_study_2.22.18.pdf.

21. *Id.* Note that in the many states that have not restructured their electricity systems, the relevant barriers to energy storage receiving full compensation are of course not due to restructuring. *See id.* at 11 (highlighting other state-level barriers energy storage faces); JIM LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, ELECTRICITY REGULATION IN THE US: A GUIDE 18, 90 (2d. 2016) [hereinafter LAZAR & REGULATORY ASSISTANCE PROJECT STAFF], http://www.raponline.org/wp-content/uploads/2016/07/rap-lazar-electricity-regulation-US-june-2016.pdf (showing cartographically which states have and have not restructured).

22. CHANG ET AL., *supra* note 13, at 17 (noting that neither utilities nor independent investors can independently earn sufficient revenue to justify investing in enough storage to maximize system-wide benefits in a restructured state).

This Note will analyze these barriers and suggest ways that New England policymakers could remove them. First, Part I will detail the environmental benefits and economics of energy storage.[23] Second, Part II will provide an overview of electricity regulation and restructuring.[24] Third, Part III will show that current New England restructuring laws generally preclude utility ownership of energy storage projects that participate in wholesale electricity markets.[25] At the same time, non-utility energy storage projects cannot receive payment for the value they provide to the T&D system.[26] The current legal regime thus retards energy storage investment by preventing any single entity from monetizing the full value of energy storage.[27] Finally, Part IV will suggest potential statutory changes legislatures could make and regulatory actions public utility commissions could take to remove or bypass these barriers.[28] Specifically, legislatures could amend restructuring statutes to allow utility-owned energy storage to participate in wholesale electricity markets, subject to certain safeguards.[29] Legislatures or commissions could also enable a shared-ownership model in which utilities own an energy storage project's T&D attributes while a third party owns its generation attributes.[30]

I. ENVIRONMENTAL BENEFITS AND ECONOMICS OF ENERGY STORAGE

A. Reducing the Environmental Harms of Fossil Fuels

1. Climate Change and Other Environmental Harms of Burning Fossil Fuels

Failing to mitigate climate change will have devastating effects on the world.[31] Among other things, climate change causes more frequent and destructive forest fires, flooding, droughts, and heat waves.[32] These environmental impacts affect human health, leading to increased

23. *See infra* Part I (outlining the environmental and economic benefits of energy storage).

24. *See infra* Part II (providing background on electricity regulation and restructuring).

25. *See infra* Part III.A (explaining how New England restructuring laws generally preclude utility ownership of energy storage projects that participate in wholesale electricity markets).

26. *See infra* Part III.B (overviewing why non-utility energy storage projects cannot capture the value they provide to the T&D system).

27. *See infra* Part III.B (articulating how the current legal regime in restructured New England states produces underinvestment in energy storage).

28. *See infra* Part IV (discussing ways to remove the restructuring-created barriers to energy storage).

29. *See infra* Part IV.A (examining models which exempt utility-owned energy storage from restructuring restrictions).

30. *See infra* Part IV.B (discussing shared-ownership models for energy storage).

31. Hansen et al., *supra* note 1, at 15.

32. *Id.* at 6, 8.

malnutrition, disease, and even death.[33] Additionally, climate change destroys critical habitat for numerous plants and animal species.[34] Global warming of 2.9˚C could result in a mass extinction that kills over 50% of all current species.[35] Furthermore, warming beyond 2˚C would eventually trigger multi-meter sea level rise.[36] That amount of sea level rise would result in "the loss of hundreds of historical coastal cities worldwide with incalculable economic consequences, create hundreds of millions of global warming refugees from highly-populated low-lying areas, and thus likely cause major international conflicts."[37]

Higher levels of global warming would further intensify these impacts.[38] Some scientists believe that if global warming of 4˚C occurred, less than a billion humans could survive on Earth.[39] Such a level of warming could cause mass famine, economic collapse, and make large portions of the Earth effectively uninhabitable.[40] Yet the world is currently heading towards as much as 4˚C of global warming, absent additional action to curb climate change.[41]

GHG emissions—especially CO_2 emissions—from the burning of fossil fuels are the principal driver of climate change.[42] Furthermore, burning fossil fuels also emits significant air pollution that kills tens of thousands of Americans every year.[43] Additionally, certain methods of

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33. *Id.* at 8.

34. *Id.* at 7.

35. *Id.*

36. *Id.* at 6.

37. *Id.*

38. Manning, *supra* note 3.

39. *See id.* (implying that climate change would kill over 8 billion people, assuming a global population of 9 billion by 2050).

40. *Id.*; Wallace-Wells, *supra* note 2.

41. Wallace-Wells, *supra* note 2; *but see* CARBON TRACKER INITIATIVE & GRANTHAM INST. CLIMATE & THE ENV'T, *supra* note 2, at 34 (projecting that even with weak climate policy cost declines in solar and electric vehicle technology would limit global warming to about 3˚C).

42. Hansen et al., *supra* note 1, at 1–2. The three most significant fossil fuels are coal, oil (petroleum), and natural gas. *See Fossil Fuels Still Dominate U.S. Energy Consumption Despite Recent Market Share Decline*, U.S. ENERGY INFO. ADMIN. (July 1, 2016), https://www.eia.gov/todayinenergy/detail.php?id=26912.

43. Jacobson et al., *supra* note 6. These air pollutants include sulfur oxides (SO_X), nitrogen oxides (NO_X), particulates, and—in the case of coal—heavy metals such as mercury. *Sulfur Dioxide Basics*, EPA, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics (last visited Apr. 14, 2019); *Basic Information About NO_2*, EPA, https://www.epa.gov/no2-pollution/basic-information-about-no2 (last visited Apr. 14, 2018); *Coal Explained: Coal and the Environment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.cfm?page=coal_environment (last visited Apr. 14, 2019). However, one should note that burning natural gas produces far less air pollution than burning coal or oil. *See Environmental Impacts of Natural Gas*, UNION OF CONCERNED SCIENTISTS, http://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas#.WhpyakqnFPY (last visited Apr. 14, 2019) ("[T]he combustion of natural gas produces negligible

extracting fossil fuels have significant environmental and human health impacts.[44] Therefore, reducing fossil fuel use both reduces pollution-related mortality and helps stem climate change.[45]

The burning of fossil fuels in power plants is the second largest source of CO_2 emissions in the U.S., emitting almost as much CO_2 as all fuels Americans burn for transportation.[46] Replacing fossil-fuel power plants with zero-emission renewable energy sources—like wind and solar—is a cost-effective way to reduce such emissions.[47] Limiting global warming to less than 2˚C requires zero-emission and low-emission energy sources to produce at least 80% of the world's electricity by 2050.[48] Currently such sources only provide 30% of the world's electricity.[49] Energy storage can provide substantial climate and pollution reduction benefits by enabling more renewable energy and helping fossil-fuel power plants to operate more efficiently.[50] Indeed, "electricity storage has been called the 'holy grail' for an economy-wide transition to low-carbon, renewable energy sources."[51]

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amounts of sulfur, mercury, and particulates. Burning natural gas does produce nitrogen oxides (NOX), which are precursors to smog, but at lower levels than gasoline and diesel used for motor vehicles.").

44. For example, Mountaintop Removal (MTR) mining for coal deforests mining regions, buries headwater streams under mining debris, and "contaminate[s] surface and groundwater with carcinogens and heavy metals." Paul R. Epstein et al., *Full Cost Accounting for the Life Cycle of Coal*, 1291 ANNALS N.Y. ACAD. SCI. 73, 77 (2011). Not surprisingly, researchers have associated MTR mining practices with cancer clusters. *Id.* Similarly, unconventional oil and gas wells that employ hydraulic fracturing pose numerous health risks to nearby communities. *Environmental Impacts of Natural Gas*, *supra* note 43. Hydraulic fracturing—or *fracking*—injects numerous chemicals and vast quantities of water underground to access unconventional sources of oil and gas. *Id.* If drillers improperly construct unconventional wells, they may contaminate local groundwater with fracking chemicals, naturally occurring radioactive materials, or underground gases. *Id.* Furthermore, improper disposal of fracking chemicals can contaminate surface water supplies. *Id.* Unconventional oil and gas wells may also emit hazardous air pollutants that cause "respiratory symptoms, cardiovascular disease, and cancer." *Id.*

45. Jacobson et al., *supra* note 6; *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 4 (describing mitigation scenarios likely to slow climate change).

46. *Sources of Greenhouse Gas Emissions*, EPA, https://www.epa.gov/ghgemissions/ sources-greenhouse-gas-emissions (last visited Apr. 14, 2019).

47. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 4, at 20 (noting that using more renewable energy is a cost-effective way to reduce emissions); *see Wind Explained: Wind Energy and the Environment*, *supra* note 5 (noting that wind is a zero-emission source of energy); *Solar Explained: Solar Energy and the Environment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/ energyexplained/index.cfm?page=solar_environment (last updated Aug. 31, 2018) (noting that solar is a zero-emission source of energy).

48. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 4, at 10, 20.

49. *Id.* at 20.

50. *See* JONES ET AL., *supra* note 7, at 4 ("[T]he electric battery is a core climate solution."); MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11.

51. JONES ET AL., *supra* note 7, at 4.

2. How Energy Storage Can Curb Climate Change and Air Pollution

Energy storage[52] can reduce the environmental harms of climate change and conventional pollution in numerous ways. Most notably, it can enable electric grids[53] to integrate much higher levels of renewable energy sources, such as wind and solar.[54] It can also replace inefficient and disproportionately polluting *peaker* power plants.[55] Furthermore, it reduces the need for fossil-fuel power plants to inefficiently *ramp*—i.e., quickly change how much electricity they generate—and can thus reduce fuel use and emissions from existing power plants.[56]

Wind and solar energy are now cheaper on average than electricity from new fossil-fuel power plants.[57] Indeed, in many cases building new wind and solar power plants is now cheaper than continuing to run existing coal power plants.[58] However, their intermittent nature still limits their full potential because wind and sunlight are not available on demand.[59] Yet the nature of electricity requires consumers to use it at virtually the same

52. *Energy storage* in its broadest sense refers to any system that stores energy for later use. For its purposes, however, this Note uses the term to refer to technologies such as batteries and flywheels, which can convert electricity into another form of energy and then convert that energy back into electricity at a later time. *See, e.g.*, *Energy Storage Technologies*, ENERGY STORAGE ASS'N, http://energystorage.org/energy-storage-1 (last visited Apr. 14, 2019).

53. An electrical grid is the sum of all interconnected electrical infrastructure that produces, transports, and delivers electricity in a given region. It includes everything from large centralized power plants to rooftop solar panels to the switchboxes in individual homes, as well as the millions of miles of wires that link it all together. *Electricity Explained: How Electricity is Delivered to Consumers*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.cfm?page=electricity_delivery (last updated Aug. 31, 2018).

54. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 98–102.

55. Lin & Damato, *supra* note 10; *Flexible Peaking Resource*, ENERGY STORAGE ASS'N, http://energystorage.org/energy-storage/technology-applications/flexible-peaking-resource (last visited Apr. 14, 2018); MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 47. Peaker or peaking power plants are power plants which the grid uses to meet peak demand and levels of demand near it. Robert Rapier, *The Load Following Power Plant: The New Peaker*, TRANSFORM (June 21, 2017), https://www.ge.com/power/transform/article.transform.articles.2017.jun.load-following-power-plant. Peak demand in turn refers to the maximum amount of instantaneous demand for power in a given period of time. *Demand for Electricity Changes Through the Day*, U.S. ENERGY INFO. ADMIN. (Apr. 6, 2011), https://www.eia.gov/todayinenergy/detail.php?id=830.

56. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 78, 86.

57. LAZARD, LAZARD'S LEVELIZED COST OF ENERGY ANALYSIS-VERSION 12.0, at 2, 7 (2018), https://www.lazard.com/media/450784/lazards-levelized-cost-of-energy-version-120-vfinal.pdf.

58. *Id.* at 6; *see also* CARBON TRACKER INITIATIVE, POWERING DOWN COAL: NAVIGATING THE ECONOMIC AND FINANCIAL RISKS IN THE LAST YEARS OF COAL POWER 24 (2018), https://www.carbontracker.org/wp-content/uploads/2018/12/CTI_Powering_Down_Coal_Report_Nov_2018_4-4.pdf (estimating that the cost to continue operating as much as 70% of U.S. coal-generation capacity now exceeds the cost of building new renewable generation capacity).

59. JONES ET AL., *supra* note 7, at 9.

moment that a power plant generates it.[60] Consequently, the traditional "grid still relies on constant generation that is responsive to demand and available at the precise moment of that demand."[61] Intermittency is thus "the single biggest obstacle to powering our homes, businesses, and even the grid with renewable generation."[62]

Energy storage is the key to integrating large amounts of intermittent renewable energy.[63] For practical purposes, the ability to store energy and send it back onto the grid when necessary means the aggregate output of power plants does not always have to exactly and instantaneously match the end-use demand for electricity.[64] Energy storage systems can charge during periods when there is excess renewable generation and discharge that energy when the grid needs it most.[65] Energy storage therefore removes—or at least substantially alleviates—the limits intermittency impose on renewables' contribution to our electricity supply.[66] That in turn will reduce fossil fuel use and emissions.[67]

Energy storage's ability to replace peaker plants is another way it can reduce fossil fuel emissions.[68] Peaker plants run infrequently and they tend to be the least efficient—and the most polluting—power plants.[69] Thus, when energy storage systems charge during off-peak periods and discharge during peak periods, they can substantially reduce emissions of both CO_2 and conventional air pollutants.[70] This may be true even if the source of the

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60. *Id.* at 6.

61. *Id.* at 9.

62. *Id.* at 9. This is not to say electric grids cannot accommodate significant amounts of renewable energy without storage. *Id.* at 122. In practice, grid operators have successfully integrated renewable energy by using traditional power plants that can alter their output on demand to compensate for fluctuating renewable output. *Id.* at 9. Most analyses indicate that existing grids can handle intermittent renewable generation providing 25–40% of the electricity supply on average. *Id.* at 122. Still, integrating higher levels of intermittent renewables will probably require energy storage. *Id.* at 9, 122.

63. *Id.* at 9.

64. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at i.

65. JONES ET AL., *supra* note 7, at 10. For simplicity, this Note uses the terms *charge* to mean *store energy* and *discharge* to mean *release energy*, regardless of whether or not the energy storage system in question is a battery.

66. *Id.* at 9.

67. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 4, at 20 (noting that using more renewable energy is a cost-effective way to reduce fossil fuel use and emissions).

68. *Id.* at 23.

69. *Flexible Peaking Resource*, *supra* note 55.

70. *See* Lin & Damato, *supra* note 10 ("For example, assuming Pacific Gas and Electric's base load electric mix as the off-peak source of electricity, energy storage would provide 55% CO_2 savings, 85% NOx savings, and up to 96% savings of CO per MWh of on-peak electricity delivered.").

off-peak energy is a baseload fossil-fuel power plant,[71] though the benefit is even greater if the source is a renewable power plant.[72]

However, such *peaker replacement* only reduces emissions when the off-peak source of electricity is not coal.[73] Consequently, in those parts of the U.S. where coal power plants provide off-peak electricity, deploying energy storage without also deploying renewable energy would increase emissions.[74] Fortunately, New England has very little coal generation; it accounts for only 1% of generation, while renewables account for 18.6% (counting hydroelectric), nuclear for 30%, and natural gas for 49%.[75] Furthermore, in New England, coal plants generally act as peaker plants, and thus energy storage would likely displace coal generation.[76] As such, even with the current generation mix, displacing peaker plants with energy storage in New England would reduce emissions.[77]

Finally, energy storage also lowers GHG and other emissions by reducing the need for fossil-fuel power plants to ramp.[78] Currently, a portion of fossil-fuel power plants need to constantly change their output levels in order to balance changes in demand or renewable generation.[79] However, most fossil-fuel power plants have an optimal output level at

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71. Baseload power plants "are the production facilities used to meet some or all of a given region's continuous energy demand, and produces energy at a constant rate, usually at a low cost relative to other production facilities available to the system." *Energy Dictionary: Baseload Plant*, ENERGY VORTEX, https://www.energyvortex.com/energydictionary/baseload_plant.html (last visited Jan. 23, 2019) [https://web.archive.org/web/20180723073034/https://www.energyvortex.com/energydictionary/baseload_plant.html].

72. Lin & Damato, *supra* note 10.

73. *See* Naga Srujana Goteti et al., *How Much Wind and Solar Are Needed to Realize Emissions Benefits From Storage?*, SPRINGER LINK (Dec. 11, 2017), https://link.springer.com/article/10.1007%2Fs12667-017-0266-4 (analyzing a coal-heavy grid and a relatively coal-free grid and finding energy storage decreased emissions in the latter but increased emissions in the former); *see id.* ("Storage increases carbon emissions when it enables a high emissions generator, such as a coal plant, to substitute for a cleaner plant, such as natural gas.").

74. *See id.* (stating that deploying energy storage in the coal-heavy Midcontinent ISO grid "will not be carbon neutral until wind or solar power reach around 18% of the [region's] generation capacity").

75. *Resource Mix*, ISO NEW ENG., https://www.iso-ne.com/about/key-stats/resource-mix/ (last visited Apr. 14, 2018).

76. *See id.* ("Coal- and oil-fired resources also make valuable contributions . . . when demand is very high or major resources are unavailable."); MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 41 ("Storage can also reduce the overall energy system emissions by reducing the time oil and coal generators are utilized to meet peak demand, particularly in winter.").

77. *See* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at xi (calculating that in Massachusetts deploying the economically optimal level of energy storage would reduce "GHG gas emissions by more than 1 MMT CO2e over a 10 year time span" and equates "to taking over 223,000 cars off the road").

78. *Id.* at 86.

79. *Id.* at 92; JONES ET AL., *supra* note 7.

which they are most fuel-efficient.[80] Necessarily, such power plants operate less efficiently when they have to frequently change output levels.[81] Energy storage can perform this balancing role, often much more effectively than fossil-fuel power plants.[82] Therefore, energy storage can enable existing fossil-fuel power plants to operate at or close to their optimal levels more often, thereby reducing their emissions.[83] By the same token, energy storage can also remove the need to build fossil-fuel power plants specifically to balance increasing levels of intermittent renewables.[84]

B. The Economics of Energy Storage

1. The Economic Benefits of Energy Storage for Consumers

Energy storage can reduce the cost of operating electric grids, thereby making electricity cheaper for consumers.[85] This is especially true when an energy storage system can avoid the need for new transmission[86] and distribution[87] infrastructure in addition to providing wholesale electricity market services.[88] For example, the Brattle Group[89] calculates that deploying an efficient level of energy storage could reduce the net cost of operating the Texas grid by about $300 million per year.[90] The Massachusetts Department of Energy Resources (DOER) has likewise calculated that an investment of approximately $970 million to $1.4 billion in energy storage would save $3.4 billion over ten years.[91] Over $2 billion

80. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 94.

81. *Id.*

82. JONES ET AL., *supra* note 7, at 125–26.

83. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11.

84. *Id.* at ii.

85. *Id.* at 88.

86. Transmission refers to the infrastructure "that moves bulk electricity from the generation sites over long distances to substations closer to areas of demand for electricity," or to the service such infrastructure provides. *Transmission & Distribution*, PJM LEARNING CTR., https://learn.pjm.com/electricity-basics/transmission-distribution.aspx (last visited Apr. 14, 2019).

87. Distribution refers to the wires and supporting infrastructure that carry electricity from the point of connection with the transmission system to the homes and businesses that consume the electricity, or to the service such infrastructure provides. *See id.* (creating an analogy that describes distribution).

88. CHANG ET AL., *supra* note 13, at 17.

89. The Brattle Group is an economic and financial consulting firm that has expertise in energy matters. *See About*, BRATTLE GRP., http://www.brattle.com/about (last visited Apr. 14, 2019) (explaining the function of the Brattle Group). Oncor Electric Delivery Company, a Texas utility, commissioned them "to explore the economics of grid-integrated storage deployment in Texas." CHANG ET AL., *supra* note 13, at 1.

90. CHANG ET AL., *supra* note 13, at 12.

91. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at xi.

of those savings would flow to Massachusetts's electricity consumers.[92] However, achieving such optimum benefit levels requires energy storage systems to receive revenue both from participating in electricity markets and from providing value to transmission or distribution systems.[93]

2. How Energy Storage Can Provide Value to the Grid and Revenue to Investors

Energy storage systems can provide wholesale electricity market services.[94] Wholesale electricity markets encompass the generation side of the electricity system, providing revenue to power plants for: (1) generating electricity; (2) being able to generate it when needed; and (3) helping to control power quality and providing reserves to maintain grid stability.[95] In New England,[96] the respective market categories for each of these services are: (1) the energy markets;[97] (2) the forward capacity market;[98] and (3) the ancillary service markets.[99] Energy storage systems are capable of providing all these services; however, from a practical standpoint, energy storage systems participate in the first market by arbitraging rather than generating electricity.[100]

Energy storage can also reduce the need for new transmission or distribution infrastructure.[101] Just as electrical reliability requires sufficient generating capacity to satisfy peak demand, a grid must also have sufficient

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92. *Id.* at 88.

93. CHANG ET AL., *supra* note 13, at 17; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 115, 117–19.

94. CHANG ET AL., *supra* note 13, at 2.

95. *Administering the Wholesale Electricity Markets*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/about/what-we-do/three-roles/administering-markets (last visited Apr. 14, 2019).

96. In this Note, New England means the six states of Maine, Massachusetts, Rhode Island, Connecticut, New Hampshire, and Vermont.

97. The energy markets consist of the day-ahead and real-time energy markets. The former "allows market participants to secure prices for electric energy the day before delivery and to hedge against price fluctuations that occur in real time." *Administering the Wholesale Electricity Markets*, *supra* note 95. The latter "balances the dispatch of generation and demand resources to meet the instantaneous demand for electricity throughout New England." *Id.*

98. The forward capacity market "ensures the system has sufficient resources to meet the future demand by paying resources to be available to meet the projected demand for electricity three years out and operate when needed once the capacity commitment period begins." *Id.*

99. Ancillary services comprise a miscellaneous set of functions, including frequency regulation (rapidly changing generation output up or down to keep the grid balanced), providing reserves to compensate for unexpected power plant outages or spikes in demand, maintaining the voltage of the grid, and re-energizing the grid following a blackout. *Id.*; JONES ET AL., *supra* note 7, at 125–27.

100. JONES ET AL., *supra* note 7, at 124–27.

101. *Id.* at 127–28; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 7, at 115.

T&D infrastructure to transport enough electricity to meet peak demand.[102] Consequently, increases in peak demand have traditionally required construction of additional T&D infrastructure that the grid only uses during peak hours.[103] However, strategically placed energy storage systems can substitute for such infrastructure by charging during off-peak hours—making use of existing infrastructure when it is underutilized—and discharging during peak hours to relieve the strain on T&D systems.[104] This allows energy storage systems to substitute for *both* a peaker plant and the infrastructure that would otherwise carry electricity from that peaker plant to consumers.[105]

Providing wholesale market services and avoiding T&D costs each comprise significant portions of the potential value of energy storage systems.[106] In Texas, for example, the Brattle Group calculated that avoided T&D costs and associated reliability benefits accounted for 30–40% of energy storage's value.[107] The other 60–70% came from providing wholesale market services.[108] Conversely, in Massachusetts, the ratio is the opposite: DOER calculates that avoided T&D costs account for about 60–70% of the potential value to a project owner.[109] Providing wholesale market services accounts for the other 30–40%.[110] Regardless, either piece constitutes at least 30% of the total value.

This is significant because if energy storage projects cannot capture either value stream then the amount of energy storage deployment will drop dramatically. For example, in 2014, the Brattle Group calculated that the optimal level of storage in Texas is 5,000 MW when accounting for both value streams.[111] However, if investors can only capture one value stream,

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102. JONES ET AL., *supra* note 7, at 127–28; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 115.

103. JONES ET AL., *supra* note 7, at 127–28; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 115.

104. JONES ET AL., *supra* note 7, at 127–28; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 115.

105. *See* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 121 (providing an example of how an energy storage system can reduce both peak demand and avoid transmission costs).

106. CHANG ET AL., *supra* note 13, at 2; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 117–19.

107. CHANG ET AL., *supra* note 13, at 2.

108. *Id.*

109. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 119. However, most of the *consumer* savings come from cost reductions on the wholesale market or generation side. *Id.* at 87.

110. *Id.*

111. CHANG ET AL., *supra* note 13, at 2, 11–12. More precisely, this is the optimal level of energy storage assuming the average cost of building a system is $350 per kilowatt-hour (kWh) of storage capacity. *Id.* at 2. If system costs fall below that price, the optimum level of storage would presumably increase. For context, 2018 costs for lithium-ion batteries directly integrated into the grid

they would only build about 1,000 MW of energy storage—just 20% of the optimum level.[112] The Brattle Group later extrapolated these findings to the entire U.S.[113] Nationally, compensating energy storage for all value streams could lead to 50,000 MW of energy storage, as opposed to just 7,000 MW if energy storage could only participate in wholesale markets.[114] In other words, allowing investors to capture all value streams could increase energy storage deployment more than sevenfold.[115]

This leads to the crux of the problem this Note seeks to address: the general inability of investors to capture all of an energy storage project's generation, transmission, and distribution value in restructured electricity markets.[116] States that have restructured their electricity markets restrict the ability of entities that provide distribution services to also provide wholesale market services.[117] In doing so, such states create barriers to energy storage projects capturing both value streams.[118]

II. ELECTRICITY REGULATION AND RESTRUCTURING

In the U.S., both the federal government and the states share regulatory authority over electricity.[119] As a general rule, the federal government regulates wholesale electricity sales and transmission while states regulate distribution and retail sales.[120] Traditionally, primarily state-regulated and

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ranged from $277 to $544 per kWh, depending on system size and configuration. LAZARD, LAZARD'S LEVELIZED COST OF STORAGE ANALYSIS—VERSION 4.0, at 10, 13 (2018), https://www.lazard.com/media/450774/lazards-levelized-cost-of-storage-version-40-vfinal.pdf. Lazard predicts lithium-ion battery project costs to fall another 28% on average in the next five years. *Id.* at 14.

112. CHANG ET AL., *supra* note 13, at 8 (showing graphically that the money private investors could make from energy storage from wholesale markets alone would only justify building 1,000 MW of energy storage); *see id.* at 12 (indicating graphically that avoided T&D costs alone would not even justify building 1,000 MW of energy storage).

113. Lueken et al., *supra* note 20, at 19.

114. *Id.*

115. *Id.* Note, however, that the sevenfold increase may depend on removing other state level barriers as well. *See id.* at 11 (indicating that states may need to provide stable rate design and further clarify regulatory treatment of energy storage, particularly energy storage paired with renewables, to unlock its full potential).

116. *See infra* Part III.A (discussing how New England restructuring statutes limit the ability of energy storage projects to capture all of their project's generation, transmission, and distribution value).

117. *See* Amy L. Stein, *Distributed Reliability*, 87 U. COLO. L. REV. 887, 957–58 (2016) (explaining how restructuring restricts utility ownership of generation assets that provide wholesale market services).

118. *See id.* at 958 (highlighting problems with restricting utility ownership of generation assets).

119. JOSEPH P. TOMAIN & RICHARD D. CUDAHY, ENERGY LAW IN A NUTSHELL 385 (3d ed. 2017).

120. *Id.*; Federal Power Act, 16 U.S.C. § 824(b)(1) (2012). Technically, the Federal Power Act only gives the federal government jurisdiction over *interstate* transmission and wholesale sales. *Id.*

vertically integrated utilities provided most Americans with electricity.[121] As such, the entire electric industry from generation to distribution was subject to a complex system of rate regulation.[122] However, in the 1990s, federal regulatory changes enabled substantial competition in wholesale electricity generation.[123] At the same time, many states—especially in New England—enacted restructuring laws to introduce retail competition.[124] To help establish a level and competitive playing field, these laws also prohibited or restricted utilities from owning generators.[125] The current regulatory regime in most of New England thus separates the generation and distribution of electricity, to the detriment of energy storage.[126]

A. Traditional Utilities and Regulation

Vertically integrated electric utilities—entities that generate, transmit, and ultimately distribute electricity to retail ratepayers[127]—served most Americans prior to the 1980s.[128] Such utilities were monopolies that operated in state-defined exclusive service territories.[129] Electric utilities are "natural monopolies," as the economies of scale in building electrical grids makes it wasteful for competing firms to duplicate such infrastructure.[130] Consequently, society minimizes electricity costs by having a single firm

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However, "[t]he accepted view today is that any transmission or sale of electric energy within the interconnected United States is in 'interstate commerce,' even if the transaction's contractual origin and destination are within a single state." SCOTT HEMPLING, REGULATING PUBLIC UTILITY PERFORMANCE: THE LAW OF MARKET STRUCTURE, PRICING AND JURISDICTION 393 (2013). Consequently, "all wholesale sales and unbundled transmission service are subject to the Federal Power Act—unless they occur within Alaska, Hawaii, or the majority of Texas that is not interconnected with other states." *Id.*

121. HEMPLING, *supra* note 120, at 72.

122. *See infra* Part II.A (explaining utility rate regulation).

123. *See infra* Part II.B (discussing federal electricity regulation reforms in the 1990s).

124. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 18 (identifying states that adopted restructuring); HEMPLING, *supra* note 120, at 75 (mentioning the possibility of retail markets due to restructuring).

125. *See generally* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 10, 90 (noting how restructuring laws in many states required utilities to divest their power plants); *see, e.g.*, 39 R.I. GEN. LAWS § 39-1-27(d) (2018) (prohibiting utilities from owning generators).

126. *See infra* Part II.B (discussing the effects of restructuring and federal regulatory changes in New England); *see generally* Stein, *supra* note 117, at 958 (outlining the various routes that states have taken to address distribution and generation).

127. Retail ratepayers or simply ratepayers are utility customers, i.e., people and businesses who buy electricity from utilities for their own use. *See Definition of Ratepayer*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/ratepayer (last visited Apr. 14, 2019) ("[A ratepayer is] one who pays for a utility service and especially electricity according to established rates.").

128. HEMPLING, *supra* note 120, at 72.

129. *Id.*

130. RICHARD F. HIRSH, POWER LOSS: THE ORIGINS OF DEREGULATION AND RESTRUCTURING IN THE AMERICAN ELECTRIC UTILITY SYSTEM 17–18, 20 (1999).

build and operate the electric grid in a given area.[131] Even today, utility monopolies continue to provide distribution service.[132] However, monopolies also have the power to charge unreasonably high prices, as they lack competitors by definition.[133] States, therefore, established public utility commissions[134] to regulate the rates that utilities may charge to check their monopoly power.[135]

Commissions have a statutory duty to ensure that rates are "just and reasonable."[136] A commission must balance consumer and utility investor interests in order to set just and reasonable rates.[137] Thus, a commission must ensure that ratepayers do not pay exploitative or otherwise excessive prices.[138] However, rates must also be high enough to provide utilities with revenue to recover their operating and capital costs, and earn a reasonable return on their investments.[139] Returns are just and reasonable if they are "commensurate with returns on investments in other enterprises having corresponding risks" and are "sufficient to assure confidence in the financial integrity of the enterprise."[140] The just and reasonable standard

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131. *Id.*

132. HEMPLING, *supra* note 120, at 75.

133. HIRSH, *supra* note 130, at 27.

134. The precise name states give such bodies vary. For example, New Hampshire calls its regulator the Public Utilities Commission, while Massachusetts calls its regulator the Department of Public Utilities. N.H. REV. STAT. ANN. § 363:1 (2018); MASS. GEN. LAWS ch. 25, § 1 (2018). This Note uses the terms public utility commissions, utility commissions, or just commissions to refer to all such entities generically.

135. *Id.* at 21–23, 26–27. FERC is the federal analogue that regulates interstate transmission and interstate wholesale sales of electricity. Federal Power Act, 16 U.S.C. § 824(a) (2012); *What FERC Does*, FERC, https://www.ferc.gov/about/ferc-does.asp?csrt=16689007847031614432 (last updated Aug. 14, 2018). The Federal Power Act defines the "sale of electric energy at wholesale" as "a sale of electric energy to any person for resale." § 824(d). Consequently, FERC has jurisdiction over the rates a power plant selling electricity for resale in interstate commerce charges. It does not, however, have jurisdiction over the rates a vertically integrated utility charges its ratepayers for the electricity its own power plants generate.

136. HEMPLING, *supra* note 120, at 216.

137. Fed. Power Comm'n v. Hope Nat. Gas Co., 320 U.S. 591, 603 (1944). In this case the Supreme Court was ruling on "the validity under the Natural Gas Act . . . of a rate order issued by the Federal Power Commission." *Id.* at 593. However, the term "just and reasonable" has the same meaning under federal and state law. HEMPLING, *supra* note 120, at 216. Thus, the content of the Federal Power Commission's (now FERC's) duty and state commission's duty to ensure just and reasonable rates is the same. *Id.*; *History of FERC*, FERC, https://www.ferc.gov/students/ferc/history.asp (last visited Apr. 14, 2019); *see also* Appeal of Pub. Serv. Co. of N.H., 547 A.2d 269, 271 (N.H. 1988) ("In setting rates, a regulatory commission follows a process of identifying consumer and producer interests competing for recognition, with an ultimate goal of striking a fair balance . . . that may be described as just and reasonable both to the customer and to the utility.").

138. HEMPLING, *supra* note 120, at 220–21.

139. *Hope Nat. Gas Co.*, 320 U.S. at 603.

140. *Id.* This requirement also has a constitutional dimension. HEMPLING, *supra* note 120, at 221. Utility regulatory statutes legally obligate utilities "to serve all customers in [their] service

also provides commissions with discretion in setting rates, as many potential rates could provide utilities with a reasonable return without gouging ratepayers.[141] As a consequence, all rates that fall within a "zone of reasonableness" are just and reasonable.[142] Furthermore, commissions are free to choose any methodology they wish to establish rates, so long as the end result is just and reasonable.[143]

Yet despite this discretionary authority, most utility commissions use a largely standardized process to set rates known as "rate of return" rate-making.[144] First, "the regulatory commission considers the annual expenses of the utility, capital investments the utility has made, and a range of returns achieved by utilities and other businesses with similar risk profiles."[145] The commission then uses this data to determine the utility's revenue requirement: the total amount of money a utility must collect to cover its expenses and earn a fair return.[146] The commission then allocates costs to customers and designs rates that enable a utility to collect its revenue requirement.[147]

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territory," and "maintain infrastructure sufficient to provide . . . service" to prescribed quality standards. *Id.* at 14, 34, 44. This constitutes a taking for the purposes of the Fifth and Fourteenth Amendments that requires just compensation, as "[s]hareholder investment in the utility is 'private property.'" *Id.* at 221. The revenue a utility collects from its authorized rates provides the compensation. *Id.* That compensation is only just, however, if a utility's rates provide it with "the opportunity to earn a fair return." *Id.* (quoting Missouri *ex rel.* Sw. Bell Tel. Co. v. Pub. Serv. Comm'n of Mo., 262 U.S. 276, 290 (1923) (Brandeis, J., concurring)). Consequently, "[r]ates which are not sufficient to yield a reasonable return . . . are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the Fourteenth Amendment." Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of W. Va., 262 U.S. 679, 690 (1923). However, in practice this constitutional requirement does not impose any additional constraints on commissions. *Hope Nat. Gas Co.*, 320 U.S. at 607. Any rate low enough to be unconstitutional would also not be just and reasonable; therefore a just and reasonable rate is constitutional. *See id.* ("Since there are no constitutional requirements more exacting than the standards of the Act, a rate order which conforms to the latter does not run afoul of the former.").

141. HEMPLING, *supra* note 120, at 220–21.

142. *Id.*

143. *See Hope Nat. Gas Co.*, 320 U.S. at 603 (stating that only the end result of a rate matters when determining if it is just and reasonable); *see also* HEMPLING, *supra* note 120, at 230 ("Both the 'just and reasonable' standard and *Hope's* focus on 'end result' lead to the same place: regulatory discretion over method selection.").

144. Inara Scott, *Teaching an Old Dog New Tricks: Adapting Public Utility Commissions to Meet Twenty-First Century Climate Challenges*, 38 HARV. ENVTL. L. REV. 371, 381–82 (2014).

145. *Id.*

146. HEMPLING, *supra* note 120, at 217.

147. Scott, *supra* note 144, at 382. The regulatory processes for allocating costs and designing rates are complex and beyond the scope of this Note. Readers interested in the details of such processes should see JONATHAN A. LESSER & LEONARDO R. GIACCHINO, FUNDAMENTALS OF ENERGY REGULATION 175–268 (2d ed. 2013).

A utility's revenue requirement has two components: operating expenses and capital expenses.[148] Operating expenses include all ongoing costs including depreciation, i.e., the cost of gradually recovering a utility's investment expenditures.[149] In contrast, capital expenses provide the "*return* on the firm's undepreciated capital investment, called the *rate base*."[150] In principle, utilities only make a profit on what is in their rate base, as they merely recover operating expenses.[151] Furthermore, the more investments they include in their rate base, the more profit they make.[152] However, commissions may bar a utility from including imprudent investments in its rate base, and likewise prevent the utility from recovering imprudently incurred operating expenses.[153] Such "[p]rudence review is regulation's substitute for competitive forces" as it allows commissions to protect ratepayers from paying unreasonable expenditures that a prudent competitive business would not incur.[154]

Utility rate regulation is complex,[155] but for this Note's purposes, only a few points are material. First, in the past, vertically integrated monopolies generated, transmitted, and distributed electricity to consumers.[156] Second, utility commissions price-regulated this entire value chain under rate-of-return ratemaking.[157] Third, utility commissions have discretion to choose any ratemaking methodology they wish, so long as the resulting rates are

148. LESSER & GIACCHINO, *supra* note 147, at 63.

149. *Id.* at 63, 67.

150. *Id.* at 63. Capital expenses also include "an allowance for *working capital*, which is the amount of money a firm needs to have on hand every day to pay its bills." *Id.*

151. In practice, a utility can make a profit on the operating side if operating expenses unexpectedly decline after a commission sets its rates for a given period. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 88 (explaining how "regulatory lag" works, leading one to infer how a utility can still make a profit due to this phenomenon). Due to the "regulatory lag" between when costs change and a commission sets new rates, a utility can then collect more in rates than it needs to cover its operating costs. *Id.* (defining the term "regulatory lag" as the "time between the period when costs change for a utility, and the point when the regulatory commission recognizes these changes by raising or lowering the utility's rates to consumers").

152. *See* LESSER & GIACCHINO, *supra* note 147, at 49 (noting that utilities can artificially increase their rates through excessively investing in equipment).

153. *Id.* at 48. A utility's investments or costs are prudent only if a utility's decision to make or incur them was reasonable, considering industry norms and what the utility knew at the time. HEMPLING, *supra* note 120, at 236–37. However, a utility's "operating and investment decisions are typically considered prudent unless proven otherwise." LESSER & GIACCHINO, *supra* note 147, at 48. Consequently, regulators bear the burden of establishing imprudence. *Id.* However, commissions may also disallow recovery for prudent but uneconomic investments on the separate basis that they are not "used and useful." *See* HEMPLING, *supra* note 120, at 251–56 (discussing cost disallowance under the used and useful standard and its limits).

154. HEMPLING, *supra* note 120, at 235.

155. LESSER & GIACCHINO, *supra* note 147, at 205.

156. HEMPLING, *supra* note 120, at 72.

157. Scott, *supra* note 144, at 381.

just and reasonable.[158] Fourth, regulated utilities—which continue to manage electricity distribution even today[159]—make their profits by earning a rate of return on the physical infrastructure in their rate base.[160]

B. Competition in Wholesale Generation and Restructuring

By the 1990s, the traditional view that electricity generation was a natural monopoly was falling out of favor with policymakers.[161] Seeking to create competitive wholesale electricity markets, Congress removed the main federal regulatory barriers to non-utility generation in the Energy Policy Act of 1992 (EPAct 1992).[162] The Act and subsequent regulatory actions also led to the creation of Independent System Operator New England (ISO-NE) to manage New England's regional transmission system and wholesale electricity markets.[163] Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut also enacted restructuring laws to enable retail electricity competition.[164] These developments created the current legal landscape for electricity in New England.[165]

In addition to removing restrictions on non-utility generators, the EPAct 1992 also sought to provide non-utility generators with access to the transmission system.[166] Thus, the Act gave FERC the authority to order transmission line owners to carry electricity "for others—generators and purchasers of wholesale power—at just and reasonable rates."[167] In 1996,

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158. HEMPLING, *supra* note 120, at 230.

159. *Id.* at 75.

160. LESSER & GIACCHINO, *supra* note 147, at 63.

161. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 9 ("Following developments in the structure of the telecommunications and natural gas industries . . . some states 'unbundled' the electricity-supply function from distribution, on the theory that only the wires (the fixed network system) constituted a natural monopoly, whereas the generation of power did not.").

162. Jeffrey D. Watkiss & Douglas W. Smith, *The Energy Policy Act of 1992—A Watershed for Competition in the Wholesale Power Market*, 10 YALE J. ON REG. 447, 447, 449, 464–65 (1993).

163. LESSER & GIACCHINO, *supra* note 147, at 54; *Our History*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/about/what-we-do/history (last visited Apr. 14, 2019).

164. LESSER & GIACCHINO, *supra* note 147, at 75; *see generally* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 9–10, 18 (highlighting how in 1994, after England and Wales began restructuring, some states and regions, including New England, followed suit).

165. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 18, 21–22 (noting that most New England states are restructured as of 2010; that ISOs and RTOs arose because of FERC Order 888, and ISOs and RTOs—including ISO-NE currently exist).

166. Watkiss & Smith, *supra* note 162, at 449.

167. *Id.* Transmission lines are "bottleneck" facilities, as they are "essential for competition, controlled by the incumbent and not economically duplicable by competitors." HEMPLING, *supra* note 120, at 74. This gives the transmission-owning utility substantial market power over non-utility generators and consumers alike. LESSER & GIACCHINO, *supra* note 147, at 33. Even worse, a utility with its own generators might try to refuse access to its generation competitors or otherwise unfairly favor

FERC issued Order 888, requiring all transmission-owning utilities to offer transmission service to others under the same terms and conditions they provided to themselves.[168]

Order 888 also encouraged transmission-owning utilities to form voluntary organizations known as Independent System Operators (ISOs), to further foster wholesale competition.[169] When utilities form an ISO—or a similar entity known as a Regional Transmission Organization (RTO)[170]—the utilities transfer control over their individual transmission systems to the ISO or RTO in exchange for rates that provide cost recovery and a return on investment.[171] ISOs and RTOs also administer wholesale electricity markets in their regions.[172] ISO-NE is the RTO for nearly all of New England,[173] responsible for managing the region's transmission system and its wholesale electricity markets.[174]

In the context of these federal changes to promote wholesale competition, many states also began to restructure their electricity systems to introduce retail competition.[175] Retail competition allows ratepayers to choose from multiple generators or suppliers of electricity who compete against each other.[176] Ratepayers' traditional regulated utility continues to perform distribution and billing services.[177] Thus, in principle, the utility merely transports and delivers the electricity their ratepayers purchased from a third party, rather than selling electricity the utility generated

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itself. *Id.* Hence, federal policymakers determined that assuring non-utility access to the transmission system required regulatory intervention. HEMPLING, *supra* note 120, at 74.

168. HEMPLING, *supra* note 120, at 74–75.

169. LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 21.

170. *Id.* After ISOs had been operating for a few years, FERC "concluded that further refinements were needed to address lingering concerns about competitive neutrality and reliability." *Id.* FERC developed the RTO model as a refinement of the ISO model in response to these concerns. *Id.* at 21–22. In 1999, FERC issued Order 2000, which included standards for RTOs and encouraged, but did not require utilities to form them. *Id.*; HEMPLING, *supra* note 120, at 75. ISOs and RTOs are very similar; their differences do not matter for the purposes of this Note. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 21 (outlining the similarity between these two entities).

171. LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 21 (explaining that ISOs and RTOs need functional control of their respective transmission systems).

172. *See id.* (charting ISOs' and RTOs' attempts to neutralize wholesale electricity markets).

173. *See* Allco Fin. Ltd. v. Klee, 861 F.3d 82, 93 (2d Cir. 2017) (noting that ISO-NE's jurisdiction encompasses "Connecticut, Massachusetts, Vermont, New Hampshire, Rhode Island, and most of Maine"). ISO-NE began as an ISO when it was founded in 1997. *Our History*, *supra* note 163. It became an RTO in 2005, but did not change its name. *Id.*

174. *Our Three Critical Roles*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/about/what-we-do/three-roles (last visited Apr. 14, 2019).

175. HEMPLING, *supra* note 120, at 75; *see* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 18.

176. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 18 (detailing electricity supply options for consumers in restructured states).

177. *See id.* (outlining billing services under restructuring).

itself.[178] That said, restructured states also allow distribution utilities to provide "default supply" or "default service" to ratepayers who do not or cannot choose a competitive supplier.[179] However, restructured states still require distribution utilities to competitively source the electricity they use to supply default service.[180]

Restructured states generally require utilities to divest their generators, or at least functionally separate their distribution service from generation.[181] The rationale behind this is twofold. First, doing so *deregulates* generation, as it means power plants are no longer subject to rate regulation.[182] This eliminates the problems rate regulation of generation poses, such as potentially requiring ratepayers to pay for uneconomic power plants.[183] Second, it helps create a level playing field for competition by taking away the utility's incumbent advantage.[184] States in turn expect increased competition to decrease costs for consumers.[185] Unfortunately, barring utility involvement in generation also creates barriers for energy storage, as it means utilities cannot capture all of energy storage's value streams.[186]

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178. *See generally id.* at 18–19 (highlighting the general principles of restructured states and how distribution and billing work in such states).

179. *Id.* at 18, 73. In fact, in restructured states most residential and small business customers remain on default service. *Id.* at 18.

180. *See id.* at 91 (explaining how distribution utilities buy power from "wholesale power supply markets" to supply default service); *see, e.g.*, N.H. REV. STAT. ANN. § 374-F:3(V)(c) (2018) ("Default service should be procured through the competitive market . . . .").

181. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 90 (highlighting how some restructured states have required utilities to divest from generation); *see, e.g.*, N.H. REV. STAT. ANN. § 374-F:3(III) ("Generation services should be subject to market competition and minimal economic regulation and at least functionally separated from transmission and distribution services . . . .").

182. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 90 (noting that this divestment eliminates rate regulation of generation).

183. *Id.* at 90–91 ("[T]his eliminates . . . possible problems with gold-plating and cost-plus regulation in that segment (although it may cause other problems).").

184. *See, e.g.*, N.H. REV. STAT. ANN. § 374-F:1(I) (2018) ("[T]he development of competitive markets for wholesale and retail electricity services are key elements in a restructured industry that will require . . . at least functional separation of centralized generation services from transmission and distribution services.").

185. *See, e.g.*, *id.* ("The most compelling reason to restructure the New Hampshire electric utility industry is to reduce costs for all consumers of electricity by harnessing the power of competitive markets.").

186. *See* Stein, *supra* note 117, at 958 ("Although requiring utilities to divest their generation assets facilitates more competition, it also . . . [creates barriers] . . . to multi-functioning resources like energy storage, whose value can only be fully realized where the user is able to capitalize on its multiple value streams.").

In sum, New England's current electricity system largely consists of non-utility generators competing in ISO-NE's wholesale markets,[187] ISO-NE managing the transmission system,[188] and traditional utilities providing physical distribution service.[189] Furthermore, all New England states (except Vermont) prohibit or restrict utility involvement in generation in order to promote competition.[190] As a result, restructuring has almost entirely eliminated the traditional vertically integrated utility model in the region.[191] Unfortunately, while restructuring requirements facilitate competition, they also create barriers to capturing the full range of benefits energy storage projects can provide absent further reforms.[192]

III. ENERGY STORAGE UNDER CURRENT NEW ENGLAND STATE LAWS

A. Current State Laws Regarding Distribution Utility Ownership of Energy Storage

1. Does Energy Storage Constitute Generation?

Restructuring laws restrict distribution utility ownership and control of generation assets.[193] As such, restructuring laws only limit distribution utility ownership of energy storage if energy storage constitutes generation.[194] Whether energy storage constitutes generation is not immediately clear.[195] Arguably, energy storage should logically qualify as generation if it acts as a generator by providing generation services.[196] Conversely, energy storage projects only store energy that some other

187. *Administering the Wholesale Electricity Markets*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/about/what-we-do/three-roles/administering-markets (last visited Apr. 14, 2019); *Our Three Critical Roles*, *supra* note 174.

188. *Our Three Critical Roles*, *supra* note 174; HEMPLING, *supra* note 120, at 75.

189. HEMPLING, *supra* note 120, at 75.

190. *See infra* Part III.A (discussing how current New England restructuring statutes restrict utility involvement in generation).

191. *See* Stein, *supra* note 117 (noting that areas that have restructured have broken up the traditional vertically integrated utility structure).

192. *See id.* at 958 (stating that while divesting generation assets may create more competition for utilities, it may impede multi-functioning).

193. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 90–91 (discussing what utilities have had to do under restructuring laws).

194. *See* Stein, *supra* note 117 (explaining the restrictions on utility ownership of energy storage when it constitutes generation in a restructured state).

195. *See* INDEP. SYS. OPERATOR NEW ENG., HOW ENERGY STORAGE CAN PARTICIPATE IN NEW ENGLAND'S WHOLESALE ELECTRICITY MARKETS 3 (2016), https://www.iso-ne.com/static-assets/documents/2016/01/final_storage_letter_cover_paper.pdf (noting that energy storage is a unique resource that can both supply and consume electricity).

196. *See id.* at 3–4 (stating that energy storage can provide generation services).

facility previously generated, and thus do not generate any *new* electricity.[197]

Nonetheless, energy storage projects—or at least those that participate in wholesale electricity markets—in all likelihood qualify as generation for the purposes of New England restructuring statutes.[198] Indeed, the Maine Public Utility Commission (MPUC) has recently implied that it considers energy storage to qualify as generation for the purposes of Maine's restructuring statute.[199] Additionally, as of this writing, ISO-NE has determined that energy storage may only receive full compensation for wholesale services if it participates as a generator in wholesale electricity markets.[200] To the extent that an energy storage project is participating or seeks to participate in New England wholesale electricity markets as a

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197. *See* JONES ET AL., *supra* note 7, at 124 ("Energy market opportunities for storage technologies involve . . . purchasing energy (and recharging batteries) when system marginal costs are low and then selling energy back to the system (discharging the batteries) when system marginal costs are high.").

198. *See* Order at 12, *In re* Emera Me. Request for Approval of Hampden Microgrid Project, No. 2017-00027 (Me. Pub. Util. Comm'n June 16, 2017), 2017 WL 2691245 [hereinafter Emera Order] (stating that the while this issue has not been address by the Commission, the MPUC implies that energy storage may qualify as generation).

199. *See id.* (referring to the battery in a proposed utility-owned, solar-plus-storage system "as a source of backup generation" while considering whether Maine's restructuring statute allows a utility to own such a system).

200. *See* INDEP. SYS. OPERATOR NEW ENG., *supra* note 195, at 4 (stating that energy storage may only participate in all wholesale markets as a generator). Note, however, that FERC's recent Order 841 requires all ISOs and RTOs to develop new participation models that compensate energy storage projects for "all capacity, energy, and ancillary services that [they are] technically capable of providing." Order 841, 83 Fed. Reg. 9580, 9582 (Mar. 6, 2018). Such participation models must also recognize "the unique characteristics of electric storage resources," specifically "their ability to both inject energy to the grid and receive energy from it." *Id.* at 9583, 9589. Yet despite this, ISO-NE's proposed Order 841 implementation plan requires energy storage systems "to register as generation resources." Peter Maloney, *As Grid Operators File FERC Order 841 Plans, Storage Floodgates Open Slowly*, UTIL. DIVE (Dec. 11, 2018), https://www.utilitydive.com/news/as-grid-operators-file-ferc-order-841-plans-storage-floodgates-open-slowly/543977/. FERC may ultimately require ISO-NE to change this aspect of its plan, though it is also possible FERC may allow ISO-NE to treat energy storage as a non-traditional form of generation. *See id.* (suggesting requiring energy storage to register as generation does not comply with Order 841); *but see* Order 841, 83 Fed. Reg. at 9583 ("[E]xisting participation models designed for *traditional* generation . . . do not recognize electric storage resources' unique physical and operational characteristics . . . ." (emphasis added)). Furthermore, even if FERC does require ISO-NE to change this aspect of its implementation plan, it would not matter for energy storage's status under state law if other states follow the MPUC's lead. *See* Emera Order, *supra* note 198 (referring to an energy storage system "as a source of . . . generation"). Notably, the MPUC interpreted Maine's restructuring statute as restricting the entities which could provide generation services. *See id.* at 11 ("At its core, the Restructuring Act was intended to open generation services to market forces . . . . It is through this prism which the generation ownership prohibition must be viewed."). Thus, if other commissions follow this services logic, they might preclude utility ownership of any energy storage project that provided wholesale market services on the basis that such utilities would then be impermissibly providing generation services.

generator, it would presumably constitute generation under New England state restructuring laws.[201] These laws therefore restrict utility ownership of energy storage projects that act as a generator.[202] The following Subsections will analyze how the individual restructuring laws of each restructured New England state affect utility-owned energy storage.[203]

2. Rhode Island

When Rhode Island restructured its electricity system, it statutorily required distribution utilities to transfer their generation assets to either an affiliate or an unrelated company.[204] It prohibited distribution utilities "from owning, operating, or controlling generating facilities" once they completed their restructuring plans.[205] However, Rhode Island allowed its public utilities commission to exempt certain utilities from its restructuring statute.[206] The Commission can only exempt a utility if it did not sell or distribute electricity outside the Commission's service territory prior to restructuring, and if it sells or distributes less than 5% of the electricity consumed in Rhode Island.[207] Thus, large utilities cannot own or operate energy storage projects that act as generators.[208] Small utilities can build and operate energy storage projects if they convince the Commission to exempt them.[209]

The Commission's authority to exempt small utilities from the restructuring statute has little practical significance, however, as a single

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201. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 90 (stating that restructuring laws require utilities to divest generating assets).

202. This Note uses *act as a generator* and similar phrases as shorthand for participate in New England wholesale electricity markets as a generator or otherwise provide generation services.

203. *See infra* Parts III.A.2–6 (analyzing how the restructuring statutes of Rhode Island, Massachusetts, Maine, Connecticut, and New Hampshire impact utility-owned energy storage in each respective state).

204. 39 R.I. GEN. LAWS § 39-1-27(a)–(b) (2018). However, Rhode Island did allow its regulatory commission to exempt some distribution utilities from the requirement to *transfer* their existing generation assets under Section 39-1-27(a). *Id.* § 39-1-27(g). Nonetheless, it did not allow the Commission to exempt utilities from Section 39-1-27(d)'s prohibition on distribution utilities owning or operating generating assets. *Id.* § 39-1-27(d), (g). As such, the Commission cannot use Section 39-1-27(g) to allow a utility to build or acquire *new* generation assets, such as energy storage projects. *See id.* § 39-1-27(g) (setting forth requirements that the Commission must follow).

205. *Id.* § 39-1-27(d).

206. *Id.* § 39-1-2(5), (26) (2018).

207. *Id.* § 39-1-2(26).

208. *See id.* § 39-1-27(d) (barring utility ownership or control of generating facilities).

209. *See id.* § 39-1-2(26) (allowing the Commission to exempt small utilities that distribute less than 5% of the electricity consumed in the state).

distribution utility, National Grid, currently serves 99% of the State.[210] As such, National Grid cannot qualify for this exception.[211] Thus, Rhode Island effectively prohibits distribution utility ownership of generation in 99% of the State.[212] By extension, Rhode Island effectively prohibits utility ownership of energy storage projects that provide wholesale generation services throughout virtually the entire State.

3. Massachusetts

Massachusetts outright prohibits distribution utility ownership of all non-nuclear generation.[213] When it implemented restructuring, Massachusetts statutorily required its distribution utilities to either sell their non-nuclear generation assets or transfer them to an independent affiliate.[214] Massachusetts's restructuring statute now bars a distribution utility from "directly owning, operating, or controlling . . . [non-nuclear] generating facilities."[215] Instead, the statute requires utilities to restructure by separating their distribution and generation businesses into independent affiliates to maintain "strict separation between such generation affiliate and the distribution and transmission operations of such electric company."[216] As such, a distribution utility in Massachusetts can neither own a non-nuclear generating asset nor participate in operating the non-nuclear generation asset of an affiliate.[217] As energy storage is non-nuclear, Massachusetts prohibits distribution utility ownership of energy storage projects that act as generators.[218]

4. Maine

Maine's restructuring statute generally requires investor-owned distribution utilities to divest all non-nuclear generation assets located in the U.S.[219] The statute prohibits investor-owned utilities from owning or

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210. *Learn About Electricity*, STATE OF R.I. OFF. ENERGY RESOURCES, http://www.energy.ri.gov/electric-gas/electricity/learn-about-electricity.php (last visited Apr. 14, 2019).

211. *See* 39 R.I. GEN. LAWS § 39-1-2(26) (allowing the Commission to only exempt small utilities).

212. *Learn About Electricity*, *supra* note 210.

213. MASS. GEN. LAWS ch. 164, § 1A(b)–(c) (2018).

214. *Id.*

215. *Id.* § 1A(b)(1).

216. *Id.* § 1A(c).

217. *Id.* § 1A(b)–(c).

218. *Id.*

219. ME. REV. STAT. ANN. tit. 35-A, § 3204(1) (2018).

controlling "generation or generation-related assets."[220] However, it also authorizes MPUC to allow an investor-owned distribution utility to own or control "generation and generation-related assets" under certain circumstances.[221] Specifically, the Maine statute authorizes MPUC to allow this if it finds that such ownership or control "is necessary for the utility to perform its obligations as a transmission and distribution utility in an efficient manner."[222]

An energy storage project that both acts as a generator and provides T&D benefits should arguably qualify under this exception.[223] A reasonable interpretation of performing T&D obligations "in an efficient manner" would be providing T&D service at the lowest possible net cost.[224] To the extent an energy storage project can earn revenue by acting as a generator, it effectively reduces the net cost of the project as a potential transmission or distribution asset.[225] Moreover, the energy storage project would *have* to act as a generator in order to minimize the net cost of the project.[226] Consequently, operating the energy storage project as a generator would be "necessary for the utility to perform its obligations . . . in an efficient manner."[227] Thus, MPUC could allow a utility to build and operate such an energy storage project if it is the cheapest option for meeting a particular transmission or distribution need.

Unfortunately, MPUC is unlikely to adopt such a reading of Section 3204(6).[228] To date, MPUC has interpreted Section 3204(6) "very narrowly."[229] Specifically, in *Central Maine Power Co.*, MPUC determined that "a fundamental purpose of the Restructuring Act was to prohibit [T&D] utilities from using generation or generation-related assets to

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220. *Id.* § 3204(5).

221. *Id.* § 3204(6).

222. *Id.*

223. *See id.* (authorizing the Commission to allow utility ownership of generation assets necessary for efficiently transmitting or distributing electricity).

224. *Id.*

225. *See* CHANG ET AL., *supra* note 13, at 17 (noting that wholesale market revenue can reduce the net cost to ratepayers of an energy storage project that provides T&D benefits); *see* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 119 (clarifying that allowing utilities to capture wholesale market revenue would reduce the investment that would need to be included in a utility's rate base).

226. *See* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 117–18 (arguing that energy storage must be used to provide multiple benefits in order to be cost-effective).

227. Order at 5, *In re* Cent. Me. Power Co., 234 Pub. Util. Rep. 4th (PUR) 170 (Me. Pub. Util. Comm'n May 4, 2004) (No. 2004-21) [hereinafter Cent. Me. Power Co. Order] (quoting ME. REV. STAT. ANN. tit. 35-A, § 3204(6)).

228. *See id.* (stating the Commission believes that Section 3204(6) does not allow distribution utilities to provide generation services).

229. Emera Order, *supra* note 198, at 8.

provide services to third-parties."[230] Thus, MPUC believes that Section 3204(6) was never intended to allow utilities to use generation within their systems for grid support, nor to provide generation services under any circumstances.[231] Yet any energy storage project acting as a generator would be providing generation services to third parties by definition.[232] Thus, MPUC interprets Section 3204(6) in a way that would *never* allow an investor-owned distribution utility to provide generation services.[233] In other words, Maine prohibits investor-owned distribution utilities from operating energy storage projects that act as generators.

However, Maine only prohibits *investor-owned* distribution utilities from owning generation.[234] Unfortunately, investor-owned utilities serve about 75% of Maine electricity customers and deliver about 79% of the electricity consumed in the State.[235] As such, this exception has limited significance, as it only applies to utilities that serve about a quarter of the State.[236] Therefore, in practice, Maine categorically prohibits distribution utilities from capturing the generation value of energy storage projects throughout the majority of the State.[237]

5. Connecticut

Connecticut law generally prohibits distribution utilities from owning or operating generation assets.[238] However, Connecticut law also provides several exceptions to this general rule.[239] Most importantly, if the State's Integrated Resource Plan (IRP) calls for new generation, Connecticut's Public Utilities Regulatory Authority (PURA) must solicit proposals for such generation.[240] A distribution utility may then submit proposals for

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230. Cent. Me. Power Co. Order, *supra* note 227, at 6.

231. *Id.* at 5.

232. *See* INDEP. SYS. OPERATOR NEW ENG., *supra* note 95, at 4 (defining *act* as a generator).

233. Cent. Me. Power Co. Order, *supra* note 227, at 4.

234. ME. REV. STAT. ANN. tit. 35-A, § 3204(5) (2018).

235. *See Delivery Rates*, MAINE: ME. PUB. UTIL. COMMISSION, http://www.maine.gov/mpuc/electricity/delivery_rates.shtml (last visited Apr. 14, 2019) (noting that investor-owned utilities serve 605,052 of the State's 809,239 total customers).

236. *Id.*

237. *See* ME. REV. STAT. ANN. tit. 35-A, § 3204(5) (prohibiting the investor-owned utilities that supply most of the State's electricity from owning generating assets).

238. CONN. GEN. STAT. ANN. § 16-244e(a) (2018).

239. *See id.* ("An electric distribution company shall not own or operate generation assets, except as provided in this section and sections 16-43d, 16-243m, 16-243u, 16a-3b and 16a-3c.").

240. *Id.* § 16a-3b(b). An Integrated Resource Plan is a plan that "[t]he Commissioner of Energy and Environmental Protection" develops "in consultation with the electric distribution companies" for meeting the State's electricity needs in the cheapest way possible that is "consistent with the state's environmental goals and standards." *Id.* § 16a-3a(a).

building new generation assets "on the same basis as other respondents to the solicitation."[241] Additionally, if PURA does not receive enough proposals to meet the IRP's goals, it may direct a utility company to make "a proposal to build and operate an electric generation facility in the state."[242]

Importantly, Connecticut law requires IRPs to identify generation, transmission, and distribution needs and determine how best to meet them.[243] More specifically, such plans must "assess and compare the cost of *transmission* line projects, new power sources, renewable sources of electricity, conservation and *distributed generation* projects to ensure the state pursues only the least-cost alternative projects."[244] Furthermore, such plans must also assess whether distributed generation projects can meet reliability needs *before* a utility may consider building new power lines.[245]

Connecticut allows a distribution utility to build and operate generation assets, provided that an IRP calls for new generating assets and the utility makes a competitive proposal.[246] Connecticut's IRP statute also contemplates distributed generation projects providing both generation services *and* avoiding transmission costs.[247] To the extent a distribution utility can own and operate distributed generation projects—because they are a type of generation asset—a distribution utility could also capture the benefits of any T&D costs such projects might avoid.[248] Thus, under certain circumstances, Connecticut allows a distribution utility to capture a generator's generation, transmission, and distribution value.[249]

Accordingly, Connecticut law does allow a distribution utility to own an energy storage project that acts as a generator under certain circumstances. [250] Specifically, a distribution utility could do so if the

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241. *Id.* § 16a-3b(b)(1). However, Section 16a-3b(b)(1) also requires a distribution utility to demonstrate "that its bid is not supported in any form of cross subsidization by affiliated entities," presumably to prevent it from unfairly underbidding non-utility proposals. *Id.*

242. *Id.* § 16a-3c(a).

243. *Id.* § 16a-3a(c).

244. *Id.* § 16a-3e (emphasis added).

245. *Id.*

246. *Id.* § 16a-3b(b).

247. *See id.* § 16a-3e (requiring IRPs to compare the costs of distributed generation with both transmission projects and other new power sources).

248. *See* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 117–18 (providing an example of how a utility could use an energy storage project providing wholesale services to also avoid distribution costs).

249. CONN. GEN. STAT. ANN. § 16a-3b(b)(1) (allowing a utility to build generating assets if it submits a winning competitive proposal).

250. *See id.* § 16a-3b(b) ("When the Integrated Resources Plan contains an option to procure new sources of generation, the authority shall develop and issue a request for proposals."); *id.* § 16a-

State's IRP called for such an energy storage project and the distribution utility made a successful competitive proposal to build it.[251] Additionally, PURA could order a distribution utility to build such an energy storage project if no one submitted a proposal to build it.[252] The distribution utility would then capture the benefit of any avoided T&D costs the energy storage project might create.[253] As such, Connecticut allows a distribution utility to build and own an energy storage project, as well as capture its generation, transmission, and distribution value.

Connecticut is an outlier among restructured New England states because it now allows distribution utilities to potentially build and own *any* generation project in its IRP.[254] Indeed, this exception arguably swallows the general rule that "[a]n electric distribution company shall not own or operate generation assets."[255] Thus, distribution utilities in Connecticut can own energy storage projects that act as generators because Connecticut partially reversed restructuring when it added this exception in 2007.[256]

6. New Hampshire

New Hampshire's restructuring statute states that "generation services should be . . . at least functionally separated from transmission and distribution services."[257] Functional separation generally refers to "requiring utilities to separate their competitive generation functions from their regulated transmission and distribution functions."[258] It is "a less drastic alternative to divestiture, under which 'a utility would have to divest itself of all or a portion of its generating assets to another entity or entities

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3b(b)(1) ("[A]n electric distribution company may submit proposals in response to a request for proposals on the same basis as other respondents to the solicitation.").

251. *Id.*

252. *See id.* § 16a-3c(a) ("[I]f the Public Utilities Regulatory Authority does not receive and approve proposals sufficient to reach the goal set by the Integrated Resources Plan, the authority may order an electric distribution company to submit . . . a proposal to build and operate an electric generation facility in the state.").

253. Indeed, the IRP statute's policy would seem to favor placing an energy storage project in a location where it could substitute for new transmission projects. *See id.* § 16a-3e ("The Integrated Resources Plan . . . shall . . . assess the least-cost alternative to address reliability concerns, including, but not limited to, lowering electricity demand through conservation and distributed generation projects before an electric distribution company submits a proposal for transmission lines or transmission line upgrades . . . .").

254. *Id.* § 16a-3b(b)(1).

255. *Id.* § 16-244e(a).

256. 2007 Conn. Acts 1051 (Reg. Sess.).

257. N.H. REV. STAT. ANN. § 374-F:3(III) (2018).

258. *In re* Algonquin Gas Transmission, L.L.C., 186 A.3d 865, 878 (N.H. 2018) (Hicks, J., dissenting) (quoting Sonnet C. Edmonds, *Retail Electric Competition in Kansas: A Utility Perspective*, 37 WASHBURN L.J. 603, 632 (1998)).

in order to remain in the distribution business.'"[259] New Hampshire's Public Utilities Commission previously interpreted this statutory language as requiring functional separation and thus barring utility involvement in generation.[260]

However, in May 2018, the New Hampshire Supreme Court reversed the Commission's decision that interpreted this statutory language in *In re Algonquin Gas Transmission, LLC*. [261] It instead held that the statute does not require "'functional separation' of generation services from transmission and distribution services."[262] The Court explained that functional separation was one of just 15 interdependent and thus mutually qualifying restructuring policy principles the statute lists.[263] Furthermore, the statute did not "reflect any legislative intent that the 'functional separation' policy principle is meant to 'direct' the PUC in the exercise of its authority in implementing the chapter to the exclusion of the 14 remaining principles."[264] Therefore, the statute does not "require 'functional separation' in all circumstances."[265] Furthermore, the Court found "that the primary intent of the legislature" in enacting the restructuring statute "was to reduce electricity costs to consumers."[266] Thus, the *Algonquin* Court interpreted the state's restructuring statute as authorizing the Commission to allow utility involvement in generation when doing so advances other restructuring policy principles that outweigh functional separation and reduces costs for consumers.[267]

But when and how other restructuring policy principles could outweigh functional separation is rather unclear, as 10 of the remaining 14 principles emphasize or incorporate the importance of fostering competition,[268] which

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259. *Id.* (quoting Edmonds, *supra* note 258, at 631).

260. *In re* Pub. Serv. Co. of N.H. d/b/a Eversource Energy, 333 Pub. Util. Rep. 4th (PUR) 163 (N.H. Pub. Utils. Comm'n Oct. 6, 2016), *rev'd In re* Algonquin Gas Transmission, L.L.C., 186 A.3d 865, 875 (N.H. 2018).

261. *Algonquin*, 186 A.3d at 874–75.

262. *Id.*

263. *Id.* at 873.

264. *Id.*

265. *Id.* at 874.

266. *Id.*

267. *See id.* at 874 n.4 (indicating that the Commission can authorize utility involvement in generation services when "other policy principles identified in the statute clearly outweighed functional separation and [doing so] would produce more reliable electric service at lower rates for New Hampshire consumers than presently exists without any significant adverse consequences").

268. *See* N.H. REV. STAT. ANN. § 374-F:3(II) (2018) ("Allowing customers to choose among electricity suppliers will help ensure fully competitive and innovative markets."); *id.* § 374-F:3(IV) ("Comparability should be assured for generators competing with affiliates of groups supplying transmission and distribution services."); *id.* § 374-F:3(V)(c) ("Default service should be procured through the competitive market . . . ."); *id.* § 374-F:3(VI) ("A nonbypassable and competitively neutral

is the purpose of functional separation.[269] Thus, insofar as violating functional separation undermines competition, violating the functional separation principle also undermines what many of the other principles try to achieve. Furthermore, even the statute's "rate relief" principle seems to rank competitive markets as equally if not more important than rate reduction.[270] It flatly states that "[t]he goal of restructuring is to create competitive markets," while also noting these markets are merely "*expected* to produce lower prices for all customers."[271] Thus in a principle-weighing analysis, the principle most relevant to reducing consumer costs cuts in both directions—and arguably more towards competition and functional separation. These points would logically weigh strongly against allowing a functional separation violation under the *Algonquin* principle-weighing test.

As a practical matter then, the *Algonquin* test makes it theoretically possible but extremely difficult for the Commission to authorize utility involvement in generation services and thus violate the functional separation principle.[272] *Algonquin* does at least establish that the restructuring statute does not automatically bar utilities from owning and operating energy storage projects that act as generators while also providing T&D benefits.[273] However, many of the restructuring statute's principles

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system benefits charge applied to the use of the distribution system may be used to fund public benefits related to the provision of electricity."); *id.* § 374-F:3(VII) ("The rules that govern market activity should . . . ensure a fully competitive market."); *id.* § 374-F:3(VIII) ("Increased competition in the electric industry should be implemented in a manner that supports and furthers the goals of environmental improvement."); *id.* § 374-F:3(XI) ("The goal of restructuring is to create competitive markets . . . ."); *id.* § 374-F:3(XIII) ("New England Power Pool (NEPOOL) should be reformed and efforts to enhance competition and to complement industry restructuring on a regional basis should be encouraged."); *id.* § 374-F:3(XIV) ("The market framework for competitive electric service should, to the extent possible, reduce reliance on administrative process. New Hampshire should move deliberately to replace traditional planning mechanisms with market driven choice as the means of supplying resource needs."); *id.* § 374-F:3(XV) ("The commission should seek to implement full customer choice among electricity suppliers in the most expeditious manner possible . . . .").

269. *See* Ne. Energy Partners v. Mahar Reg'l Sch. Dist., 971 N.E.2d 258, 265 (Mass. 2012) (noting that functional separation is "a necessary first step in" implementing a fully competitive market for electricity generation); *Algonquin*, 186 A.3d at 878 (Hicks, J., dissenting) ("The importance of at least functionally separating generation services from transmission and distribution services is that achieving and maintaining a competitive market in generation services depends upon it.").

270. *See* N.H. REV. STAT. ANN. § 374-F:3(XI) ("The goal of restructuring is to create competitive markets that are expected to produce lower prices for all customers than would have been paid under the current regulatory system.").

271. *Id.* (emphasis added).

272. *See Algonquin*, 186 A.3d at 874 n.4 (indicating that other principles must outweigh the functional separation principle before the Commission could authorize a violation of the latter).

273. *See id.* at 874 (stating that the restructuring statute does not require "'functional separation' in all circumstances"); *id*. at 878 (Hicks, J., dissenting) (quoting Edmonds, *supra* note 258, at 632) (explaining that functional separation refers to "requiring utilities to separate their competitive generation functions from their regulated transmission and distribution functions").

lean in favor of competition and thus functional separation.[274] The Commission would thus find it difficult to authorize utility ownership of such energy storage projects.[275] The *Algonquin* decision will therefore be of little practical benefit to energy storage deployment.

Yet one other provision of the restructuring statute would seem to offer some hope for energy storage. This provision states that "distribution service companies should not be absolutely precluded from owning small scale distributed generation resources as part of a strategy for minimizing transmission and distribution costs."[276] Indeed, a separate statute explicitly permits distribution utilities to "invest in or own distributed energy resources."[277] New Hampshire defines "distributed energy resources" as including energy storage projects connected to the local distribution systems that help reduce T&D costs.[278] Thus, though New Hampshire generally prohibits distribution utilities from operating generation,[279] it explicitly exempts distributed generation projects—including energy storage—that reduce T&D costs.[280]

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274. *See* N.H. REV. STAT. ANN. § 374-F:3 (listing these principles).

275. *See Algonquin*, 186 A.3d at 874 n.4 (indicating that other principles must outweigh the functional separation principle before the Commission could authorize a violation of the latter).

276. N.H. REV. STAT. ANN. § 374-F:3(III).

277. *Id.* § 374-G:4(I).

278. *Id.* § 374-G:2(I)(b).

279. *Id.* § 374-F:3(III).

280. *Id.* § 374-G:2(I)(b). Note, however, that though this Section clearly defines energy storage as a distributed energy resource, the Section is less clear on whether energy storage constitutes generation. Section 374-G:2(I)(b) in full states:

> 'Distributed energy resources' means electric generation equipment, including clean and renewable generation, energy storage, energy efficiency, demand response, load reduction or control programs, and technologies or devices located on or interconnected to the local electric distribution system for purposes including but not limited to reducing line losses, supporting voltage regulation, or peak load shaving, as part of a strategy for minimizing transmission and distribution costs as provided in RSA 374-F:3, III.

Id. Whether energy storage constitutes distributed "electric generation equipment" matters because many of the statute's restrictions on utility ownership apply only to distributed generation. *See, e.g.*, *id.* § 374-G:3–4 (limiting when a utility can own or invest in distributed generation). Conceivably, one might read Section 374-G:2(I)(b) as defining only "clean and renewable generation" as "electric generation equipment" such that energy storage is a "distributed energy resource" but not necessarily distributed generation. *Id.* § 374-G:2(I)(b). However, the lack of any semicolon separating "renewable generation" from "energy storage" indicates that the commas surrounding the phrase "including clean and renewable generation" are not internal commas. *See* BRYAN GARNER, THE REDBOOK: A MANUAL ON LEGAL STYLE 14 (3d ed. 2013) ("[S]emicolons . . . separate elements of a series of phrases or clauses if one or more of the elements contains an internal comma."). That indicates "energy storage," like "clean and renewable generation," is part of an "electric generation equipment" series rather than just part of a "distributed energy resources" series, which makes energy storage a form of "electric generation equipment." N.H. REV. STAT. ANN. § 374-G:2(I)(b). The cross reference further bolsters this conclusion, as the cross-referenced Section mentions using only "distributed *generation* resources as

However, New Hampshire severely limits the scope of this exception.[281] First, a utility can only use the electricity that distributed generation facilities produce to offset distribution system losses,[282] for its own use, or for a customer's use if the generator is sited on that customer's property.[283] This limits the amount of distributed generation utilities can own or control, and their ability to use such generation to reduce transmission charges.[284] This exhaustive list of authorized purposes also means a utility could not bid such a project into wholesale markets.[285] Second, utilities can only own or invest in distributed generation with a capacity of 5 MW or less.[286] This limits the potential economies of scale larger system sizes could provide.[287] Third, the combined capacity of all distributed generators that a utility either owns or invests in cannot exceed "[six] percent of the utility's total distribution peak load."[288] That inefficiently limits the peak load reductions distributed generation can provide.[289] Indeed, an efficient level of energy storage capacity alone—excluding all other distributed energy resources—would likely reduce peak demand by nearly 10%.[290]

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part of a strategy for minimizing transmission and distribution costs." *Id.* § 374-F:3(III) (emphasis added). As such, the most natural reading of the statute is that it defines energy storage as "electric generation equipment" and thus as distributed generation when it is "located on or interconnected to the local electric distribution system." *Id.* § 374-G:2(I)(b). Consequently, the statute's limitations on utility ownership of distributed generation most likely apply to energy storage. *See, e.g.*, *id.* § 374-G:3–4 (limiting when a utility can own or invest in distributed generation).

281. N.H. REV. STAT. ANN. § 374-G:3–4 (2018).

282. Distribution system losses refer to electricity lost in the distribution system for either technical reasons inherent in electricity distribution or commercial reasons. Jignesh Parmar, *Total Losses in Power Distribution and Transmission Lines*, ELECTRICAL ENGINEERING PORTAL (Aug. 19, 2013), http://electrical-engineering-portal.com/total-losses-in-power-distribution-and-transmission-lines-1. About 70% of total losses from both the T&D systems occur on the distribution system. *Id.* On average, 5% of electricity is lost as it travels from power plants to consumers in the U.S. *How Much Electricity is Lost in T&D in the United States?*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=105&t=3 (last updated Jan. 9, 2019). Consequently, distribution system losses only account for about 3.5% of the electricity a distribution utility handles. Offsetting such losses thus can only support a limited amount of distributed generation. *Id.*

283. N.H. REV. STAT. ANN. § 374-G:3(I)–(III).

284. *Id.*

285. *Id*.

286. *See id.* § 374-G:2(II) (excluding generators with a capacity of 5 MW or more from the definition of distributed energy resources).

287. *See* LAZARD, *supra* note 57, at 10 (implying that many efficiently sized energy storage projects on a distribution system would be about 10 MWs).

288. N.H. REV. STAT. ANN. § 374-G:4(II).

289. *See* MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 91 (asserting that an efficient level of energy storage would reduce peak load by nearly 10%).

290. *Id.*

Thus, though New Hampshire law explicitly allows utilities to invest in energy storage when it reduces T&D costs,[291] it effectively prohibits utilities from deploying what would likely be an efficient level of energy storage or bidding energy storage projects into wholesale markets.[292] Consequently, New Hampshire's restructuring and related statutes still significantly constrain energy storage development.[293]

B. Inability of Non-Utility Energy Storage Projects to Receive Compensation for Avoided T&D Costs

Restructuring statutes do not legally prohibit compensating non-utility generators for avoided T&D costs; they only restrict utility ownership of generators.[294] However, in all states "[p]hysical distribution, due to its natural monopoly characteristics, remains a monopoly service provided by traditional utilities."[295] Furthermore, ISO-NE charges distribution utilities for the costs of running the transmission system based on how much their ratepayers contribute to regional peak load.[296] Yet ISO-NE does not provide a mechanism that directly compensates independent non-transmission projects for reducing the need or substituting for new transmission investment.[297] Thus, distribution utilities are the only entity that can directly

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291. N.H. REV. STAT. ANN. § 374-G:2(I)(b).

292. *See id.* § 374-G:3–4 (limiting when a utility can own or invest in distributed energy resources and the purposes for which a utility can use distributed energy resources).

293. *Id.*

294. *See supra* Part III.A (discussing how New England restructuring statutes restrict utility ownership of generators).

295. HEMPLING, *supra* note 120, at 75.

296. INDEP. SYS. OPERATOR NEW ENG., § II: ISO NEW ENGLAND OPEN ACCESS TRANSMISSION TARIFF, at § II.21 (n.d.), https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/oatt/sect_ii.pdf (last updated Jan. 29, 2019). Specifically, a distribution utility pays ISO-NE "an amount equal to its Monthly Regional Network Load for the month times the applicable Local Network RNS Rate." *Id.* § II.21.1. RNS stands for Regional Network Service, which is essentially ISO-NE's terminology for transmission service. *See id.* § II.11 ("Regional Network Service . . . includes transmission service . . . for the delivery to a Network Customer of its energy and capacity . . . ."). A utility's Monthly Regional Network Load is essentially the amount of power it draws from the regional grid during the hour of greatest region-wide power demand in a given month. *See id.* § II.21.2 ("[A] Network Customer's 'Monthly Regional Network Load' is its hourly load . . . coincident with the coincident aggregate load of all Network Customers served in each Local Network in the hour in which the coincident load is at its maximum for the month ('Monthly Peak')."). This structure allows a utility to reduce its transmission service charges by reducing the power it draws from the regional grid during the monthly peak hour. *See id.* § II.21.1 (explaining that a distribution utility's transmission charge is proportional to its Monthly Regional Network Load).

297. *See id.* ATTACHMENT K REGIONAL SYSTEM PLANNING PROCESS § 3.5 (noting that ISO-NE only "account[s] for market responses" in its transmission planning process, differentiating market responses from transmission solutions, and indicating it will solicit only transmission solutions to meet reliability needs); ISO-NE defines "market responses" as "investments in resources (e.g., demand-side

benefit financially from reduced transmission costs.[298] Consequently, a non-utility energy storage project will only receive compensation for avoided T&D costs if a distribution utility pays it for providing such value.[299]

However, distribution utilities have no incentive to do so. Consistent cost savings proportionally reduce a utility's revenue requirements and the total amount of revenue it earns through rates.[300] Consequently, unlike competitive businesses, utilities operating under cost-of-service regulation have little financial incentive to reduce costs.[301] Moreover, distribution utilities only earn a return on their rate-base: the undepreciated value of their physical infrastructure and equipment, plus working capital.[302] If a third-party energy storage project removes the need for new distribution infrastructure, it reduces a distribution utility's rate base and thus, its total profits.[303] Such third-party energy storage projects work against a utility's

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projects, generation and distributed generation);" energy storage would thus fall into this category. *Id.* Furthermore, ISO-NE will only "seek generation, demand-side and merchant transmission alternatives" when it is unable to find a viable transmission solution to meet a transmission system reliability need. *Id.* § 7.3(b)(i). Therefore, ISO-NE would solicit energy storage to meet a transmission reliability need "as a last resort," but would not directly compensate an energy storage project for helping to prevent a reliability need from arising. *Id.* § 7.3(a). However, ISO-NE's wholesale energy markets and Forward Capacity Market do provide higher payments to supply and demand resources in transmission-constrained areas. *See FAQs: Locational Marginal Pricing*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/participate/support/faq/lmp (last visited Apr. 14, 2019) (explaining how local wholesale energy prices incorporate transmission system constraints); *About the FCM and Its Auctions*, INDEP. SYS. OPERATOR NEW ENG., https://www.iso-ne.com/markets-operations/markets/forward-capacity-market/fcm-participation-guide/about-the-fcm-and-its-auctions (last visited Apr. 14, 2019) (outlining how the Forward Capacity Market pays more for resources in capacity-constrained zones). ISO-NE thus compensates non-transmission resources for relieving transmission constraints, thereby indirectly compensating such resources for avoiding some transmission costs. *FAQs: Locational Marginal Pricing*, *supra*; *About the FCM and Its Auctions*, *supra*.

298. Reduced transmission costs for the utility would indirectly result in lower rates for ratepayers. *See supra* Part II.A (discussing utility rate regulation).

299. *See* CHANG ET AL., *supra* note 13, at 17 (noting that independent investors do not have a way of financially benefiting from reducing a utility's T&D costs).

300. *See* LESSER & GIACCHINO, *supra* note 147, at 45–46, 63 (explaining that a regulated utility's revenue is proportional to its costs); *but see* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 87 ("However, the utility does still have some incentive to reduce expenses. Once the rates are set, they stay in place until changed, regardless of whether the operating expenses are the same, higher, or lower than in the test year; so the utility earns more if it incurs lower costs.").

301. Regulators do subject utility spending to prudence review and may prevent utilities from collecting money from customers to cover excessive spending. LESSER & GIACCHINO, *supra* note 147, at 48–49. As such, utilities still have some incentive to control costs in order to ensure regulators will allow them to recover costs. However, regulators presume that a utility's operating costs and investments are "prudent unless proven otherwise." *Id.* at 48. Consequently, prudence review provides utilities with a weaker incentive to control costs than market competition provides to competitive businesses.

302. *Id.* at 63–64.

303. *See id.* (highlighting that utilities make their profits by placing physical infrastructure in their rate base).

business interest, and therefore utilities will not willingly facilitate such projects.[304] They will not compensate third parties for removing the need for traditional distribution infrastructure unless regulators obligate them to do so.[305]

Currently, no such regulatory requirement appears to exist.[306] Granted, "some states have made reforms to open the distribution system to third-party products and services that enable consumers to buy less distribution service from [utilities]."[307] However, these reforms enable consumers to directly contract for certain energy services from third parties, and do not require utilities to compensate third parties for avoided costs.[308] The closest existing mechanism is a "Value of Solar" tariff, which in part requires utilities to compensate ratepayers who generate their own solar energy for any resulting avoided T&D costs.[309] However, as the name implies, such a mechanism only applies to solar, and no New England state has yet adopted such a tariff.[310] Moreover, the existing scholarly literature that discusses potential ways to compensate non-utilities for avoided T&D costs implicitly presumes no such general method currently exists.[311]

Under current New England state laws, non-utility energy storage projects appear to have no means to compel utilities to compensate them for the value of avoided T&D costs.[312] Though restructuring statutes do not limit the ability of these entities to earn revenue in wholesale electricity market, current New England regulatory regimes effectively prevent them

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304. *See id.* at 49 (noting that utilities may have a financial incentive to *gold-plate*, that is, invest in unnecessary infrastructure to artificially inflate their rate base and thus increase their allowed rates); LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 86 ("[T]he Averch-Johnson effect . . . suggests that utilities will spend too much on capital investments because their allowed return is a function of their investment.").

305. LESSER & GIACCHINO, *supra* note 147, at 49.

306. *See, e.g.*, Ari Peskoe, *Unjust, Unreasonable, and Unduly Discriminatory: Electric Utility Rates and the Campaign Against Rooftop Solar*, 11 TEX. J. OIL GAS & ENERGY L. 211, 292–96 (2016) (implying that no mechanism requiring utilities to compensate third parties for avoided T&D costs exists).

307. *Id.* at 287.

308. *See id.* at 287–88 (discussing such reforms in the context of third-party ownership of distributed solar-power systems).

309. *See id.* at 279 (explaining what a "Value of Solar" tariff is).

310. *See id*. (noting that only Minnesota and the city of Austin, Texas have adopted a "Value of Solar" tariff).

311. *See, e.g.*, *id.* at 292–96 (implying that no such mechanism currently exists).

312. *See, e.g.*, *id.* (implying that no such mechanism currently exists by describing the problems of the current system and suggesting ways policymakers *could* require utilities to compensate third parties for the value they provide to the grid).

from monetizing the full range of value energy storage provides.[313] Consequently, non-utilities lack the incentive to invest in and deploy an economically efficient level of energy storage in New England.[314] Because utilities also lack this incentive for the most part,[315] current New England regulatory regimes effectively guarantee that all types of electricity sector participants will underinvest in energy storage to the detriment of both consumers and the environment.[316]

IV. WAYS STATES CAN REMOVE BARRIERS TO ENERGY STORAGE

State policymakers have two main options for removing restructuring barriers to energy storage. First, states could enact new legislation simply exempting energy storage from the restrictions restructuring places on utility-owned generation.[317] Or second, policymakers could create a shared-ownership model in which a non-utility captures an energy storage project's wholesale market revenue, while a utility captures its T&D benefits.[318] This Part addresses the advantages and drawbacks of both options.

A. Exempt Energy Storage from Utility-Ownership Restrictions

The simplest solution would be to exempt energy storage from all restrictions restructuring places on utility ownership or operation of generators.[319] In principle, such an approach should minimize project development costs: utilities will know the most about where to locate an energy storage project to provide the greatest distribution or transmission cost savings.[320] However, it could also undermine restructuring, and

313. *See supra* Part III.A (showing how New England restructuring statutes restrict utility ownership of generators); *see, e.g.*, Peskoe, *supra* note 306 (discussing that no commissions require utilities to compensate for avoided T&D costs exists).

314. *See, e.g.*, Peskoe, *supra* note 306, at 294–96 (demonstrating how declining to compensate third parties for the value their products and services provide to the grid hamstrings competitive development of energy storage and similar technologies).

315. *See supra* Part III.A (describing how New England restructuring statutes restrict utility owned energy storage projects from earning revenue in wholesale electricity markets).

316. *See* CHANG ET AL., *supra* note 13, at 17–18 (arguing that restructured electricity markets, as currently structured, lead to inefficiently low levels of energy storage deployment).

317. *See infra* Part IV.A (discussing how an energy storage exemption might impact storage deployment).

318. *See infra* Part IV.B (outlining how shared ownership models might function).

319. *See supra* Part III.A (describing the ways in which restructuring statutes restrict utility ownership of energy storage projects).

320. *See* Peskoe, *supra* note 306, at 294 (noting that utilities know more about their costs than anyone else); Stein, *supra note* 117, at 958–59 (arguing that utility ownership would reduce transaction costs as well as "minimize both coordination and visibility problems").

potentially provide utilities with a *de facto* monopoly over non-customer-owned distributed energy storage.[321]

A legislature would have to enact such a change because statutory language restricts utility ownership of energy storage projects that act as generators.[322] Generally, states could use language such as "notwithstanding [citation to state's restructuring statute], distribution utilities may own and/or operate energy storage projects that participate in wholesale electricity markets."

Such legislation would also have to address how a utility could rate base an energy storage project that acts as a generator, and how it would handle the revenue the project earns in wholesale electricity markets.[323] One option would be to allow a utility to rate base the entire cost of the project, but then use all revenue the project raises to reduce its customers' rates. Unfortunately, this approach places the risks of the project underperforming in wholesale markets on ratepayers.[324] It also arguably gives regulated utilities an unfair advantage on the wholesale electricity market.[325] Under this regime, utilities could potentially use ratepayer money to subsidize an energy storage project's participation in wholesale markets, bidding the project in at prices below what the utility needs to recover the project's costs.[326] A utility could thus exploit the benefits it enjoys as a regulated monopoly to undercut competitive generators in wholesale markets.[327] This is precisely why New England restructuring statutes restricted utility ownership of generating assets.[328] Consequently, such an approach could

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321. *See supra* Part III.B (explaining that restructuring was meant to encourage competition and avoid risking ratepayer money on generating assets).

322. *See supra* Part III.A (overviewing the restrictions imposed by New England restructuring statutes on utility-owned energy storage projects).

323. *See* Lueken et al., *supra* note 20, at 11, 18 (noting that states need to define ways of valuing T&D benefits as well as accounting for the wholesale value of energy storage while avoiding conflicts between the two roles).

324. *See* LESSER & GIACCHINO, *supra* note 147, at 56 (highlighting that allowing a regulated utility to recover the cost of uncompetitive investments in rates shifts market risk from the utility to its ratepayers).

325. *See id.* at 71–72 (explaining how forcing ratepayers to *cross-subsidize* a utility's competitive activities unfairly hurts the utility's competitors).

326. *See id.* (emphasizing how cross-subsidies can result in ratepayers paying more, and how utilities can then use that ratepayer money to undercut their non-utility competitors).

327. *See id.* ("When a regulated firm provides several products or services, some that are regulated and some that are not, it is important to ensure that the nonregulated costs are not tagged with the regulated costs. Doing so . . . can nobble the firm's unregulated competitors . . . .").

328. *See, e.g.*, N.H. REV. STAT. ANN. § 374-F:1 (2018) (stating that restructuring is meant to create free and fair competitive markets, which require the separation of generation from T&D).

severely undermine the restructuring policy of fostering competition in electricity generation.[329]

A better option for states that wish to avoid this outcome would be to allow the utility to rate base only the value of the project's avoided distribution or transmission costs,[330] while allowing it to keep the wholesale market revenue. An example of such statutory language might be:

> A utility shall only recover the value of transmission and distribution system benefits and avoided costs of authorized and prudent utility-owned energy storage project(s) in its distribution rates as a component of rate base. The utility shall keep the portion of the income the energy storage investment earns from participation in wholesale electricity markets.

This places the business risks of the project underperforming in the wholesale markets on the utility, not its customers. It also prevents the utility from using ratepayer money to unfairly undercut other wholesale market participants. This approach thus provides greater consumer protection and is more in keeping with restructuring principles.[331]

Regardless of which approach to rate basing an energy storage project a state chooses, utility ownership would likely minimize costs and facilitate

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329. *See, e.g.*, *id.* (pronouncing the goal of restructuring: to "harness[] the power of competitive markets").

330. Of course, either the state legislature or its utility commission would then need to determine how to calculate this value. *See* LESSER & GIACCHINO, *supra* note 147, at 69 (noting there are multiple ways to calculate the value of utility assets even when a utility rate bases the entire asset). A state could let a utility rate base the avoided cost of any other infrastructure the utility would have built but-for the energy storage project in a manner somewhat akin to a "[v]alue of service" approach. *See id*. ("Value of service is based either on a prior period of time . . . or on the projected value of the assets for a future regulatory period."). However, in the event that an energy storage project is much cheaper than traditional infrastructure—at least after subtracting wholesale market revenues from the project's cost—this could cause ratepayers to unjustly and unreasonably overpay for the project. *See* Appeal of Pub. Serv. Co. of N.H., 547 A.2d 269, 271 (N.H. 1988) (defining that rates are only just and reasonable if they fairly balance utility and consumer interests). A state could allocate more of the financial benefits of energy storage to ratepayers by limiting the utility to rate basing only a percentage of avoided costs. But such a blunt instrument may fail to adequately compensate marginal but still economically efficient energy storage projects and thus render them nonviable. *See* CHANG ET AL., *supra* note 13, at 17; MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 115, 117–19 (explaining that deploying an optimal level of energy storage requires adequately compensating energy storage projects for all the benefits they provide). A better approach might be to rate base the value of all avoided T&D costs, but then cap the total combined return a utility could make on an energy storage project, including revenue from wholesale markets and ratepayers. *See* LESSER & GIACCHINO, *supra* note 147, at 139–41 (overviewing how regulators determine a rate of return for utilities). The state could then require a utility to use any revenue in excess of the allowed rate of return to reduce customer rates.

331. *See supra* Part II.B (asserting that restructuring was meant to shield ratepayers from the costs of uneconomic generating assets as well as promote competition).

optimal siting of storage projects.[332] Having a utility, as a single integrated entity, handle such a project reduces transaction costs.[333] Utilities—unlike third parties and regulators—also have direct access to data about their distribution system and cost structure.[334] Therefore, they do not need to spend time or money acquiring such data from another source. A utility can thus optimize energy storage project siting to maximize T&D benefits more readily and efficiently than any other entity.[335] Monopoly utilities can also borrow money at lower interest rates than competitive businesses, which reduces the financing costs for an energy storage project.[336] In sum, these factors could make utility-owned energy storage quicker and cheaper to build than third-party owned energy storage.

However, such an approach would *de facto* leave energy storage in the hands of monopoly utilities.[337] With no mechanism for anyone else to monetize avoided T&D benefits, utilities would have an immense advantage over non-utility energy storage developers.[338] Even allowing a utility to partially rate base an energy storage project would significantly reduce the costs a utility needs to recover from wholesale markets.[339] In contrast, a non-utility developer would only be able to build projects that could be profitable with just wholesale market revenue.[340] That advantage could lead utilities' energy storage projects to crowd out other projects, destroying much of the market for non-utility energy storage.[341] State

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332. *See* Stein, *supra* note 117, at 958, 960 (noting that utility ownership can avoid inefficiencies and high transaction costs); *id.* at 959 ("A new world of utility-owned [distributed energy resources] would minimize both coordination and visibility problems . . . .").

333. *Id.* at 958, 960.

334. *See* LESSER & GIACCHINO, *supra* note 147, at 38 ("From the regulator's perspective . . . the exact shape and location of the firm's average cost curve will be uncertain."); Peskoe, *supra* note 306, at 294 (noting that utilities know more about their own costs than anyone else).

335. *See* Stein, *supra* note 117, at 959 ("A new world of utility-owned [distributed energy resources] would minimize both coordination and visibility problems, as the utility would have as much knowledge about the resources as they would of their other, more traditional resources.").

336. HIRSH, *supra* note 130, at 23–24.

337. *Id.* at 23.

338. *See supra* Part III.B (overviewing why non-utilities cannot monetize avoided T&D costs under the current regulatory system).

339. *See* LESSER & GIACCHINO, *supra* note 147, at 71–72 (explaining how enabling a utility to recover the costs of an unregulated activity from ratepayers allows it to undercut its non-utility competitors).

340. *See supra* Part III.B (overviewing why non-utilities can only monetize wholesale market revenue under the current regulatory system).

341. LESSER & GIACCHINO, *supra* note 147, at 71–72. The lack of competition would also mean utility energy storage projects would not be subject to market pressures to control costs. *See* Matias Busso & Sebastian Galiani, *The Causal Effect of Competition on Prices and Quality: Evidence from a Field Experiment* 3 (Nat'l Bureau of Econ. Res., Working Paper No. 20054) (2018), https://www.nber.org/papers/w20054.pdf ("[T]he entry of new competitors leads to price reductions by putting more competitive pressure on market incumbents."). Such a lack of market pressure could offset

policymakers that wish to foster more competition in the electricity sector would also dislike this result.[342] Moreover, non-utility developers would likely oppose the passage of such legislation, thereby decreasing the chance a state could implement such a solution in the first place.[343]

Thus, exempting energy storage from restructuring limitations would likely lead to distribution utilities dominating energy storage deployment. This offers the benefits of simplicity, lower transaction and financing costs, and thus potentially faster and greater levels of energy storage deployment.[344] However, it could also put non-utility developers at a severe disadvantage and significantly curtail competition in energy storage.[345] Allowing distribution utilities to rate base projects that act as generators also violates restructuring principles that favor using competitive markets rather than ratepayer money to fund generation.[346] It also raises consumer protection issues, especially if a utility could rate base all the costs of the project.[347] Consequently, a state that wishes to pursue this solution should only let a utility include the value of an energy storage project's avoided T&D costs in its rate base. Doing so would properly require the utility to bear the risks of the project's wholesale market performance, and prevent it from using ratepayer money to undercut other market participants.[348]

B. Enable Shared Ownership or Control of Energy Storage Projects

Another way state policymakers could remove restructuring barriers to energy storage would be to allow utilities and third parties to share

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some of the benefits by lowering transactions and financing costs utility ownership offers. *See id.* (reporting empirical findings that introducing increased competition reduces the price of goods).

342. *See, e.g.*, N.H. REV. STAT. ANN. § 374-F:1 (2018) (establishing that competition in the electricity sector is an important legislative policy goal for New Hampshire).

343. *See, e.g.*, Stein, *supra* note 117, at 960 (noting that New York restricted utility ownership of distributed energy resources in part because of non-utility developers' opposition).

344. *See id.* at 958–60 (explaining that utility ownership of distributed energy resources simplifies the deployment process while also enabling lower financing and transaction costs).

345. LESSER & GIACCHINO, *supra* note 147, at 71–72.

346. Stein, *supra* note 117, at 960. Amy Stein also argues that "[w]hile there is some inherent appeal to the efficiencies associated with a reintegration of the ownership of [distributed] reliability resources with the utility, it is unclear if there is a principled end point to such a reintegration." *Id.* Thus, "[e]ven if valid justifications exist, regulators may be hesitant to carve out an exception for reliability resources for fear of a slippery slope." *Id.*

347. *See* LESSER & GIACCHINO, *supra* note 147, at 56 (overviewing the impact of cost shifting on ratepayers).

348. *See id.* at 71–72 ("When a regulated firm provides several products or services . . . it is important to ensure that the nonregulated costs are not tagged with the regulated costs. Doing so will not only unfairly increase the regulated prices the firm's customers pay, but it can nobble the firm's unregulated competitors . . . .").

ownership or control of an energy storage project.[349] In such a model, a distribution utility would receive the benefits of avoided T&D costs, while the third party would handle the energy storage project's participation in wholesale electricity markets.[350] This model prevents direct utility involvement in wholesale electricity markets, and preserves a role for competitive non-utility entities in energy storage.[351] Consequently, this model better comports with restructuring principles than a model in which utilities handle all aspects of an energy storage project.[352] However, it also increases project complexity, potentially increasing the costs of deploying energy storage.[353] While non-utility developers will likely prefer shared ownership, utilities will prefer a model over which they have sole control.[354]

1. Utility as Primary Owner

The Brattle Group has proposed one approach to shared ownership of energy storage.[355] In this model, utilities would deploy and own energy storage projects but *auction off* the right to wholesale market revenues to a third party.[356] The utility would use the income it receives from auctioning off such rights to reduce its customer's rates.[357] The third party would then handle bidding the project into wholesale markets and meeting the project's wholesale market obligations.[358] The third party would retain all wholesale market revenues to cover the costs of purchasing the project rights and make a profit.[359] In this model, the utility would not participate in wholesale markets, maintaining the restructuring policy of separating distribution and generation.[360] Likewise, the third party would bear all the risks of the

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349. *See* SKY STANFIELD, JOSEPH "SEPH" PETTA & SARA BALDWIN AUCK, CHARGING AHEAD: AN ENERGY STORAGE GUIDE FOR STATE POLICYMAKERS 30 (2017) (noting shared ownership's potential and outlining one form it could take).

350. *Id.*; CHANG ET AL., *supra* note 13, at 18.

351. CHANG ET AL., *supra* note 13, at 18.

352. *See supra* Part II.B (outlining that restructuring was meant to shield ratepayers from the costs of uneconomic generating assets as well as promote competition).

353. *See* Stein, *supra* note 117, at 958–60 (noting that utility ownership can avoid inefficiencies and high transaction costs).

354. *See id.* at 960 (noting that due to non-utility developers' opposition, New York restricted utility ownership of distributed energy resources).

355. CHANG ET AL., *supra* note 13, at 17–18.

356. *Id.* at 18.

357. *Id.*

358. *Id.*

359. *See id.* (implying that third parties would keep wholesale market revenue).

360. *Id.*

project underperforming in the wholesale market, rather than the utility's ratepayers.[361]

The Brattle Group's approach still requires changes to New England restructuring statutes.[362] After all, in this system, utilities still own energy storage projects that act as generators, even if someone else manages the project's wholesale market participation and retains the resulting revenue.[363] Moreover, by auctioning off the rights to the project's wholesale market revenue, a utility derives revenue from the project's generation functionality.[364] Utilities therefore financially benefit from their ownership of generation assets, which would violate New England's restructuring statutes.[365] Enabling such a system would therefore require legislative action. Statutory language to enable such system would look like this:

> Notwithstanding any provision of [citation to state's restructuring statute] . . . a utility may develop and own energy storage projects that reduce transmission or distribution costs . . . . A utility may contractually sell the right to bid such utility-owned energy storage projects into wholesale electricity markets to a non-utility. Any such contract shall provide that the non-utility shall retain any wholesale market revenue the energy storage project earns, and bear all risk of project underperformance in the wholesale market . . . . The utility shall use all compensation a

361. *See id.* ("Under the envisioned policy framework, the TDSPs will continue to be only transmission and distribution service providers with no wholesale market participation."). However, the utility's ratepayers might still bear the risk of the auction not raising sufficient money to cover project costs a utility does not recoup through T&D cost savings. *See id.* at 17–18 (acknowledging this risk implicitly by proposing a safety margin requirement by which expected benefits would need to exceed expected costs).

362. *See 2015 Texas Legislature and Electric Power Policy: A Recap*, HUSCH BLACKWELL (July 2, 2015), https://www.huschblackwell.com/newsandinsights/2015-texas-legislature-and-electric-power-policy-a-recap (noting that the Texas legislature would have to enact statutory changes before a utility could implement the Brattle Group proposal).

363. *See* CHANG ET AL., *supra* note 13, at 17–18 (describing a model in which utilities would invest in and presumably own the energy storage project, but "auction off" the rights to bid it into wholesale markets).

364. *See id.* at 18 (noting that utilities would "'auction off' the wholesale market value of distributed storage").

365. *See supra* Part III.A (discussing how New England restructuring statutes restrict utility owned energy storage projects from earning revenue in wholesale electricity markets). However, the current version of Connecticut's restructuring statute would permit this arrangement, provided a utility made a competitive proposal to share ownership of an energy storage project called for in the State's Integrated Resource Plan. *See supra* Part III.A.5 (discussing the conditions under which a utility may own generation assets in Connecticut).

> non-utility pays the utility for the contractual right . . . to reduce retail electricity rates.[366]

2. Third Party as Primary Owner

Another shared-ownership approach has the third party as the primary owner of the energy storage project, with the third party providing T&D benefits as a service to the utility.[367] A state could treat the third party as selling the project's T&D attributes to the utility.[368] However, the third party would need to know where to deploy a project to maximize T&D benefits.[369] As utilities likely possess more of this information than anyone else,[370] this model requires some mechanism to induce utilities to tell third parties where optimal deployment sites are.[371]

State policymakers could require utilities to locate such sites, and determine what T&D costs an energy storage project located there might avoid.[372] A state could then require or allow its utility commission, or the utilities themselves, to solicit competitive proposals to construct energy storage projects in prime locations.[373] Such a competitive process could specify the maximum payments the utility can likely provide to third parties, based on the utility's avoided-cost estimates.[374] The utility or the commission could select the project proposal that provides the greatest net

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366. H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(III) (N.H. 2019).

367. *See, e.g.*, *id.* sec. 2, § 374-H:3(II)(b)–(c) (proposing a system to enable such an approach legislatively).

368. *Cf. id.* sec. 2, § 374-H:3(II)(b) ("[T]he rules shall require a utility to compensate a non-utility for the value of all transmission and distribution costs the utility will likely avoid because of the [non-utility] energy storage project.").

369. *Cf.* Lueken et al., *supra* note 20, at 11 (arguing that states should find ways to integrate energy storage into T&D processes and address the lack of accepted ways to compensate the T&D value of energy storage projects).

370. *See* Peskoe, *supra* note 306, at 294 (noting that utilities know more about their own costs than anyone else).

371. *See, e.g.*, H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(II) (N.H. 2019) (proposing to legislatively mandate a certain amount of non-utility-owned energy storage); *id.* § 374-H:3(II)(a) (proposing to order the Commission to prioritize non-utility-owned energy storage projects that avoid T&D costs); *id.* § 374-H:3(I) (proposing to order the Commission to use its rule-making authority to create programs that implement these provisions).

372. *Cf. id.* § 374-H:3(I), (II)(a) (proposing to order the Commission to to create programs that facilitate developing non-utility-owned energy storage projects that avoid T&D costs).

373. *See id.* § 374-H:3(I), (II)(a) (proposing to order the Commission to create programs that facilitate deploying non-utility-owned energy storage projects that avoid T&D costs, thereby granting it authority to create such a competitive solicitation program).

374. *See id.* § 374-H:3(I), (II)(a) (proposing to order the Commission to create programs that implement these provisions, thereby granting it authority to create such a competitive solicitation program).

T&D cost savings.[375] Such a design ensures that the utility—and ultimately its ratepayers—will not overpay for the project. Inasmuch as the third-party owner secures financing to build the project and handles the project's wholesale market participation, it would bear the project development and market risks.[376] This would shield ratepayers from all risks associated with the project's generation side.[377] It also keeps the utility's role in the project completely separate from the project's generation side, in accordance with restructuring principles.[378]

The potential problem with this model is the financial implications for the utility. Distribution utilities only make a return on their rate base, which is traditionally just their own physical infrastructure, equipment, and working capital.[379] They recover—but make no profit on—any other costs, such as contract payments to a third party.[380] A utility would forego *all* of the profit it would have made by building traditional distribution infrastructure if it instead contracted third-party-owned energy storage to perform the distribution function. In principle, policymakers could still require a utility to contract for third-party-owned storage.[381] However, trying to force utilities to do something directly against their financial interests poses practical problems.

First, utilities would obviously dislike such a system and probably oppose any effort to create it.[382] Generally, earning a rate of return on rate-based investments is the only way a utility profits from providing distribution service.[383] Requiring a utility to forego such profit whenever energy storage is the cheapest solution may create a major threat to their core business model.[384] As such, utilities would likely try to derail such a

375. *Cf. id.* § 374-H:3(II)(a) ("The commission's regulations shall create a preference for non-utility energy storage projects that avoid or reduce transmission and distribution costs.").

376. *See id.* § 374-H:3(VI) (emphasizing that utilities would not have any role regarding the wholesale market side of the project under the proposed system).

377. *See id.* (implying such a shield by noting utilities would not participate in the wholesale markets, and thus would not expose themselves to generation risks they could pass on to ratepayers).

378. *See id.* ("Nothing in this section shall give a utility the right to . . . directly participate in wholesale electricity markets."); N.H. REV. STAT. ANN. § 374-F:3(III) (2018) ("Generation services should be . . . at least functionally separated from transmission and distribution services . . . .").

379. LESSER & GIACCHINO, *supra* note 147, at 63–64.

380. *Id.* at 48, 63.

381. *See, e.g.*, H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(II) (N.H. 2019) (proposing to legislatively mandate non-utility-owned energy storage).

382. *See supra* Part I.A.2 (explaining how investor-owned utilities prefer models that grant returns to their investors).

383. LESSER & GIACCHINO, *supra* note 147, at 63.

384. *See id.* at 63–64 (explaining that utilities make their profits by placing physical infrastructure in their rate base).

system before it ever came into existence.[385] Establishing such a system would be politically costly for state policymakers, and may well be politically infeasible.[386]

Second, even if a state were to implement such a system, utilities would have the means, motive, and opportunity to undercut it. After all, such a system would depend on the utilities themselves providing information—which probably only they possess—about the extent of the costs an energy storage project would avoid.[387] Moreover, utilities can "exploit [such] an obvious information asymmetry" and "mold a cost-of-service study to meet [their] own goals, such as [creating entry barriers] for alternative service providers."[388] In other words, utilities can strategically misrepresent the details about their cost structures, and thus undervalue potential third-party energy storage projects.[389] Granted, the regulatory oversight of utility commissions may check this practice somewhat. However, commissions have limited resources, and thus may not detect every misrepresentation.[390] Consequently, state policymakers should expect that under such a system, this *strategic* utility behavior will lead to inefficiently low levels of energy storage deployment.[391]

However, a simple solution to this problem exists—allow utilities to include the value of such contract payments to third-party owners in their rate base.[392] This would allow the utilities to earn a profit on such

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385. *Cf.* Peskoe, *supra* note 306, at 260–75 (discussing how many investor-owned utilities have sought to undermine distributed energy resources, particularly rooftop solar, because they perceived them as a threat to their business).

386. *Cf. id.* at 260 (quoting KARL BOYD BROOKS, PUBLIC POWER, PRIVATE DAMS: THE HELLS CANYON DAM CONTROVERSY 131 (2009)) (noting that, with regard to distributed energy resources, utilities have employed tactics that "are reminiscent of campaigns launched in the twentieth century against government-backed utilities, which were smeared with 'the most lurid McCarthyite fantasies of the early 1950s'").

387. *See id.* at 294 (acknowledging that utilities have the most knowledge regarding their costs).

388. *Id.*

389. *See* Shelley Welton, *Public Energy*, 92 N.Y.U. L. REV. 267, 317 (2017) ("[I]nformation asymmetries allow utilities to exploit commissions in rate cases and earn rates of return higher than necessary to cover costs.").

390. *See* LAZAR & REGULATORY ASSISTANCE PROJECT STAFF, *supra* note 21, at 87 ("Although commissions do review . . . expenses to determine if they are reasonable before approving them, they may not have the staff adequate for them to really examine them in detail . . . .").

391. *Cf.* Peskoe, *supra* note 306, at 294 ("An IOU can mold a cost-of-service study to meet its own goals . . . ."); *id.* at 247 (noting that in the past utilities have "resorted to vindictive and mendacious tactics" to oppose threats to their business model).

392. *See, e.g.*, H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(II)(b) (N.H. 2019) ("If the non-utility energy storage project avoids the need for a new distribution or transmission project the utility could have added to its rate base, the commission may allow the utility to include . . . the value of the corresponding portion of its payment to the non-utility in its rate base.").

contracts.[393] As such, utilities would likely evaluate energy storage projects on more of an equal basis with traditional distribution infrastructure, rather than trying to block a storage solution. Moreover, insofar as energy storage projects act as distribution infrastructure, it is arguably reasonable to allow utilities to make a profit on them as with any other distribution infrastructure.[394]

A positive feature of this model is that, unlike the Brattle Group model, utility commissions have the authority to implement such a system themselves.[395] They possess the authority to allow utilities to rate base such contracts as part of their discretionary ratemaking authority.[396] The standard cost-of-service methodology is not a statutory requirement; state commissions possess "the authority . . . to devise unique systems for setting rates."[397] Consequently, state commissions can change aspects of their rate-setting methodology, provided that the resulting rate is just and reasonable.[398]

That in turn means a commission can change how it calculates a utility's rate base and revenue requirement, so long as the new method fairly compensates utilities and does not produce excessive rates for consumers.[399] Granting utilities a new ability to rate base contracts with a third-party energy storage project owner would not harm its financial interests.[400] Thus, such a change would continue to fairly compensate utilities.[401] Likewise, a contract that provides net savings to ratepayers relative to traditional distribution investments would reduce rates.

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393. *See* LESSER & GIACCHINO, *supra note* 147, at 63–64 (overviewing how utilities make their profits on physical infrastructure).

394. *Cf.* H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(II)(b) (N.H. 2019) (authorizing the Commission to allow such rate basing if the Commission finds it is "just" and "reasonable").

395. Of course, a state legislature could statutorily require a commission to implement such a system if the latter does not do so on its own initiative. *See, e.g.*, *id.* ("If the non-utility energy storage project avoids the need for a new distribution or transmission project the utility could have added to its rate base, the commission may allow the utility to include . . . the value of the corresponding portion of its payment to the non-utility in its rate base.").

396. *See* Scott, *supra* note 144, at 381 (noting that state commissions possess the legal authority "to devise unique systems for setting rates").

397. *Id.* at 381; *see also* HEMPLING, *supra* note 120, at 230 (explaining that "statutory-constitutional deference" gives commissions discretionary authority to choose different ratemaking methodologies).

398. HEMPLING, *supra* note 120, at 230. Remember that a rate is just and reasonable if it falls within a "zone of reasonableness" that fairly balances the financial interests of a utility and its ratepayers. *Id.* at 220–21.

399. *Id.* at 220–21.

400. *See* LESSER & GIACCHINO, *supra note* 147, at 63–64 (explaining that the an addition to the rate base would increase a utility's profits).

401. *Id.* at 63–64.

Therefore, allowing utilities to rate base contracts would still produce just and reasonable rates.[402]

Commissions can also require utilities to determine optimal sites for energy storage projects, the costs such projects might avoid, and to solicit third-party energy storage projects through a competitive process.[403] Utility commissions possess "broad authority to regulate utilities" in order to "keep[] rates as low as possible" for customers—provided utilities can still earn fair compensation for providing service.[404] For example, the Massachusetts Supreme Judicial Court held that the State's Department of Public Utilities "has the authority as a rate regulator to . . . require that [a] utility pursue a course likely to be less costly to ratepayers in the long term."[405] Utility commissions also have the authority to require that utilities determine when and where third-party owned energy storage projects are the most cost effective means of providing distribution service to ratepayers.[406] On the same basis, utility commissions could also require utilities to solicit projects through a competitive process, and contract for their T&D benefits when doing so would save ratepayers money.

Finally, allowing utilities to contractually procure T&D benefits from third-party energy storage owners would not violate New England restructuring statutes.[407] Unlike in the Brattle Group model, in this system a utility would never own the energy storage project itself. The third party would remain the main owner of the system. Depending on how a utility commission chose to treat the arrangement, the utility would either buy a service or acquire ownership of just the T&D attributes of an energy storage project. Either way, the utility would not own the project's generation attributes or any rights to them; the utility would not participate or derive

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402. *See* Appeal of Pub. Serv. Co. of N.H., 547 A.2d 269, 271 (N.H. 1988) ("In setting rates, a regulatory commission follows a process of identifying consumer and producer interests competing for recognition, with an ultimate goal of striking a fair balance . . . that may be described as just and reasonable both to the customer and to the utility.").

403. *See, e.g.*, N.H. REV. STAT. ANN. § 374:3 (2018) (granting the New Hampshire Public Utilities Commission the broad power to supervise utilities).

404. Scott, *supra* note 144, at 392. Furthermore, "most states' utility codes include general authority clauses, extending the authority of the commissions to all acts necessary to carry out their statutory authority." *Id.* at 383–84. For example, New Hampshire statutory law provides that "[t]he public utilities commission shall have the general supervision of all public utilities and the plants owned, operated or controlled by the same so far as necessary to carry into effect the provisions of this title." N.H. REV. STAT. ANN. § 374:3 (2018).

405. Mass. Elec. Co. v. Dep't of Pub. Util., 643 N.E.2d 1029, 1034 (Mass. 1994).

406. *See* Scott, *supra* note 144, at 392 (stating that utility commissions possess "broad authority to regulate utilities" in order to "keep[] rates as low as possible" for customers).

407. However, in the case of New Hampshire, its separate statute restricting utility investment in distributed energy resources—including energy storage—would still apply. *See supra* Part III.A.6 (discussing the conditions under which a utility can own distributed generation in New Hampshire).

any revenue from the project's generation side. Unlike the Brattle Group model or sole utility ownership, a utility commission could implement this model of shared ownership even in the absence of any statutory change.

Both shared ownership models possess several other advantages over the sole utility ownership model. They better adhere to the spirit of restructuring principles by keeping utilities uninvolved in the generation side of an energy storage project.[408] They also preserve a competitive role for third parties in the energy storage space.[409] Such competition would also exert market pressure on energy storage projects, potentially helping to control their costs.[410] Competitive non-utility businesses interested in developing and operating energy storage projects are also likely to support rather than oppose such a system.[411] Maintaining utilities' ability to rate base the distribution or transmission value of such projects would, at the very least, blunt utility opposition to such a system.[412] Consequently, shared ownership models may offer a more politically workable compromise between restructuring proponents, utilities, and third parties than a sole-utility-ownership model.

Shared ownership does sacrifice the cost savings a utility might capture by not involving a third party and financing the project itself.[413] As noted above, monopoly utilities can borrow money at lower rates than competitive businesses.[414] Likewise, not involving a third party reduces the transaction costs of developing the energy storage project.[415] Consequently, a shared-ownership model would likely involve greater transaction and financing costs than sole utility ownership.[416] If these cost increases outweigh the downward cost pressure of market competition, shared

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408. *See* H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(VI) (N.H. 2019) ("Nothing in this section shall give a utility the right to . . . directly participate in wholesale electricity markets."); N.H. REV. STAT. ANN. § 374-F:3(III) ("Generation services should be . . . at least functionally separated from transmission and distribution services . . . .").

409. CHANG ET AL., *supra* note 13, at 18.

410. *See* Busso & Galiani, *supra* note 341 ("[T]he entry of new competitors leads to price reductions by putting more competitive pressure on market incumbents.").

411. *See* Stein, *supra* note 117, at 960 (providing New York's rationale for restricted utility ownership of distributed energy resources).

412. *See* LESSER & GIACCHINO, *supra note* 147, at 63–64 (overviewing what goes towards calculating a utility's profits).

413. *See* Stein, *supra* note 117, at 958, 960 (noting that utility ownership can avoid inefficiencies and high transaction costs).

414. HIRSH, *supra* note 130, at 23–24.

415. *See* Stein, *supra* note 117, at 958, 960 (addressing methods to avoid inefficiencies and high transaction costs).

416. *See id.* (implying that economies of scale and ensured returns exist help utilities avoid inefficiencies and high transaction costs).

ownership could increase project costs and lead to lower levels of energy storage deployment.

In short, shared ownership may be more politically feasible,[417] enable more competition in energy storage deployment,[418] and better adhere to restructuring principles than sole-utility ownership.[419] In addition, commissions could implement one version of shared ownership even in the absence of statutory change.[420] The trade-off, however, is higher financing and transaction costs for energy storage projects,[421] though downward pressure on costs from greater market competition might offset these increases.[422] Nonetheless, shared ownership may still entail higher costs and thus lead to less energy storage deployment than sole utility ownership.

C. The Best Path Forward

Whether sole-utility or shared ownership is preferable will depend upon a state's policy priorities. If simply maximizing energy storage deployment is the only goal, sole-utility ownership is likely the best option.[423] Conversely, shared ownership provides the best option to policymakers who wish to privilege restructuring and competition.[424] Shared ownership also has the advantage of not requiring statutory change, unlike a sole-utility-ownership model.[425] Policy experiments with the different models would allow policymakers to evaluate the relative merits

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417. *See id.* at 960 (overviewing opposition to utility ownership of distributed energy resources).

418. *See supra* Part IV.B (explaining why shared ownership leads to more competition).

419. *See* H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:3(VI) (N.H. 2019) (emphasizing that under the proposed shared-ownership framework, utilities would not be involved in the generation side of energy storage projects); N.H. REV. STAT. ANN. § 374-F:3(III) (2018) ("Generation services should be . . . at least functionally separated from transmission and distribution services . . . .").

420. *See supra* notes 396–408 and accompanying text (asserting why commissions have the ability and authority to implement one version of the shared-ownership model on their own).

421. *See* Stein, *supra* note 117, at 958, 960 (noting that non-utility ownership can be less efficient than utility ownership).

422. *See* Busso & Galiani, *supra* note 341 ("[T]he entry of new competitors leads to price reductions by putting more competitive pressure on market incumbents.").

423. *See* Stein, *supra* note 117, at 958–960 (explaining that utility ownership of distributed energy resources simplifies the deployment process while also enabling lower financing and transaction costs).

424. *See supra* Part IV.B (arguing how shared ownership better comports with restructuring principles and enables greater competition).

425. *See supra* Part IV.A (noting that enabling sole-utility ownership would require statutory change); *see supra* Part IV.B (clarifying that enabling shared ownership would not require statutory change). New Hampshire is a partial exception, as it allows utilities to own generation assets under some restrictive conditions. *See supra* Part III.A.6 (discussing the conditions under which a utility can own generation assets in New Hampshire).

of each model under real-world conditions.[426] This will provide policymakers with the information needed to balance competing policy priorities and determine best practices.[427]

In order to achieve optimal levels of energy storage deployment in the shortest possible timeframe, this Note proposes that states pass legislation authorizing the adoption of several different models. Such legislation should allow sole-utility ownership of energy storage, with a legal cap on market share to prevent crowding out non-utility competitors. For example, the legislation could limit utility-owned energy storage to no more than 50% of deployed energy storage projects.[428] All remaining energy storage projects would be shared ownership projects or projects that do not involve utilities. The legislation would permit utilities to rate base only the value of avoided T&D costs and the reliability benefits of their energy storage projects.[429] Utilities or third parties, rather than ratepayers, would thus shoulder the risk of project underperformance in wholesale electricity markets.[430]

Such a policy design has three main advantages. First, on passage it immediately enables deployment of energy storage free of restructuring restrictions. Second, it allows policymakers to gather real-world data on the practicality of each model. In particular, it would provide data about the relative costs of developing utility-owned and shared-ownership energy storage projects that would give policymakers data on the size of any cost premium shared-ownership requires. From that, policymakers could reasonably estimate what effect barring sole-utility ownership might have on energy storage deployment levels. Third, this policy design avoids prematurely locking a state into either a sole-utility-ownership or shared-ownership model.

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426. *Cf.* H.B. 715-FN, 2019 Gen. Court, Reg. Sess., sec. 2, § 374-H:2(II) (N.H. 2019) (directing the New Hampshire Public Utilities Commission to study the benefits of energy storage after a storage deployment program using different ownership models has begun).

427. *Cf. id.* § 374-H:2(IV) (directing the Commission to use such information in setting a higher energy storage target).

428. *See, e.g.*, *id.* § 374-H:3(II) (proposing to require that non-utilities own at least 50% of energy storage projects). Note, however, that H.B. 715 only enables the two shared-ownership models—utility as primary owner and third party as primary owner—because it expressly maintains the restructuring restrictions on utility participation in wholesale electricity markets. *See id.* § 374-H:3(VI) ("Nothing in this section shall give a utility the right to . . . directly participate in wholesale electricity markets.").

429. *See supra* Part IV.A (identifying why utilities should not be allowed to rate base the entire cost of an energy storage project).

430. *See supra* Part IV.A (describing how this allocation of risk protects ratepayers).

In practice, however, the best policy is whatever is most politically feasible in a given state.[431] Recall that removing restructuring barriers to energy storage could potentially increase energy storage deployment fivefold to sevenfold.[432] That extra energy storage deployment could significantly reduce air pollution in New England,[433] while saving ratepayers billions of dollars.[434] The relative differences in the benefits, costs, and deployment levels of sole-utility and shared ownership likely pale in comparison. In other words, the marginal benefit of picking the better way to remove restructuring barriers is small compared to the benefits of simply removing the barriers.

As such, policymakers should not make the perfect the enemy of the good. They should only seek to optimize the policy design to the extent that doing so does not decrease the chances of actually implementing the policy. Policymakers' primary goal should be simply to remove the barriers.

CONCLUSION

Energy storage can reduce the cost of electricity while playing a key role in the fight against climate change. However, policymakers did not design the current electricity regulatory system with its unique characteristics in mind. This problem is particularly acute in New England's restructured markets. By maintaining monopoly distribution utilities while restricting a utility's ability to own generation, such states have inadvertently restricted the range of benefits energy storage can offer the grid. New England might needlessly overpay billions for its electricity and undermine the fight against climate change if no legal changes occur to remove these barriers.

This Note offers multiple ways policymakers could address the barriers preventing optimal utilization of energy storage in New England. Both exempting energy storage from utility-ownership restrictions or enabling shared ownership of energy storage provide potential solutions. As each solution has its own advantages and drawbacks, states should initially enable both to flourish under a time-limited market share cap. Doing so

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431. *See, e.g.*, H.B. 715-FN (proposing to allow shared-ownership but not sole-utility ownership to comport with state restructuring principles).

432. CHANG ET AL., *supra* note 13, at 8; LUEKEN ET AL., *supra* note 20, at 19. Note, however, that the sevenfold increase may depend on removing other state level barriers as well. *See* LUEKEN ET AL., *supra* note 20, at 11 (indicating that states may need to provide stable rate design and further clarify regulatory treatment of energy storage, particularly energy storage paired with renewables, to unlock its full potential).

433. *See supra* Part I.A (noting the environmental benefits of energy storage).

434. MASS. DEP'T OF ENERGY RES. ET AL., *supra* note 11, at 77, 88.

would allow policymakers to evaluate the real-world performance of both models without committing to either or stalling energy storage deployment in the interim. However, policymakers should implement some solution in the near future. The benefits of removing the barriers outweigh the potential inefficiencies of doing so in a less-than-perfect manner. Fortunately, in the world of policies that help address climate change, doing so should be relatively easy. Enabling more energy storage through regulatory changes offers a win-win-win for New Englander's pocketbooks, the environment, and future generations.

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