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ENVIRONMENTAL REGULATION GOING RETRO: LEARNING FORESIGHT FROM HINDSIGHT

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I. INTRODUCTION

Environmental law demands foresight. Much environmental law seeks to prevent dangers that “may reasonably be anticipated,”¹ invoking precaution against future risks before they occur.² Even

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1. *E.g.*, Clean Air Act, 42 U.S.C. § 108 (2004).

2. *E.g.*, *Ethyl Corp. v. United States*, 541 F.2d 377, 377 (D.C. Cir. 1976). For a recent review of precaution in environmental law, see Jonathan B. Wiener, *Precaution and Climate*

environmental laws that seek to remedy past damage and restore ecological systems still depend on foreseeing the future effects of such measures. Environmental Impact Assessment (EIA)—the flagship of modern environmental law, now adopted around the world—calls for foresight before taking action.³ Similarly, Regulatory Impact Assessment (RIA)—required by every United States (U.S.) President of the past four decades, and increasingly adopted in other countries—has emphasized prospective *ex ante* assessment of the future impacts of proposed new rules or rule revisions.⁴ Each of these impact assessment (IA) tools incorporates, to some degree, the analytic methods of risk assessment (RA) and cost-benefit analysis (CBA).

Yet foresight is inevitably imperfect. Humans may be unusual among species in trying to make decisions via foresight, by envisioning hypothetical scenarios of future consequences (and how they will feel about them),⁵ but humans also tend to be flawed forecasters.⁶ Choosing among options is challenging, because anticipating the consequences of alternative actions involves foreseeing future outcomes with and without each option and furthermore foreseeing future preferences about these outcomes.⁷ Even when making decisions with the best intentions, humans are susceptible to biases and heuristics. The future scenarios that the human brain constructs tend to be made of collages of memories, which helps explain why humans tend to overemphasize events that they recall as more salient (the availability heuristic).⁸ Humans may overstate the importance of their current state of affairs as a reference point

Change, in THE OXFORD HANDBOOK OF INT'L CLIMATE CHANGE LAW (Cinnamon Carlarne et al., eds., Oxford Univ. Press, 2016).

3. The U.S. National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq., requires federal agencies to stop and think ahead about the reasonably foreseeable significant environmental impacts of their major actions. On the international adoption of EIA, see NEIL CRAIK, INTERNATIONAL LAW OF ENVIRONMENTAL IMPACT ASSESSMENT (Cambridge Univ. Press, 2008). On EIA as policy foresight and its international diffusion, see Jonathan B. Wiener & Daniel L. Ribeiro, *Impact Assessment: Diffusion and Integration*, in COMPARATIVE LAW AND REGULATION: UNDERSTANDING THE GLOBAL REGULATORY PROCESS (Francesca Bignami & David Zaring eds., 2016).

4. See Wiener & Ribeiro, *supra* note 3.

5. See DANIEL GILBERT, STUMBLING ON HAPPINESS 81-106 (Vintage Canada ed. 2009).

6. *Id.*; LEONARD MLODINOW, THE DRUNKARD'S WALK: HOW RANDOMNESS RULES OUR LIVES (Vintage Books 2008); PHILIP E. TETLOCK & DAN GARDNER, SUPERFORECASTING: THE ART AND SCIENCE OF PREDICTION (Crown 2015); DANIEL KAHNEMAN, THINKING, FAST AND SLOW (1st ed. 2011); NASSIM NICHOLAS TALEB, FOOLED BY RANDOMNESS: THE HIDDEN ROLE OF CHANCE IN LIFE AND IN THE MARKETS (Random House 2005).

7. GILBERT, *supra* note 5.

8. Daniel T. Gilbert & Timothy D. Wilson, *Prospection: Experiencing the Future*, 317 SCIENCE 1351 (2007); D. L. Schacter, D. R. Addis & R. L. Buckner, *Episodic Simulation of Future Events: Concepts, Data, and Applications*, 1124 ANN. N. Y. ACAD. SCIENCE 39 (2008).

(status quo bias); they may find it difficult to appreciate randomness, expecting to see a cause behind every event; they may attribute patterns when there is only noise; and they may overstate the skills or errors of the decision maker.⁹

Benjamin Franklin understood both the need for foresight and its inescapable imperfection when he advised his friend, the British scientist Joseph Priestley, who was considering whether to accept a job offer made by Lord Shelburne to work as the librarian and tutor of Shelburne's children.¹⁰ Franklin proposed a process of envisioning and weighing "all the Reasons pro and con" for each decision option, recognizing that:

tho' the Weight of Reasons cannot be taken with the Precision of Algebraic Quantities, yet, when each is thus considered ... and the whole lies before me, I think I can judge better, and am less liable to make a rash Step; and in fact I have found great Advantage from this kind of Equation, in what may be called Moral or Prudential Algebra.¹¹

Taking Franklin's advice, Priestley considered his objectives and collected information on Lord Shelburne and his offer.¹² He sought to foresee and weigh the possible consequences of his alternatives and make his decision.¹³ Yet, as Franklin noted, even such foresight is inevitably imprecise.

Foresight can be improved, notably through astute hindsight: learning from the past.¹⁴ The key is to reassess past foresight in light of experience and thereby increase the accuracy of our

9. MLODINOW, *supra* note 6, at 9 (mentioning examples of how adverse outcomes can be misperceived as indicative of bad decisions or bad decision skills).

10. JOHN TOWILL RUTT, *LIFE AND CORRESPONDENCE OF JOSEPH PRIESTLEY: VOLUME I* 180 (1831).

11. Benjamin Franklin, Letter to Joseph Priestley (September 19, 1772), in *BENJAMIN FRANKLIN: REPRESENTATIVE SELECTIONS, WITH INTRODUCTION, BIBLIOGRAPHY AND NOTES* 348-49 (Frank Luther Mott & Chester E. Jorgenson, eds., New York: American Book Company). The context and influence of Franklin's letter on the development of CBA is discussed in Jonathan B. Wiener, *The Diffusion of Regulatory Oversight*, in *THE GLOBALIZATION OF COST-BENEFIT ANALYSIS IN ENVIRONMENTAL POLICY* (Richard L. Revesz & Michael A. Livermore eds., 2013); RUTT, *supra* note 10, at 182-183. The discussion of Priestley's decision making process before and after Franklin's advice is also mentioned in CHIP HEATH & DAN HEATH, *DECISIVE: HOW TO MAKE BETTER CHOICES IN LIFE AND WORK* (2013).

12. See RUTT, *supra* note 10, at 178, 181, 183, 185, 188.

13. *Id.*

14. TETLOCK & GARDNER, *supra* note 6, at 13 ("Forecast, measure, revise. Repeat. It's a never ending process of incremental improvement that explains why weather forecasts are good and slowly getting better. . . . [W]ithout revision, there can be no improvement.").

foresight methods.¹⁵ Informing foresight from hindsight is an essential inferential method of science. From hypothesis testing through experimentation and observation, to the Bayes-Laplace Theory of updating prior beliefs, the essence of scientific inquiry is that additional information can enable us to test past assumptions and predictions and improve our ability to foresee.¹⁶

In this sense, environmental law needs to learn¹⁷ to improve its foresight via hindsight—it needs to couple prospection with retrospection. The point of such retrospection is not to return to a past state of the world; it is not a reactionary nostalgia, but rather a reflective (at times bittersweet) process of learning.¹⁸ Measuring past forecasts against policy performance can promote learning and improvement in subsequent decisions. Such a forecast-revise-adapt approach is a central feature of the new wave of developments in artificial intelligence and deep learning.¹⁹ It can be part of our legal institutions as well.

IA, developed in the U.S. and diffused throughout the world, has become the institutional and legal mechanism for policy foresight.²⁰ As noted, EIA and RIA have both been adopted widely as prospective ex ante procedures for policy foresight, seeking to foster environmental quality and better regulation.²¹

The emphasis of both RIA and EIA over the past five decades has been prospective: estimating the future consequences of a policy decision.²² Researchers have observed that these ex ante forecasts may, understandably, exhibit significant uncertainties

15. See generally *id.*

16. SHARON BERTSCH MCGRAYNE, *THE THEORY THAT WOULD NOT DIE: HOW BAYES' RULE CRACKED THE ENIGMA CODE, HUNTED DOWN RUSSIAN SUBMARINES, AND EMERGED TRIUMPHANT FROM TWO CENTURIES OF CONTROVERSY* (Reprint ed. 2012); MLODINOW, *supra* note 6.

17. For an early call to incorporate learning into environmental law, including through experimentation and review, see Daniel A. Farber, *Environmental Protection as a Learning Experience*, 27 *Loy. L.A. L. Rev.* 791 (1994).

18. SVETLANA BOYM, *THE FUTURE OF NOSTALGIA* (Basic Books 2008).

19. Nicola Lettieri, *Computational Social Science, the Evolution of Policy Design and Rule Making in Smart Societies*, 8 *FUTURE INTERNET* 19 (2016); *Rise of the Machines*, *ECONOMIST* (May 2015), <http://www.economist.com/news/briefing/21650526-artificial-intelligence-scars-people-excessively-so-rise-machines>.

20. Wiener & Ribeiro, *supra* note 3.

21. Wiener, *supra* note 11. See Wiener & Ribeiro, *supra* note 3.

22. See Jos Arts, Paula Caldwell & Angus Morrison-Saunders, *Environmental Impact Assessment Follow-up: Good Practice and Future Directions—Findings from a Workshop at the IALA 2000 Conference*, 19 *IMPACT ASSESS. PROJ. APPRAIS.* 175, 175-85 (2001); JOSEPH ALDY, *LEARNING FROM EXPERIENCE: AN ASSESSMENT OF THE RETROSPECTIVE REVIEWS OF AGENCY RULES AND THE EVIDENCE FOR IMPROVING THE DESIGN AND IMPLEMENTATION OF REGULATORY POLICY* 7 (2014); EUR. COMM'N, *Smart Regulation in the European Union*, COM (2010) 543 final, at 3 (Oct. 8, 2010) [hereinafter EC, *Smart Regulation*].

and inaccuracies.²³ Several studies have found that only a plurality of ex ante IAs turn out to be accurate (even defined loosely as +/- 25%), with errors of both overestimation and underestimation of actual impacts, for reasons including: industry overestimation of costs, assumptions of static technology followed by actual innovation, and mis-projection of compliance rates.²⁴ In some cases, the ex ante IA may appear inaccurate because the policy was changed after the ex ante IA was prepared on a prior version of the policy.²⁵ Yet there have still been “only . . . a handful” of retrospective studies of prospective accuracy,²⁶ and they have examined only partial samples which may not be representative of the broader universe of policies and IAs.²⁷

Governments have increasingly called for regular conduct of retrospective review or ex post IA, chiefly to secure cost savings or other gains from revising older regulations.²⁸ Retrospective review of existing regulations was the objective of section 5 of President Bill Clinton’s Executive Order (EO) 12,866 (1993)²⁹; section 6 of President Barack Obama’s EO 13,563 (2011)³⁰; President Obama’s EO 13,579 (2011) calling on independent agencies to conduct similar reviews³¹; President Obama’s EO 13,610 (2012) giving further details on the review process³²; and

23. See Adam Finkel, *The Cost of Nothing Trumps the Value of Everything: The Failure of Regulatory Economics to Keep Pace with Improvements in Quantitative Risk Analysis*, 4 MICH. J. ENVTL. & ADMIN. L. 91 (2014).

24. See Winston Harrington, Richard D. Morgenstern & Peter Nelson, *On the Accuracy of Regulatory Cost Estimates*, 19 J. POL’Y ANALYSIS & MGMT. 297 (2000); OFFICE OF MGMT. & BUDGET, 2005 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES (2005) [hereinafter OMB 2005 REPORT]; Winston Harrington, *Grading Estimates of the Benefits and Costs of Federal Regulation: A Review of Reviews*, RESOURCES FOR THE FUTURE (2006); Richard D. Morgenstern, *The RFF Regulatory Performance Initiative: What Have We Learned?*, RESOURCES FOR THE FUTURE (2015) [hereinafter Morgenstern, *RFF*].

25. Such changes could occur during the legislative/rulemaking process after the ex ante IA is prepared, or during implementation after adoption of the policy. One of the main criticisms of ex ante IA expressed by some officials from Directorates-General of the European Commission is that the proposed policy action examined in the ex ante IA gets significantly amended after the proposal leaves the Commission and traverses the European Parliament and Council—without an update to the IA to assess the impacts of the final policy action. Interview with Two Officials from Directorates-General of the European Commission (2015), on file with authors.

26. Finkel, *supra* note 23, at 118.

27. See *id.*

28. See *infra* Section III.

29. Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993). Previously, President Jimmy Carter’s Exec. Order 12,044 (1978) addressed review of existing regulations in §§ 2(d)(8) and 4; and President Ronald Reagan’s Exec. Order 12,291 (1981) addressed review of existing regulations in § 3(i).

30. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

31. Exec. Order No. 13,579, 76 Fed. Reg. 41,587 (July 11, 2015).

32. Exec. Order No. 13,610, 77 Fed. Reg. 28,469 (May 10, 2012).

the Organization for Economic Co-operation and Development's (OECD) recommendation number 5 on regulatory policy and governance (2012).³³ The Regulatory Flexibility Act (RFA) requires agencies to review within 10 years of issuance those regulations that have "a significant economic impact upon a substantial number of small entities."³⁴ Some statutes require reviews every few years.³⁵ The Administrative Conference of the United States (ACUS) endorsed the call for retrospective review as early as 1995 (just after the Clinton EO),³⁶ commissioned an expert appraisal in 2014 by Joseph Aldy of retrospective review efforts to date (soon after the Obama EO),³⁷ and adopted a set of recommendations in late 2014 for strengthening retrospective review.³⁸ Countries around the world have been adopting versions of retrospective review (whether called ex post IA, follow up policy evaluation, post-implementation review, retrospective review, or otherwise).³⁹

Yet, these government measures to require retrospective review have not yet fulfilled the goal that we emphasize here: using retrospective review to learn to improve prospective review—using hindsight to improve foresight. Calls for retrospective review have yielded only partial and slow progress in practice. After his term at the helm of Office of Information and Regulatory Affairs (OIRA), where he was a key architect of the Obama administration's retrospective review orders and supervised their implementation, Cass Sunstein wrote that "[i]t is an astonishing fact that until very recently, there has been no sustained effort to gather, let alone act on, that information [about what regulatory policies actually do]—and

33. ORG. FOR ECON. CO-OPERATION & DEV., RECOMMENDATION OF THE COUNCIL ON REGULATORY POLICY AND GOVERNANCE (2012).

34. 5 U.S.C. § 602(a)(1) (2012).

35. *E.g.*, 42 U.S.C. § 7409(d) (requiring reviews of national ambient air quality standards [NAAQS] every five years).

36. Admin. Conference of the U.S., Recommendation 95-3, Review of Existing Agency Regulations, 60 Fed. Reg. 43,108, 43,109 (Aug. 18, 1995).

37. ALDY, *supra* note 22.

38. Admin. Conference of the U.S., Recommendation 2014-5, Retrospective Review of Agency Rules, adopted December 4, 2014, at 79 Fed. Reg. 75,114, 75,114-117 (Dec. 17, 2014). ACUS Recommendation 5(c) notes that one factor in selecting rules for retrospective analysis is "[u]ncertainty about the accuracy of initial estimates of regulatory costs and benefits." *Id.* at 75,116. Retrospective review was also advocated by the American Bar Association. SECTION OF ADMIN. LAW AND REGULATORY PRACTICE, AM. BAR ASSOC., IMPROVING THE ADMINISTRATIVE PROCESS: A REPORT TO THE PRESIDENT-ELECT 12-13 (2016), http://www.americanbar.org/content/dam/aba/administrative/administrative_law/Final%20POTUS%20Report%2010-26-16.authcheckdam.pdf.

39. ORG. FOR ECON. CO-OPERATION & DEV., REGULATORY POLICY OUTLOOK § 5 (2015) [hereinafter OECD, POLICY OUTLOOK].

that existing efforts remain highly preliminary and partial.”⁴⁰ The Aldy report found that the Obama administration’s measures generated retrospective reviews of several hundred specific rules, and helped build a culture of retrospective review; however, the track record remained “mixed” and very few of the administration’s newly issued rules were revisions based on a retrospective review or required a future retrospective review.⁴¹ Cary Coglianese observed that “retrospective review is today where prospective analysis was in the 1970s: ad hoc and largely unmanaged.”⁴² OECD remarked: “ex post evaluation by [U.S.] federal agencies remains patchy and unsystematic.”⁴³

It is understandable that agencies told to conduct retrospective reviews may see this task as low priority compared to issuing the new policies demanded by Congress, the President, and the public; an agency may hesitate to conduct reviews that might cast doubt on its own past analyses, or subject its policies to revision or rescission. Hence, there is a need for presidential exhortation (or another institutional mechanism) to promote retrospective review. The Obama Administration continued to seek and report additional retrospective reviews by agencies each year.⁴⁴

So far, government retrospective review has mainly been aimed at assessing each regulatory policy individually, with a view to revising that specific policy, often to reduce its cost burden.⁴⁵ In this article, we argue that the retrospective review effort should be broader, assessing the comprehensive scope of important impacts (not only costs, but also benefits and ancillary impacts, with a view not just to reducing burdens, but also to increasing net

40. Cass R. Sunstein, *The Regulatory Look-Back*, 94 B.U. L. REV. 579, 588 (2014).

41. ALDY, *supra* note 22, at 4-6. Similarly, Sofie Miller studied twenty-two rules promulgated in 2014 and found that very few included plans for future retrospective review. Sofie E. Miller, *Learning from Experience: Retrospective Review of Regulations in 2014* (Geo. Wash. U. Regulatory Studies Ctr., Working Paper, 2015), <https://regulatorystudies.columbian.gwu.edu/learning-experience-retrospective-review-regulations-2014>.

42. Cary Coglianese, *Moving Forward with Regulatory Lookback*, 30 YALE J. ON REG. 57, 59 (2013).

43. OECD, POLICY OUTLOOK, *supra* note 39, at 123; *see also* Randall Lutter, *Regulatory Policy: What Role For Retrospective Analysis and Review?*, 4 J. BENEFIT-COST ANALYSIS, 17-38 (2013) (similar).

44. *See, e.g.*, Howard Shelanski, *Making All Levels of Government More Efficient and Effective Through Retrospective Review*, THE WHITE HOUSE (Mar. 4, 2016), <https://www.whitehouse.gov/blog/2016/03/04/making-all-levels-government-more-efficient-and-effective-through-retrospective> (reporting on “more than 50 new retrospective initiatives” and stating that the administration’s “regulatory lookback effort to date [since 2011] has achieved an estimated \$28 billion in net 5-year savings”). Howard Shelanski was the Administrator of OIRA during President Obama’s second term.

45. *See infra* Section II.

benefits).⁴⁶ Furthermore, we argue that retrospective review should emphasize learning—by assessing larger and representative samples of multiple ex post IAs compared to ex ante IAs, in order to improve foresight through more accurate ex ante IA methodologies and to learn about better policy designs.⁴⁷ Under EO 13,563, “each agency is directed to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible”⁴⁸—which should include using retrospective review to test and improve the accuracy of prospective IA. Cary Coglianese recommends “rigorous retrospective review [of multiple rules sharing common estimation issues] to evaluate their benefits and costs retrospectively [and] help validate or improve prospective estimation techniques applicable to other rules.”⁴⁹ Aldy likewise notes the value of using retrospective review (ex post IA) to test and improve the accuracy of methodologies for prospective ex ante IA.⁵⁰

46. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011), recognizes the possibility that retrospective review will find that a rule is “insufficient” as well as that it is “outmoded, ineffective . . . or excessively burdensome” (section 6), but the emphasis so far has been on reducing costs; see Shelanski, *supra* note 44 (noting large cost savings, but also an example of expanding federal policy on hearing aids). A useful analogy may be to outcomes studies in medical care, the objective of which is not necessarily to reduce (or increase) medication, but to improve patient health outcomes; similarly, retrospective review should be aimed evenhandedly not at reducing (or increasing) regulation, but at improving societal outcomes. See Jonathan B. Wiener, *Managing the Iatrogenic Risks of Risk Management*, 9 RISK: HEALTH SAFETY & ENV’T 39, 78-79 (1998) (proposing national outcomes studies of regulation, akin to outcomes studies in medicine).

47. OIRA appears to agree with this goal of using retrospective IA to enhance the accuracy of prospective IA:

Prospective analysis may overestimate or underestimate both benefits and costs; retrospective analysis can be important as a corrective mechanism.[9] Executive Orders 13563 and 13610 specifically call for such analysis, with the goal of improving relevant regulations through modification, streamlining, expansion, or repeal. The aim of retrospective analysis is to improve understanding of the accuracy of prospective analysis and to provide a basis for potentially modifying rules as a result of ex post evaluations. Rules should be written and designed to facilitate retrospective analysis of their effects, including consideration of the data that will be needed for future evaluation of the rules’ ex post costs and benefits.

OFFICE OF MGMT. & BUDGET, 2015 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND AGENCY COMPLIANCE WITH THE UNFUNDED MANDATES REFORM ACT 6 (2016) (with footnote 9 citing Michael Greenstone, *Toward a Culture of Persistent Regulatory Experimentation and Evaluation*, in *NEW PERSPECTIVES ON REGULATION* (David Moss & John Cisternino, eds., 2009)). However, in response to two commenters on the 2015 draft report who suggested that OMB should report the findings of retrospective reviews alongside OMB’s reports of agencies’ prospective IAs for major rules over the past decade, OMB replied that it hopes the agencies and outside researchers will do so. *Id.* at 109.

48. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

49. Coglianese, *supra* note 42, at 65.

50. ALDY, *supra* note 22, at 22-26. See also Adam J. White, *Retrospective Review, for Tomorrow’s Sake*, YALE J. ON REG.: NOTICE & COMMENT BLOG (Nov. 28, 2016),

President Obama declared in his 2009 inaugural address that “[t]he question we ask today is not whether our government is too big or too small, but whether it works.”⁵¹ Regulations can protect environmental quality and public health, but if poorly designed or if conditions change, they can also induce new problems.⁵² If policy makers try to foresee the expected consequences of proposed policy actions, then efforts should be undertaken to validate these forecasts and improve their accuracy over time. Without a mechanism to learn what really works and how well (or poorly), it will be unknown if government policies are achieving their intended or optimal outcomes, and the government will not be able to improve its foresight for subsequent policy decisions. Without ex post review, ex ante IA can err in foreseeing impacts, and can more easily be used to justify a policy choice already taken, rather than to learn about actual impacts.⁵³

Sections II and III of this article trace the evolution of IA, first the rise and diffusion of ex ante analysis and then the more limited emergence of ex post review, including EIA, RIA, and other related tools intended to improve policy decisions and increase accountability. Section IV offers an original contribution to the literature with a new empirical analysis of agency reporting data on the extent to which U.S. environmental regulation—in particular, regulation by the Environmental Protection Agency (EPA)—is going retro, in the sense of incorporating a learning mechanism by which hindsight can improve foresight. We find low levels of implementation of ex post EIA and RIA, and a focus on reducing the cost burden of each policy taken individually, rather than evaluation of a comprehensive scope of impacts or multi-policy retrospective to test and learn to improve the accuracy of prospective IA. Section V comments on the possible causes of

<http://yalejreg.com/nc/retrospective-review-for-tomorrows-sake-by-adam-j-white/> (“retrospective review’s greatest virtue actually has nothing to do with repealing regulations. Rather, retrospective review’s greatest value is forward-looking . . . to confront how accurate or inaccurate the agencies’ own projections were in forecasting the rules’ impacts in the first place.”).

51. Barrack Obama, INAUGURAL ADDRESS BY BARACK OBAMA, Jan. 21, 2009, <http://www.inaugural.senate.gov/swearing-in/address/address-by-barack-obama-2009> (last visited Jan. 21, 2017).

52. Wiener, *supra* note 11, at 124; JOHN D. GRAHAM & JONATHAN B. WIENER, RISK VS. RISK: TRADEOFFS IN PROTECTING HEALTH AND THE ENVIRONMENT (Harvard Univ. Press, 1995). As regulatory impacts affect different people, further analysis is needed to assure a fair distribution of welfare. See MATTHEW D. ADLER, WELL-BEING AND FAIR DISTRIBUTION: BEYOND COST-BENEFIT ANALYSIS (Oxford Univ. Press, 2012).; Matthew D. Adler, *Cost-Benefit Analysis and Distributional Weights: An Overview* (Duke Envtl. & Energy Econ., Working Paper EE 13-05, 2013), http://scholarship.law.duke.edu/faculty_scholarship/3110.

53. See Claudio M. Radaelli, *Rationality, Power, Management and Symbols: Four Images of Regulatory Impact Assessment*, 33 SCANDINAVIAN. POL. STUDIES 164-188, 171 (2010) (mentioning the de-coupling of the “talk” and practice of regulatory assessment instruments).

and remedies for the shortcomings we have observed, and makes recommendations for future research and for institutional reforms to improve the implementation of ex post IA, so better foresight can evolve from better hindsight.

II. ENVIRONMENTAL POLICY FORESIGHT

U.S. environmental law has evolved by progressively incorporating analytical tools and methods of policy foresight. Four such tools gained importance as not only methods for improving regulation and other policy decisions, but also as measures to increase accountability and better communicate decisions to the public. The early application of CBA to government infrastructure projects laid the methodological basis for the subsequent deployment of prospective EIA and RIA. Similarly, formal methods of prospective RA were developed to inform policy decisions.

A. CBA of Infrastructure Projects

The conceptual elements of CBA were evident in Benjamin Franklin's letter to Joseph Priestley in 1772, quoted above.⁵⁴ There is some evidence that these ideas then influenced pivotal thinkers in late 18th century Paris, notably Jeremy Bentham and French engineer-economists such as Jules Dupuit (professor at the Ecole des Ponts et Chaussées), and the French military engineers later brought these ideas back to America to train the U.S. Army Corps of Engineers (Army Corps).⁵⁵ CBA in U.S. policymaking first appeared as a practice of the Army Corps in selecting projects.⁵⁶ With the beginning of the professionalization of the civil service in the 1880s, the Army Corps began to develop a systematized planning process for designing and choosing priorities for infrastructure projects based on economic analysis of anticipated costs and benefits.⁵⁷ The longstanding use of CBA by the Army Corps' archetype, the French Corps des Ponts et Chaussées, was a direct influence.⁵⁸ Since 1807, the French Corps had been quantifying and monetizing the social costs and benefits of infrastructure projects as a method of measuring their "public

54. Franklin, *supra* note 11.

55. See Wiener, *supra* note 11.

56. See THEODORE M. PORTER, TRUST IN NUMBERS ch. 7, at 148 (Princeton Univ. Press, 1996).

57. *Id.* at 151.

58. *Id.* at 148, 150.

utility” and ranking different projects competing for public funds.⁵⁹ French influence—starting with engineers assisting the Americans during the Revolutionary War—combined with the distinct political setting under which the U.S. Army Corps developed, stimulated the gradual adoption and implementation of CBA.⁶⁰

The U.S. Congress played a major role in formalizing and routinizing CBA in the 20th century by making it a legal requirement preceding funding decisions for public water projects—first in the Rivers and Harbors Act of 1902 (RHA) and then in the Flood Control Act of 1936 (FCA).⁶¹ The main policy motivations for the two Acts were to improve governance and promote stronger accountability in public spending; to enhance the perception of fairness in the selection of water projects; and to control “pork barrel” politics.⁶² The RHA and the FCA employed different approaches to improving the rationality of water project funding decisions. The RHA’s approach was mainly institutional, creating an advisory body—a national-level advisory Board of Engineers for Rivers and Harbors—but also procedural/methodological, i.e., creating the possibility of a CBA before the approval of a water project.⁶³ The FCA, on the other hand, built upon the RHA to transform CBA into a binding normative standard for Congressional approval of funds for every public water project.⁶⁴ The standard introduced by the FCA for Congressional approval was “if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected.”⁶⁵ For the two types

59. *Id.* at 120.

60. Wiener, *supra* note 11, at 134; PORTER, *supra* note 56; *See infra* note 67; JOE N. BALLARD, THE HISTORY OF THE U.S. ARMY CORPS OF ENGINEERS 17 (1988) (on the participation of French engineers in the Revolutionary War).

61. 33 U.S.C. §§ 541-579 (1902); 33 U.S.C. §§ 701-709 (1936).

62. BEATRICE HORT HOLMES, A HISTORY OF FEDERAL WATER RESOURCES PROGRAMS, 1800-1960, at 8 (1972); PORTER, *supra* note 56, at 149, 155.

63. According to the Rivers and Harbors Act of 1902 (RHA):

[I]n the consideration of such works and projects the board shall have in view the amount and character of commerce existing or reasonably prospective which will be benefited by the improvement, and the relation of the ultimate cost of such work, both as to cost of construction and maintenance, to the public commercial interest involved, and the public necessity for the work and propriety of its construction, continuance, or maintenance at the expense of the United States.

33 U.S.C. § 541. The Act also stipulated that “all facts, information, and arguments which are presented to the board for its consideration in connections with any matter referred to it by the Chief of Engineers shall be reduced to and submitted in writing, and made a part of the records.” Still, the board acted in an advisory board capacity, since only the projects referred to it by the Chief of Engineers underwent a CBA analysis. *Id.*

64. *See* Flood Control Act of 1936, 33 U.S.C. §§ 701-709 (1936).

65. *Id.* § 1(a), 33 U.S.C. § 701(a).

of studies, forecasting the positive and negative, direct and indirect, effects of public projects worked as a preceding step to the calculation of its net benefits.⁶⁶

The next period of significant methodological and institutional developments of CBA, as a method for informing and promoting accountability for policy decisions, occurred between the 1940s and the late 1960s. To a remarkable extent, the standardization of CBA methods was a product of American demand for transparency in government decision-making.⁶⁷ To resolve disputes over how to conduct CBA analyses, the Bureau of the Budget—the predecessor of the Office of Management and Budget (OMB)—used powers vested by EO 9,384 of 1943 and, in 1952, issued Circular A-47 with the first set of interagency guidelines for CBA of water projects.⁶⁸ Circular A-47 consolidated years of evolution and methodological debate about CBA, transforming CBA of water and related land programs and projects into a process of sequential decisions, from problem definition to the calculation of net benefits.⁶⁹ CBA became “an essential part of the process of formulating and selecting projects.”⁷⁰ The forecasting nature of CBA was once again evident, now in the guidelines (“a concise but complete estimate of all the benefits and all of the economic costs. Because any long-term

66. In the RHA, the idea of forecasting, with its inevitable uncertainty, is explicit in the use of expression “reasonably prospective” to refer to the estimation of benefits. *See id.* § 3, 33 U.S.C. § 541.

67. A. R. Prest & R. Turvey, *Cost-Benefit Analysis: A Survey*, 75 *ECON. J.* 683-735, 684 (1965); PORTER, *supra* note 56, at 149, 162 (explaining how the most powerful advocates for standardized methods of CBA were the opponents of the Army Corps, namely utilities, railroads, the Soil and Conservation Service of the Department of Agriculture, and the Bureau of Reclamation, in the Department of the Interior). Attitudes toward transparency and access to information differed in France and the U.S., while decisions by the French Conseil général about alternative programs—all backed by economic quantification—were made in closed session and the Corps des Ponts protected itself by withholding information, the U.S. Army Corps of Engineers was compelled to disclose its findings. *Id.* at 116, 144. In Porter’s view, this transparency was one of the key factors explaining why CBA evolved in the U.S., surpassing the French approach in methodological sophistication. *Id.*

68. BUREAU OF THE BUDGET, CIRCULAR A-47, REPORTS AND BUDGET ESTIMATES RELATING TO FEDERAL PROGRAMS AND PROJECTS FOR CONSERVATION, DEVELOPMENT, OR USE OF WATER AND RELATED LAND RESOURCES (1952). Circular A-47 established minimum criteria that would be used by the Executive Office of the President when reviewing proposed water project reports and budget estimates, with the goal of promoting “more uniform agency policies and standards,” and to inform better priority setting among projects competing for funds. *Id.* Circular A-47 was preceded by a series of studies by the Subcommittee on Benefits and Costs, established in 1946 at the Inter-Agency Committee on Water Resources (IACWR), with the goal of formulating uniform principles and procedures for CBA of water resources projects. Executive Order 9,384 of 1943 required agencies to submit to the Bureau of the Budget reports relating to or affecting Federal public works and improvement projects.

69. INTER-AGENCY COMM. ON WATER RESOURCES, PROPOSED PRACTICES FOR ECONOMIC ANALYSIS OF RIVER BASIN PROJECTS 3, 11, 18, 22 (1958); John F. Timmons, *Economic Framework for Watershed Development*, 36 *J. FARM ECON.* 1170, 1173 (1954).

70. INTER-AGENCY COMM. ON WATER RESOURCES, *supra* note 69, at 11.

estimates are subject to wide margins of error, the results should be expressed in ranges rather than in single figures”).⁷¹

Influenced by the developments in welfare economics, the use of CBA expanded from water projects to inform project decisions in other areas, such as health, recreation, and land use.⁷² Soon, planners overseas began to advocate the use of ex ante “evaluation in planning” centered on CBA as the ideal approach to making rational and transparent planning choices.⁷³ Even with methodological limitations, CBA was seen as an improvement compared to open-ended concepts of the time (e.g., “best use of land in the public interest,” “a pattern of land use that is reasonably convenient, pleasing and cheap,” or “advantages and disadvantages”).⁷⁴

CBA would soon become a key component of IA—in particular in the U.S.⁷⁵ During and after the 1970s, several U.S. environmental statutes incorporated CBA for agency decisions or regulations, independent of an IA.⁷⁶

71. BUREAU OF THE BUDGET, *supra* note 68, at 5; *See also* INTER-AGENCY COMM. ON WATER RESOURCES, *supra* note 69, at 17. When discussing the treatment of risks in CBA, the IACRW Report mentions:

Risks in the form of uncertainties for which no appropriate basis is available for prediction include the probability of errors in estimating benefits and costs due to such factors as fluctuations in levels of economic activity, technological changes and innovations, and other unforeseeable developments adversely affecting the cost of value of project services.

INTER-AGENCY COMM. ON WATER RESOURCES, *supra* note 69, at 23.

72. Nathaniel Lichfield, *Cost-Benefit Analysis in Plan Evaluation*, 35 TOWN PLAN. REV. 159, 163 (1964); ROBERT DORFMAN, MEASURING BENEFITS OF GOVERNMENT INVESTMENTS; PAPERS PRESENTED AT A CONFERENCE OF EXPERTS HELD NOVEMBER 7-9, 1963, at 7-9 (1965); PORTER, *supra* note 56, at 187 (“The new welfare economics presupposed that all pleasures and pains in life were commensurable under a single, coherent, quantifiable utility function. It seemed both intellectually serious and practically useful to try to work this out for such difficult issues as recreation, health, and the saving or loss of life”).

73. Lichfield, *supra* note 72.

74. *Id.* at 161, 168.

75. CBA is often a key part of RIA. *See* RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH (Reprint ed. 2011). But RIA can be undertaken without full CBA (for example, if RIA takes a goal as given and employs cost-effectiveness analysis).

76. For example, the Toxic Substances Control Act (TSCA) of 1976, § 6(c); the Safe Drinking Water Act (SDWA) Amendments of 1996, authorizing EPA to determine whether the benefits justify the costs before setting drinking water standards; or the Amended Gas Pipeline Safety Standards of 1996, requiring CBA before setting safety standards. *See* Robert W. Hahn, *State and Federal Regulatory Reform: A Comparative Analysis*, 29 J. LEG. STUD. 873, 889 (2000).

B. EIA

The creation of EIA in the U.S. was a landmark in the evolution of normative frameworks of ex ante IA systems and policy foresight. The National Environmental Policy Act (NEPA) (1969) was a response to the countervailing environmental risks of government actions by mission oriented-agencies, such as in the transportation and energy sectors.⁷⁷ EIA became by far the most operational and significant of NEPA's provisions, covering policy decisions of different scales, including permits, projects, programs, plans, regulations, and legislative proposals submitted by the Executive Branch to Congress.⁷⁸ The logic of EIA is to improve the environmental outcomes of government decisions via analysis, transparency, and public participation in the policy decision process before implementation.⁷⁹ EIA works as both a precautionary and evidence-based tool with the potential of avoiding unintended consequences and unnecessary environmental harms.⁸⁰

Foresight is at the core of EIA. Agencies must undertake EIA to foresee the environmental impacts of their actions, as the language of foresight in the guidelines issued under NEPA by the Council on Environmental Quality (CEQ) explicitly indicates.⁸¹ Regarding uncertainty, CEQ guidelines require

77. 42 U.S.C. § 4321; Jonathan B. Wiener, *Managing the Iatrogenic Risks of Risk Management*, 9 RISK 39, 42-43 (1998). NEPA was a reaction against agencies neglecting environmental impacts. In the early NEPA case of *Calvert Cliffs Coordinating Committee v. AEC*, 449 F.2d 1109 (DC Cir. 1971), Judge Skelly Wright saw in NEPA a requirement of CBA to include the environmental costs of federal agency projects. See A. Dan Tarlock, *The Story of Calvert Cliffs: A Court Construes the National Environmental Policy Act to Create a Powerful Cause of Action*, in ENVIRONMENTAL LAW STORIES, 84 (Richard J. Lazarus ed., 2005); Robert L. Rabin, *Federal Regulation in Historical Perspective*, 38 STAN. LAW REV. 1189, 1279 (1986). Agencies that did not have to prepare CBA analysis of their own projects and major policy decisions under their own statutes, such as the Atomic Energy Commission and the Department of Transportation, were most in need of this broader CBA incorporating environmental impacts. *Id.* at 1299; JOANNA L. GRISINGER, *THE UNWIELDY AMERICAN STATE: ADMINISTRATIVE POLITICS SINCE THE NEW DEAL* 12, 246 (2014); Tarlock, *supra* note. In the first 8 years of implementation of NEPA, the Department of Transportation was the agency most frequently involved in NEPA litigation, with 211 cases. COUNCIL ON ENVTL. QUALITY, *THE NINTH ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY* (1978). Later, the U.S. Supreme Court held that NEPA did not impose a substantive CBA requirement, only a procedural stop and think requirement. See *Strycker's Bay Neighborhood Council v. Karlen*, 444 U.S. 223, 228 (1980).

78. National Environmental Policy Act of 1969, § 102(c)(i)-(ii), 42 U.S.C. § 4332 (2012).

79. See Craik, *supra* note 3.

80. The required EIS must be prepared and submitted early in the policy process. 40 C.F.R. § 1501.2. EISs should be based "upon the analysis and supporting data from the natural and social sciences and the environmental design arts." 40 C.F.R. § 1502.8.

81. Sections 102(c)(i) and (ii) of NEPA includes the core content of EIA, requiring its report (i.e. the "detailed statement" prepared by the responsible agency official) to include environmental impacts and adverse environmental effects from the action, without language

agencies to be clear about the lack of sufficient information “when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement.”⁸² When defining which cumulative impacts and indirect impacts EIA must consider, the guidelines also mention “reasonably foreseeable” impacts and future actions.⁸³ In other countries, EIA regulations and guidelines employ language denoting foresight at the core of EIA.⁸⁴

From its concise formulation in section 102 (C) of NEPA, EIA evolved through the 1970s into a sophisticated and detailed set of guidelines resulting from repeated interactions among Congress, the President, courts, non-governmental actors, and the CEQ.⁸⁵ From the U.S., the concept of EIA diffused throughout the globe and reached over a hundred countries.⁸⁶ Also, many states in the U.S. adopted their versions of NEPA (or “little NEPAs”). In less than nine years, over 10,000 environmental impact statements (EIS) had been filed before federal agencies in the U.S., and many times this number of environmental assessments.⁸⁷ In most countries that have adopted EIA, it only applies to project level decisions—perhaps because it remained unclear, at least until the 1978 CEQ regulations, which kinds of agency policy decisions would be considered “major federal actions” to trigger an EIA under

denoting uncertainty, such as “estimates” or “potential.” National Environmental Policy Act of 1969, § 102(c)(i)-(ii), 42 U.S.C. § 4332 (2012).

82. 40 C.F.R. § 1502.22 (1978). The expression “reasonably foreseeable significant adverse impacts” is repeated in other provisions of the rule.

83. 40 C.F.R. § 1508.7 (1978).

84. In the U.K., for instance, EIAs should include “an estimate, by [the] type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc[.]) resulting from the operation of the proposed development.” Town and Country Planning Regulations 2011, No. 1824, Schedule 4, Part 1(c). In Canada, EIAs should consider “environmental effects . . . that may occur in connection with the designated project and any cumulative environmental effects that are likely to result from the designated project . . .” S.C. 2012, ch. 19, s. 52, § 19(1)(a). In Australia, a controlled action for which an environmental assessment may be required should consider as relevant impacts those that the action “(a) has or will have; or (b) is likely to have.” Environmental Protection and Biodiversity Conservation Act 1999, Compilation No. 51 (2016), Div. 2, 821(1).

85. Herbert F. Stevens, *The Council on Environmental Quality’s Guidelines and Their Influence on the National Environment Policy Act*, 23 CATH. U. L. REV. 547, 556 (1973). One year after CEQ passed its 1978 regulation, the Supreme Court validated its legal force. *Andrus v. Sierra Club*, 442 U.S. 347, 357-58 (1979); *accord*. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348-53 (1989); *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 377 (1988); *Warm Springs Dam Task Force v. Gribble*, 417 U.S. 1301, 1309-10 (1974).

86. Craik, *supra* note 3, at 23; Wiener & Ribeiro, *supra* note 3.

87. COUNCIL ON ENVTL. QUALITY, *supra* note 77, at 407. In the U.S. federal process, environmental assessments are preliminary studies aimed at informing the agency decision whether to conduct a full EIS. *See* 40 C.F.R. § 1508.9 (1978).

NEPA.⁸⁸ Expanding the scope of EIA to cover programs and plans, the European Union (EU) and its Member States passed legislation creating the Strategic Environmental Assessment (SEA).⁸⁹

C. RIA

RIA was also set up in the U.S. during the 1970s, partly to help the Executive Branch oversee the flow of rules emanating from the new environmental and other social legislation passed by Congress during this period, and modeled in part on EIA.⁹⁰ When Congress enacted NEPA in 1969, commentators were discussing the expansion of CBA from water projects, programs, and budget planning to agency regulations.⁹¹ Responding to concerns over the compliance costs of new environmental regulations, President Nixon created the National Industrial Pollution Control Council and transformed the Bureau of the Budget into its current form of the OMB.⁹² The first formulation of what became the RIA in the U.S. was issued by a memorandum from the OMB Director in May 1971, creating the Quality of Life Review (QLR).⁹³ Under the QLR requirement, every agency had to submit proposed rules to OMB for review and clearance before publishing a notice

88. Jerry B. Edmonds, *The National Environmental Policy Act Applied to Policy-Level Decisionmaking*, 3 *ECOL. L.Q.* 799, 799 (1973) (explaining how at first there were doubts on whether the EIA should cover policy decisions at levels other than the project-level).

89. The creation of SEA as a supposedly distinct tool from EIA can be seen as a rebranding effort, compared to the option of simply expanding the scope of EIA, as it has been in the U.S. at least since 1978. "Policies," a category that is usually used to include legislation, regulation, and policy documents, has not been covered by SEA, except by the 2003 SEA Protocol to the Espoo Convention, which focuses on transboundary effects. One possible reason is the overlap with RIA. *See infra* Section II.D.

90. NEPA was a source of inspiration for the development of the Quality of Life Review, which responded to the perceived need for an "Economic Impact Statement." Joe Conley II, *Environmentalism Contained: A History of Corporate Responses to the New Environmentalism* 162 (2006).

91. ALLAN SCHMID, *EFFECTIVE PUBLIC POLICY AND THE GOVERNMENT BUDGET: A UNIFORM TREATMENT OF PUBLIC EXPENDITURE AND PUBLIC RULES* 579-91 (1969). According to one participant, the tools of benefit-cost analysis and centralized review used at the Army Corps of Engineers (discussed in Section II.A., *supra*) were then promoted by Allan Schmid as a way to oversee regulation generally, and adopted by the Nixon Administration. *See* Jim Tozzi, *OIRA's Formative Years: The Historical Record of Centralized Regulatory Review Preceding OIRA's Founding*, 63 *ADMIN. L. REV.* (special ed.) 37, 41-43 (2011).

92. Christopher S. Yoo, Steven G. Calabresi & Anthony J. Colangelo, *The Unitary Executive in the Modern Era, 1945-2004*, 90 *IOWA L. REV.* 601, 658 (2005); William H. Rodgers Jr., *National Industrial Pollution Control Council: Advise or Collude*, 13 *BC INDUS. COM. REV.* 719 (1971).

93. OFFICE OF MGMT. & BUDGET, *OMB PAPERS: QUALITY OF LIFE REVIEW #1, AGENCY REGULATIONS, STANDARDS, AND GUIDELINES PERTAINING TO ENVIRONMENTAL QUALITY, CONSUMER PROTECTION, AND OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY* 2 (1971); *see* Tozzi, *supra* note 91, at 44-45.

of proposed rulemaking (NPRM).⁹⁴ Agencies had to prepare a summary description containing the principal objectives, alternatives considered, costs and benefits of each alternative, and the reason for selecting the preferred alternative.⁹⁵ In practice, the QLR was applied almost exclusively to environmental regulation from the EPA.⁹⁶

Since the 1970s, every American president of both major political parties has maintained or expanded the ex ante RIA framework. In 1978, President Carter issued EO 12,044 and created the “Regulatory Analysis” requirement, overseen by a “Regulatory Analysis Review Group.”⁹⁷ In 1980, Congress enacted and President Carter signed the Paperwork Reduction Act (PRA), creating OIRA within OMB.⁹⁸ In 1981, President Reagan issued EO 12,291, replacing Carter’s EO and giving the tool its current name, the “Regulatory Impact Analysis,” as well as giving OMB/OIRA the authority to oversee RIAs.⁹⁹ In 1993, President Clinton issued EO 12,866, replacing and improving upon Reagan’s EO; subsequent presidents have maintained EO 12,866 in effect.¹⁰⁰ In 2011, President Obama issued EO 13,563, supplementing without rescinding EO 12,866,¹⁰¹ notably by requiring retrospective review as discussed above.¹⁰² In 2003, OIRA issued Circular A-4,

94. *Id.*

95. *Id.*

96. *Id.*

97. Exec. Order No. 12,044, 43 Fed. Reg. 12,661 (1978). Earlier, in 1974, President Ford (while maintaining the QLR requirement) issued EO 11,821, creating the Inflation Impact Statement (IIS) (renamed in 1976 “Economic Impact Statements”) as an additional requirement to executive agency rulemaking. Exec. Order No. 11,821, 39 Fed. Reg. 41,501 (1974); Exec. Order No. 11,949, 41 Fed. Reg. 23,663 (1976).

98. Pub. L. No. 96-511, 94 Stat. 2812 (1980) (codified at 44 U.S.C. §§ 3501-3521).

99. Exec. Order No. 12,291, 3 C.F.R. § 127 (1981).

100. Exec. Order No. 12,866, 3 C.F.R. § 638 (1993).

101. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (2011). The scope of impacts to be covered has evolved across these EOs. EO 12,044 referred to the “economic consequences” of the proposed rule, EO 12,044, § 3(b)(1) (not using the word “benefits”). EO 12,291 used the language of costs and benefits, but without a specific mention of environmental and social impacts (section 3(d)(1)). Under EOs 12,866 and 13,563, RIA must assess costs and benefits, including impacts on the environment, public health and safety, and on discrimination or bias (section 6(a)(3)(C)(i) of EO 12,866 and section 1(b)(3) of EO 13,563). Moreover, EO 12,291 called for benefits to “outweigh” costs, whereas EO 12,866 changed this language to call for benefits to “justify” costs. See Exec. Order No. 12,044, 43 Fed. Reg. 12,661 (1978); Exec. Order No. 12,291, 46 Fed. Reg. 13,193 (1981); Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (1993).

102. See *supra* notes 29-32. The current RIA framework in the U.S. is comprised mainly of EOs 12,866, 13,563, and 13,610. But in addition to these basic requirements applicable to significant rulemaking actions of executive agencies (and EO 13,579 regarding independent agencies), the overall picture of RIA in the U.S. is more complex and fragmented. In addition to the RIA, agencies are subject to RIA-like requirements focusing on specific classes of stakeholders or kinds of impacts, such as on takings of private property (EO 12,630 of 1988), Indian tribal governments (EO 13,175 of 2000), children (EO 13,045 of 1997), health and environmental impacts on minorities (EO 12,898 of 1994), and energy (EO 13,211 of 2001). In 1980, drawing inspiration from the same political and economic circumstances of the late-

which continues to serve as the main RIA guidelines in the U.S.¹⁰³ These EOs use language calling for foresight in RIA.¹⁰⁴ Similarly, the foresight nature of RIA is evident in Circular A-4's provisions related to uncertainty.¹⁰⁵ In addition to using the same language of the EOs denoting forecasting (e.g., "anticipate and evaluate the likely consequences of rules"), Circular A-4 has detailed sections on the uncertainty elements involved in foreseeing the effects of rules.¹⁰⁶

Similarly, but less rapidly than EIA, the concept of RIA has diffused throughout other national and subnational jurisdictions. At the state level in the U.S., *ex ante* RIA was adopted by many states, under different names and with different scopes, also figuring in the Model State Administrative Procedure Act.¹⁰⁷

1970s, Congress passed two statutes: the Regulatory Flexibility Act (RFA) and the Paperwork Reduction Act (PRA) of 1980, both calling for *ex ante* analysis—the RFA, for impacts on small businesses; and the PRA, for impacts resulting from information requirements. In addition to the RFA and the PRA, Congress also passed the Unfunded Mandates Reform Act (UMRA) of 1995, requiring *ex ante* RIA of any proposed agency rule that may result in the expenditure by a state, local, tribal government, or by the private sector, in the aggregate, of more than \$1 million in any one year. See Wiener & Ribeiro, *supra* note 3, at 175.

103. OFFICE OF MGMT. & BUDGET, CIRCULAR A-4, REGULATORY ANALYSIS 1 (2003) [hereinafter OMB, A-4].

104. "[T]he *expected* benefits or accomplishments and the costs," OFFICE OF MGMT. & BUDGET, *supra* note 93, at 2 (emphasis added); "an *estimate* ... of the new reporting burdens or recordkeeping requirements," Exec. Order No. 12,044, § 2(d)(6), 43 Fed. Reg. 12,661 (1978) (emphasis added); "an *estimate* of the number of small entities to which the proposed rule will apply," and "the *projected* reporting, recordkeeping and other compliance requirements," 5 U.S.C. § 603(b)(3)-(4) (2012) (emphasis added); "*estimate* of the burden that *shall* result from the collection of information" and "a description of the *likely* respondents and proposed frequency of response to the collection of information," 44 U.S.C. § 3507(a)(D)(ii)(V)-(IV) (2012) (emphasis added); "[a] description of the *potential* benefits [and costs] of the rule . . . and the identification of those *likely* to receive the benefits [and bear the costs]," Exec. Order No. 12,291, § 3(d)(1), 3 C.F.R. § 127 (1981) (emphasis added); "assessment of the *potential* costs and benefits of the regulatory action" and "[a]n assessment . . . of benefits [and costs] anticipated from the regulatory action." Exec. Order No. 12,866, § 6(a)(3)(B)(ii), -(C)(i), 3 C.F.R. § 638 (1993) (emphasis added); and "to quantify *anticipated* present and future benefits and costs." Exec. Order No. 13,563, § 1(c), 3 C.F.R. § 13,563 (2011) (emphasis added).

105. OMB, A-4, *supra* note 103.

106. *Id.* Some key examples are stipulating and measuring the baseline ("what the world would be like if the proposed rule is not adopted") and dealing with uncertainty (with emphasis on identifying key uncertainties and conducting sensitivity analysis, as a way of anticipating the effect of changing forecasting assumptions). *Id.* at 2. In one section, Circular A-4 stipulates: "[y]our estimates cannot be more precise than their most uncertain component. Thus, your analysis should report estimates in a way that reflects the degree of uncertainty and not create a false sense of precision." *Id.* at 40.

107. See Russell S. Sobel & John A. Dove, *Analyzing the Effectiveness of State Regulatory Review*, 44 PUB. FIN. REV. 446 (2016); JASON A. SCHWARTZ, 52 EXPERIMENTS WITH REGULATORY REVIEW 87 (2010) (with a detailed view of each state, finding that "45 states require[d] some form of [ex ante] economic impact analysis, besides specialized reviews like regulatory flexibility analysis."); see also Stuart Shapiro & Deborah Borie-Holtz, *Regulatory Reform in the States: Lessons from New Jersey*, (March 24, 2011) (available at <http://papers.ssrn.com/abstract=1794172>). In another 2011 study, Shapiro and Borie-Holtz classified the states of New York, Virginia, Michigan, and Pennsylvania with a maximum

Internationally, *ex ante* RIA became the cornerstone of the Better Regulation movement in Europe, and was adopted by every OECD member country.¹⁰⁸ The United Kingdom (U.K.) and the EU represent two jurisdictions in which *ex ante* RIA has been making significant advances, leading to innovative institutional transformations in recent years.¹⁰⁹ In the latest version of its guidelines, the U.K. RIA system mentions the use of sensitivity analysis, while also discussing how to report the uncertainty of parameters assessed in RIA.¹¹⁰ In 2015, the European Commission also issued a new set of guidelines for its IA system, with similar language and provisions revealing the forecasting basis of IA.¹¹¹

D. Risk Assessment

Alongside or within CBA, EIA, and RIA, *ex ante* risk assessment (RA) has been a key analytical tool for foreseeing future potential harms of pollutants and other stressors.¹¹² EPA has employed

score of stringency of RIA requirements. STUART SHAPIRO & DEBORAH BORIE-HOLTZ, INSTITUTE FOR POLICY INTEGRITY, DOES PROCESS MATTER: REGULATORY PROCEDURE AND REGULATORY OUTPUT IN THE STATES 8 n.13 (2011), <http://policyintegrity.org/publications/detail/does-process-matter>; NAT'L CONFERENCE OF COMM'RS ON UNIF. STATE LAWS, REVISED MODEL STATE ADMINISTRATIVE PROCEDURE ACT § 305 (2010) (suggesting implementation comparison of alternatives on the basis of CBA of a proposed rule, and a determination that the benefits of the proposed rule justify its costs).

108. Jonathan B. Wiener, *Better Regulation in Europe*, 59 CURRENT LEGAL PROB. 447 (2006); Wiener, *supra* note 11, at 126-28. OECD has been a major supplier of information and experiences on regulatory quality improvement, helping to spread RIA. *Id.* at 130. See also FABRIZIO DE FRANCESCO, TRANSNATIONAL POLICY INNOVATION: THE OECD AND THE DIFFUSION OF REGULATORY IMPACT ANALYSIS (Dario Castiglione et al. eds., 2013) (documenting the influence of OECD on the diffusion of RIA); OECD, POLICY OUTLOOK, *supra* note 39.

109. For recent developments in the U.K. and EU systems, respectively, see DEP'T FOR BUS. INNOVATION & SKILLS, BETTER REGULATION FRAMEWORK MANUAL (2015), and EUR. COMM'N, *Better Regulation Guidelines*, COM (2015) 215 final (April 19, 2015) [hereinafter EC, *Better Regulation Guidelines*].

110. DEP'T FOR BUS. ENERGY & INDUS. STRATEGY, BETTER REGULATION FRAMEWORK MANUAL § 2.2.5 (2015). The Manual is also explicit when discussing the estimate levels and underlying uncertainty of compliance with the proposed regulation. *Id.* at § 2.3.50. It has a specific topic for "Key assumptions, sensitivities and risks" in which the foresight nature of RIA becomes evident: "[i]n order to reflect the inherent uncertainty of costs and benefits estimates, you may need to provide a range for your costs and benefits estimates. Highlight the factors determining the outcome within any range and how any risks will be mitigated." *Id.* The Better Regulation Framework Manual refers to the Green Book as the main source of detailed methodological guidelines. *Id.* at § 1.5.5.

111. EC, *Better Regulation Guidelines*, *supra* note 109 (mentioning "assumptions," "uncertainty," "estimates," and "sensitivity" in many parts of the document). For example: "When quantifying [all relevant impacts], spurious precision should be avoided and ranges provided Whenever an assumption is particularly important or uncertain, sensitivity analysis should be used to check whether changing it would lead to significantly different results." *Id.* at 27.

112. See Alon Rosenthal, George M. Gray & John D. Graham, *Legislating Acceptable Cancer Risk from Exposure to Toxic Chemicals*, 19 Ecology L.Q. 269 (1992) (documenting

formal RA practices since its early days, having issued its first RA document at least as early as 1975.¹¹³ The National Academy of Sciences (NAS) encouraged federal agencies to conduct RAs and outlined guidelines for best practices.¹¹⁴ In some cases, environmental statutes incorporate RA as a requirement for agency decision or rulemaking—either independently or combined with EIA, RIA, and CBA.¹¹⁵ The Clean Air Act (CAA), for instance, requires EPA to make findings that a pollutant “may reasonably be anticipated to endanger public health or welfare” for setting national ambient air quality standards, and to conduct residual RAs after setting emissions standards for major sources of hazardous air pollutants;¹¹⁶ the Resource Conservation and Recovery Act (RCRA) mandates that EPA make findings of endangerment to public health or the environment to regulate hazardous waste sites;¹¹⁷ the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) stipulates a risk/benefit analysis for the registration of pesticides.¹¹⁸ Many other environmental statutes impose criteria or standards without formally requiring (but in practice leading to) RA processes.¹¹⁹

Forecasting is at the center of RA, because RA attempts to characterize the likelihood and severity of future adverse events with the purpose of informing decisions marked by

requirements for RA in many environmental laws); RICHARD L. REVESZ, ENV'TL. & POL'Y 51 (3d ed. 2015) (“Risk assessment is generally recognized as the first step in the regulatory process—a regulatory agency must first analyze the magnitude of an environmental risk before it can intelligently decide on whether and how much risk should be regulated—a process known as risk management”).

113. U.S. ENVTL. PROT. AGENCY, EPA/100/B-04/001, AN EXAMINATION OF EPA, RISK ASSESSMENT PRINCIPLES & PRACTICE 4 (2004) [hereinafter EPA, 2004 EXAMINATION]; see also CARNEGIE COMM'N ON SCI., TECH., & GOV'T, RISK AND THE ENV'T 27 (1993).

114. NAT'L RESEARCH COUNCIL, RISK ASSESSMENT IN THE FEDERAL GOVERNMENT: MANAGING THE PROCESS 57-58 (1983); NAT'L RESEARCH COUNCIL, SCIENCE AND DECISIONS: ADVANCING RISK ASSESSMENT 26 (2009); see also Junius C. McElveen, Jr., *Risk Assessment in the Federal Government: Trying to Understand the Process*, 5 TUL. ENVTL. L.J. 45, 53 (1991); EPA, 2004 EXAMINATION, *supra* note 113, at 3 (describing the use of risk assessment as a routine activity by EPA for making multiple kinds of decisions).

115. RA of pollutants or other stressors should, in principle, provide the information for the harm estimates in EIA and for the risk reduction benefits estimates in RIA. See Alan L. Porter & Frederick A. Rossini, *Integrated Impact Assessment*, 6 INTERDISC. SCI. REV. 346 (1981); Fred Anderson et al., *Regulatory Improvement Legislation: Risk Assessment, Cost-Benefit Analysis, and Judicial Review*, 11 DUKE ENVTL. L. & POL'Y F. 89, 93 (2000); Hossein Mahmoudi et al., *A framework for combining social impact assessment and risk assessment*, 43 ENVTL. IMPACT ASSESS. REV. 1 (2013).

116. 42 U.S.C. §§ 7408(a)(1)(A), 7412(f)(1) (2012); see also U.S. ENVTL. PROT. AGENCY, EPA-453/R-99-001, RESIDUAL RISK: REPORT TO CONGRESS (1999).

117. McElveen, *supra* note 114, at 48 n.3.

118. See GOV'T ACCOUNTABILITY OFFICE, GAO/RCED-91-52, EPA'S USE OF BENEFIT ASSESSMENTS IN REGULATING PESTICIDES 9 (1991).

119. Rosenthal et al., *supra* note 112; McElveen, *supra* note 114.

uncertainty.¹²⁰ The NAS's National Research Council has acknowledged that risk assessors rely on assumptions and make use of "inferential bridges" in order to conduct ex ante RA in the face of uncertainty.¹²¹ The analytical steps of RA (hazard identification, dose-response assessment, exposure assessment, and risk characterization) are necessarily inferential, resulting in estimates with ranges of uncertainty.¹²²

III. FROM FORESIGHT TO HINDSIGHT: THE RISE OF RETROSPECTIVE REVIEW

The development of prospective analytical tools for policy foresight—such as ex ante RA, CBA, EIA, and RIA—has enabled important advances in protection of public health, environment and security against uncertain future risks, but it has also prompted the question whether these ex ante tools are generating accurate foresight. There is growing interest in developing evidence-based tools to enable retrospective, ex post, or look-back reviews of past policies.¹²³ The precautionary approach underlying ex ante IA tools ("look before you leap") also suggests the value of revisiting earlier estimates in light of data on actual experience: prudent precaution is provisional, to be revised as knowledge improves.¹²⁴ Different forms of retrospective, ex post, and periodic reviews have gained ground in the literature and have gradually been adopted by governments, supplementing ex ante RA, CBA, EIA, and RIA tools. This Section describes these developments. A key finding of our inquiry is that retrospective reviews have more

120. For a historical account of the evolution of risk analysis from probability theory, see PETER L. BERNSTEIN, *AGAINST THE GODS: THE REMARKABLE STORY OF RISK* (1996). On deep uncertainty in RA, see Robert J. Lempert & Myles T. Collins, *Managing the Risk of Uncertain Threshold Responses: Comparison of Robust, Optimum, and Precautionary Approaches*, 27 RISK ANALYSIS 1009 (2007). On RA and management of extreme catastrophic risks, see Nick Bostrom, *Existential Risk Prevention as Global Priority*, 4 GLOB. POL'Y 15 (2013); Jonathan B. Wiener, *The Tragedy of the Uncommons: On the Politics of Apocalypse*, 7 GLOB. POL'Y 67 (2016).

121. NAT'L RESEARCH COUNCIL, *RISK ASSESSMENT IN THE FEDERAL GOVERNMENT*, *supra* note 114, at 3, 28. By contrast, RIA fits into the NRC's definition of risk management: "the process of weighing policy alternatives and selecting the most appropriate regulatory action, integrating the results of risk assessment with engineering data and with social, economic, and political concerns to reach a decision." *Id.* at 3; see also Anderson et al., *supra* note 115, at 91. See NAT'L RESEARCH COUNCIL, *RISK ASSESSMENT IN THE FEDERAL GOVERNMENT*, *supra* note 114, at 7 (stressing the importance of communicating uncertainty and variability in the results of RA).

122. See M. Granger Morgan, *Risk Analysis and Management*, 269 SCI. AM. 32, 34 (1993) (explaining the different uncertainties inherent to risk analysis and, consequently, the need to represent them with probability distributions).

123. See ALDY, *supra* note 22; Coglianesi, *supra* note 42.

124. See Wiener, *supra* note 2.

often been aimed at reducing the cost of individual rules, and less often at learning from experience to improve the accuracy of ex ante foresight.

A. Ex Post RIA in the U.S.

Ex ante analysis of regulatory impacts of proposed rules, and ex post evaluation of existing rules, developed as intertwined ideas since the early years of RIA in the U.S.¹²⁵ While addressing Congress in 1974, President Ford asked Congress to “undertake a long-overdue total reexamination of the independent regulatory agencies” as part of a joint effort to “identify and eliminate existing federal rules and regulations that increase costs to the consumer without any good reason in today’s economic climate.”¹²⁶ But soon after, when he issued EO 11,821, Ford’s Inflation Impact Statement (IIS) focused only on proposals for legislation or promulgation of new regulations and rules by executive agencies.¹²⁷ In 1978, President Carter’s EO 12,044 not only expanded the ex ante RIA requirement to address all economic impacts, but also innovated significantly by introducing ex post RIA.¹²⁸ Carter’s EO had a specific section on “Review of Existing Regulations,” requiring agencies to “periodically review their existing regulations to determine whether they are achieving the policy goals of this Order.”¹²⁹ In addition to this central mandate, EO 12,044 also stipulated procedural/methodological rules, as well as selection criteria, communication and participation requirements of such regulatory reviews.¹³⁰ Methodologically, regulatory reviews should “follow the same procedural steps outlined for the development of

125. Nixon’s QLR, however, focused only on the estimated impacts of new regulation, given its predominant focus—the recent new wave of environmental regulation. OFFICE OF MGMT. & BUDGET, *supra* note 93, at 1.

126. Gerald Ford, “WHIP INFLATION NOW” SPEECH (OCTOBER 8, 1974), MILLER CENTER, UNIVERSITY OF VIRGINIA (Oct. 8, 1974), <http://millercenter.org/president/ford/speeches/speech-3283> (last visited Jan. 21, 2017).

127. *See* OMB, A-4, *supra* note 103. Exec. Order No. 11,821, Preamble, 39 Fed. Reg. 41,501 (1974). The Council on Wage and Price Stability, created in 1974 by Congress, to which EO 11,821 allowed OMB to delegate its oversight functions related to the IIS, employed broad language to describe its role, which could potentially include reviewing the performance of existing programs and activities. Council on Wage and Price Stability Act, Pub. L. No. 93-387, § 3(A)(7), 88 Stat. 750, 750 (1974).

128. *See* Exec. Order No. 12,044, 43 Fed. Reg. 12,661 (1978).

129. *Id.* at § 4. The goals of the EO are stipulated in section 1, according to which “[R]egulations shall be as simple and clear as possible. They shall achieve legislative goals effectively and efficiently. They shall not impose unnecessary burdens on the economy, on individuals, on public or private organizations, or on State and local governments.” *Id.* at § 1.

130. *Id.* at § 4.

new regulations,”¹³¹ i.e., ex ante regulatory analysis.¹³² The criteria developed by each agency for selecting rules for review—based on the general criteria stipulated by the EO—and the list of regulations selected for review were to be published and included in the semiannual agency agendas.¹³³ EO 12,044 also required that new regulations include “a plan for evaluating the regulation after its issuance has been developed”¹³⁴—a prospective provision for retrospective review.

After Carter’s EO, every other EO issued on RIA included a provision regarding retrospective reviews of existing regulation, although typically with a less comprehensive framework than in EO 12,044. For example, section 3 of EO 12,291, issued by President Reagan in 1981, included a subsection requiring agencies to “initiate reviews of currently effective rules in accordance with the purposes of this Order, and perform Regulatory Impact Analyses of currently effective major rules.”¹³⁵ The provision requiring agencies to include in ex ante RIA a plan for future review disappeared, as well as mentions of selection criteria for review.¹³⁶ On the other hand, OMB was given express authority to designate currently effective rules for review and establish schedules for reviews and analyses under the EO.¹³⁷ Then, in 1993 with EO 12,866, President Clinton included section 5 on ex post evaluation of existing regulations, requiring publication of regulations selected for review in each agency’s annual plan and regulatory agenda, empowering the Vice President to identify rules for review, and instructing agencies to conduct reviews to make existing rules “more effective in

131. *Id.*

132. Including, in the case of significant regulations with major consequences, “a careful examination of alternative approaches” and a “succinct statement of the problem; a description of the major alternative ways of dealing with the problem that were considered by the agency; an analysis of the economic consequences of each of these alternatives and a detailed explanation of the reasons for choosing one alternative over the others.” *Id.* at § 3(b)(1).

133. *Id.* at § 2(a).

134. *Id.* at § 2(d)(8).

135. Exec. Order No. 12,291, § 3(i), 46 Fed. Reg. 13,193 (Feb. 17, 1981).

136. *See id.*

137. In 1985, President Reagan issued EO 12,498, once again addressing the need to reduce the burdens of “existing and future regulations.” It created a requirement that agencies should annually state their regulatory policies, goals, and objectives for the coming years, including “information concerning all significant regulatory actions underway or planned.” Exec. Order No. 12,498, § 1, 50 Fed. Reg. 1036 (Jan. 4, 1985). In 1992, President Bush announced in his State of the Union Address a 90-day moratorium on new regulation, and a review of federal regulations, which was then directed to agencies via a memorandum on the same day. The memorandum defines the standards for review, mirroring much of the process applicable to ex ante RIA under EO 12,291. Neil R. Eisner et al., *Federal Agency Reviews of Existing Regulations*, 48 ADMIN. L. REV. (AM. BAR ASS’N) 139, 142 (1996). President Clinton followed the same approach and mandated another one-time review effort of existing regulations via memorandum issued to federal agencies in 1995. Hahn, *supra* note 76, at 887.

achieving the regulatory objectives, less burdensome, or in greater alignment with the President's priorities."¹³⁸

President Obama supplemented EO 12,866 with three additional EOs, all with rules for retrospective review of existing regulations.¹³⁹ Like EO 12,866, EO 13,563 dedicates one section to what it calls "Retrospective Analysis of Existing Rules."¹⁴⁰ By reaffirming the provision in section 5 of EO 12,866, President Obama signaled that at least some agencies had not complied with it so far, requiring them again to submit to OIRA "a preliminary plan . . . under which the agency will periodically review its existing regulations . . ." ¹⁴¹ In the following year, President Obama issued EO 13,610, on "Identifying and Reducing Regulatory Burdens."¹⁴² This new EO added to the ex post RIA system a provision on public participation, and created a complementary duty requiring agencies to report semiannually to OIRA "on the status of their retrospective review efforts,"¹⁴³ describing "progress, anticipated accomplishments, and proposed timelines for relevant actions . . ." ¹⁴⁴ EO 13,610 also stipulated in section 3 a set of factors that agencies should consider when setting priorities and selecting rules for review.¹⁴⁵ OIRA has issued a series of memoranda pressing

138. Exec. Order No. 12,866, § 5(a), 58 Fed. Reg. 51,735 (Sep. 30, 1993). The goal of such review is defined in the same provision as "to determine whether any such regulations should be modified or eliminated so as to make the agency's regulatory program more effective in achieving the regulatory objectives, less burdensome, or in greater alignment with the President's priorities and the principles set forth in this Executive Order."

139. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011); Exec. Order No. 13,579, 76 Fed. Reg. 41,585 (Jul. 11, 2011); Exec. Order No. 13,610, 77 Fed. Reg. 28,469 (May 10 2012).

140. Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

141. *Id.* at § 6(b). The provision announces the same goal of the review "to determine whether any such regulations should be modified, streamlined, expanded, or repealed so as to make the agency's regulatory program more effective or less burdensome in achieving the regulatory objectives." *Id.* The other operational provision in section 6—this one original—directs agencies to release "[s]uch retrospective analyses, including supporting data, . . . online whenever possible." *Id.* at § 6(a).

142. Exec. Order No. 13,610, 77 Fed. Reg. 28,469 (May 10, 2012). EO 13,610 renames "review of existing regulations" as "retrospective review." The same overall purpose is reaffirmed: "to conduct retrospective analyses of existing rules to examine whether they remain justified and whether they should be modified or streamlined in light of changed circumstances, including the rise of new technologies." *Id.* at § 1.

143. *Id.* at §§ 3-4.

144. *Id.* at §§ 2, 4. EO 13,610 also requires that such semiannual reports be made available to the public, as well as the "retrospective analyses of regulations, including supporting data"—the latter, "wherever practicable." *Id.*

145. The factors are: (a) reviews that will "produce significant quantifiable monetary savings or significant quantifiable reductions in paperwork burdens while protecting public health, welfare, safety, and our environment;" (b) reviews that will "reduce unjustified regulatory burdens or simplify or harmonize regulatory requirements imposed on small business;" (c) reforms that would make "significant progress in reducing those burdens while

the agencies to identify existing rules and conduct reviews, but OIRA has not yet issued a full guideline document for ex post RIA akin to Circular A-4 for ex ante RIA.¹⁴⁶

In addition to presidents using their executive powers to promote ex post RIA in the U.S., Congress has also created statutory ex post evaluation requirements. For example, the Regulatory Flexibility Act (RFA) provisions on periodic regulatory review require that every regulation with a significant economic impact on a substantial number of small entities must undergo a review within ten years of being issued.¹⁴⁷ The Paperwork Reduction Act (PRA) allowed any interested party to request that OMB review an existing information collection requirement, which could lead to a “remedial” action by OMB and the agency.¹⁴⁸ Also, the PRA called for new regulations to have their information collection requirements reviewed every three years after initial approval; based on the review report, OMB can approve or disapprove the extension.¹⁴⁹ The Unfunded Mandates Act (UMRA) also has a provision regarding review of existing regulations, although with a provisional nature.¹⁵⁰ Several specific laws also require periodic reviews of past policies: examples include the five year reviews of national ambient air quality standards in the CAA, and the six year reviews of drinking water quality standards in the Safe Drinking Water Act (SDWA).¹⁵¹

protecting public health, welfare, safety, and our environment;” and (d) “consideration to the cumulative effects of agency regulations, including cumulative burdens.” *Id.* at § 3.

146. Coglianese, *supra* note 42, at 61-62; see also Cary Coglianese, *Empirical Analysis and Administrative Law*, 2002 UNIV. ILL. L. REV. 1111, 62 (2002).

147. 5 U.S.C. § 610(a) (“[t]he purpose of the review shall be to determine whether such rules should be continued without change, or should be amended or rescinded, consistent with the stated objectives of applicable statutes, to minimize any significant economic impact of the rules upon a substantial number of such small entities.”).

148. 44 U.S.C. §§ 3507(g)-(h)(1) (2000).

149. *Id.*

150. Title III of the Unfunded Mandates Act of 1995 (UMRA) addresses “Review of Federal Mandates,” granting the Advisory Commission on Intergovernmental Relations powers to investigate and review the role and impact of existing Federal mandates. As a result of such review—which appears in the Act to be a one-time analysis—the Commission may make a recommendation for “suspending, on a temporary basis, Federal mandates which are not vital to public health and safety and which compound the fiscal difficulties of State, local, and tribal governments, including recommendations for triggering such suspension.” 2 U.S.C. § 1552(a)(3)(d) (1995).

151. 42 U.S.C. § 7409(d) (Clean Air Act provision for NAAQS to be reviewed every five years); 42 U.S.C. § 300g-1(b)(9) (1996) (SDWA provision for six year reviews). The Frank R. Lautenberg Chemical Safety for the 21st Century Act of 2016, amending the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2601 et seq., now calls for periodic reviews of policies every five years. Pub. L. 114-182 (June 22, 2016), amending TSCA to insert section 26(l), to be codified at 15 U.S.C. § 2625(l). The Telecommunications Act of 1996 calls for biennial reviews by the Federal Communications Commission. Robert Hahn et al., *Assessing the Quality of Regulatory Impact Analyses*, 23 HARV. J. OF LAW & PUB. POL’Y 889 (2000).

At least since 1996, Congress began to include in appropriations legislation a requirement directing OMB to annually submit reports containing “estimates of the total annual costs and benefits of Federal Regulatory programs, including quantitative and non-quantitative measures of regulatory costs and benefits.”¹⁵² Initially, the requirement also stipulated that OMB should include in its report “recommendations from the Director . . . to reform or eliminate any Federal regulatory program or program element that is inefficient, ineffective, or is not a sound use of the Nations’ resources.”¹⁵³ The provisions were annually renewed in appropriations legislation until, in 2001, it became a permanent feature of what is now known as the Regulatory Right-to-Know Act.¹⁵⁴ In 2012, Congress passed the Consolidated Appropriations Act, which also requires OMB to include in its annual report to Congress information on agency implementation of EO 13,563; in particular, it requires OMB to identify “existing regulations that have been reviewed and determined to be outmoded, ineffective, and excessively burdensome.”¹⁵⁵

Following the same pattern of diffusion of *ex ante* RIA, U.S. states have also adopted requirements for periodic *ex post* reviews of existing regulations.¹⁵⁶ The 1981 edition of the Model State Administrative Procedure Act (MSAPA) suggests a provision requiring periodic review of all agency regulations in no longer than seven years.¹⁵⁷ In 2000, Robert Hahn reported that nearly one-third

152. OFFICE OF INFO. & REGULATORY AFFAIRS, 1997 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS (1997) [hereinafter OIRA, 1997 REPORT].

153. Treasury, Postal Services and General Government Appropriations Act of 1997, § 645, Pub. L. No. 104-208, 110 Stat. 3009 (codified as amended in 28 U.S.C. § 2241 (2008)).

154. Treasury and General Government Appropriations Act of 1998, § 625, Pub. L. No. 105-277, 112 Stat. 2681 (1998); Treasury and General Government Appropriations Act of 2001, § 624, Pub. L. No. 106-554, 115 Stat. 514 (2001) (“[f]or the calendar year 2002 and each year thereafter...”). Starting in 1999, the language used in the two provisions changed: regarding the recommendations for reform, the new statute directed OMB to only include in its report “recommendations for reform.” *Id.*; Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1999, Pub. L. No. 105-227, §§ 683(a)(1)-(3), 112 Stat. 2681 (1999) (requiring that in the accounting statement and associated report submitted by OIRA there should be “recommendations for reform.”). Section 638(a)(1) became “an estimate of the total annual costs and benefits (including quantifiable and non-quantifiable effects) of Federal rules and paperwork, to the extent feasible: (A) in the aggregate; (B) by agency and agency program; and (C) by major rule.” *Id.*

155. Consolidated Appropriations Act of 2012, Pub. L. 112-74, 125 Stat. 786; OFFICE OF INFO. & REGULATORY AFFAIRS, 2012 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 56 (2013) [hereinafter OIRA, 2012 REPORT].

156. See SCHWARTZ, *supra* note 107, at 46; Hahn, *supra* note 76. See *infra* Section IV.

157. Interestingly, the 2010 edition does not have the same provision. The 1981 version was substituted for another rule creating the possibility of periodic review of agency regulations by a legislative committee. NAT’L CONFERENCE OF COMM’RS ON UNIF. STATE LAWS, *supra* note 107; SCHWARTZ, *supra* note 107, at 34, 37, 115.

of the states had adopted comprehensive review requirements of all existing regulations.¹⁵⁸ The extensive analysis conducted in 2010 by Jason Schwartz of the Institute for Policy Integrity found thirty states in which agencies were either encouraged or required to reevaluate their existing regulations periodically.¹⁵⁹ The trigger for review in these systems is the passage of time from the initial date of when an agency issues a regulation, with the selection of rules to review including, in many states, all regulations.¹⁶⁰

B. Ex Post RIA Beyond the U.S.

As with ex ante RIA, ex post RIA has also become a global element of regulatory governance. In 2012 OECD published a new set of recommendations from its Council on Regulatory Policy and Governance.¹⁶¹ Along with recommending adoption of ex ante RIA, it called for member countries to “[c]onduct systematic programme reviews of the stock of significant regulation against clear defined policy goals, including consideration of costs and benefits, to ensure that regulations remain up to date, cost justified, cost effective and consistent, and deliver the intended policy objectives.”¹⁶² It directed countries to do this by “[m]aintain[ing] a regulatory management system, including both ex ante assessment and ex post evaluation as key parts of evidence-based decision making.”¹⁶³

158. Hahn, *supra* note 76, at 874, 876 (the study relied on interviews and survey data, sometimes with only one response per state).

159. SCHWARTZ, *supra* note 107, at 86. Another study, published in 2016, found twenty-five states that enacted requirements to review existing regulations, from 2006 through 2013. See Stuart Shapiro, Debra Borie-Holtz & Ian Markey, *Retrospective Review in Four States*, 39 REG. 32 (2016) (narrating the recent history and reporting interview data on the adoption and implementation of review of existing regulations in four states: Delaware, Nevada, Florida, and Rhode Island).

160. SCHWARTZ, *supra* note 107, at 115-123.

161. ORG. FOR ECON. CO-OPERATION & DEV., 2012 OECD RECOMMENDATION OF THE COUNCIL ON REGULATORY POLICY GOVERNANCE 3 (2012) [hereinafter OECD, 2012 RECOMMENDATION] (building upon the 1997 OECD Report on Regulatory Reform, the 2005 Guiding Principles for Regulatory Quality and Performance, the 2005 APEC-OECD Integrated Checklist for Regulatory Reform, and the 2009 Recommendation of the Council on Competition Assessment).

162. *Id.* at 4.

163. *Id.* at 6. OECD also said that “[t]he use of a permanent review mechanism should be considered for inclusion in rules, such as through review clauses in primary laws and sunseting of subordinate legislation.” *Id.* at 12. The 2012 Recommendation builds on the 1995 Recommendation, in which no mention to ex post RIA existed. See ORG. FOR ECON. CO-OPERATION & DEV., RECOMMENDATION OF THE COUNCIL ON IMPROVING THE QUALITY OF GOVERNMENT REGULATION (1995). It also supplements the 2005 OECD Guiding Principles for Regulatory Quality and Performance, which already suggested that member countries “[a]ssess impacts and review regulations systematically to ensure that they meet their intended objectives efficiently and effectively in a changing and complex economic and social environment” ORG. FOR ECON. CO-OPERATION & DEV., OECD GUIDING PRINCIPLES FOR REGULATORY QUALITY AND PERFORMANCE 14 (2005). Synthesizing 10 years of work on

OECD reported that by 2011, twenty-four of its member countries had mandatory periodic evaluation requirements of existing regulations.¹⁶⁴ Of the jurisdictions that have adopted ex post RIA, three systems have a distinct level of sophistication and detail: the U.K., the EU, and Australia.¹⁶⁵

1. United Kingdom

Initially influenced by the U.S. RIA system, the U.K. IA system eventually outpaced its American archetype in its ex post IA framework.¹⁶⁶ From the initial phase of development in the mid-1980s, the U.K. IA system followed a dual approach, targeting both the flow of new regulations and the stock of existing regulations.¹⁶⁷ To address the first, the central government developed the Compliance Cost Assessment (CCA).¹⁶⁸ The CCA was later transformed into the U.K. RIA with the launch of the Better Regulation Initiative in 1998, and rebranded in 2007 as simply “Impact Assessment.”¹⁶⁹ On the side of existing

regulatory reform, OECD published in 2011 a report identifying ex post evaluation as one of the essential tools of regulatory policy alongside ex ante RIA. ORG. FOR ECON. CO-OPERATION & DEV., REGULATORY POLICY AND GOVERNANCE: SUPPORTING ECONOMIC GROWTH AND SERVING THE PUBLIC INTEREST (2011) [hereinafter OECD, SUPPORTING ECONOMIC GROWTH].

164. OECD, SUPPORTING ECONOMIC GROWTH, *supra* note 163, at 31. In 2015, OECD reported that the number was 20 countries plus the European Commission *see* OECD, POLICY OUTLOOK, *supra* note 39; *see infra* Section III, for observations about the methodology of the study.

165. *See infra* Section III.

166. HOUSE OF COMMONS, LIFTING THE BURDEN, 1985, Cmnd. 9571, at 2-3 (UK) [hereinafter HOUSE OF COMMONS, LIFTING THE BURDEN] (“[w]e have considered carefully the work done in other countries, in particular in the U.S.A.”). Comparisons with the U.S. regulatory policy appeared in the other reports of the time, such as in a 1986 White Paper:

The secret of the American experience undoubtedly lies in a more entrepreneurial society. Yet that is not all. If we examine their economy we will see that individuals are far less restricted if they wish to work for themselves, to start a new business, or to employ people. They enjoy a freedom from regulations foreign to most Europeans. Are they too free, or are we too regulated?

HOUSE OF COMMONS, BUILDING BUSINESSES . . . NOT BARRIERS, 1986, Cmnd. 9794, at 1 (UK) [hereinafter HOUSE OF COMMONS, BUILDING BUSINESSES].

167. HOUSE OF COMMONS, LIFTING THE BURDEN, *supra* note 166, at 3.

168. Since the inception of CCA, it had some requirements aimed at enabling a future review of a new proposed regulation to which the CCA applied. *See* HOUSE OF COMMONS, BUILDING BUSINESSES, *supra* note 166, at 12 (stipulating as one of elements of the CCA the clarification of “what steps can be taken to measure the effectiveness of the new regulation in meeting its objectives?”). This was accompanied by a prescription regarding (partial) monitoring, directing departments to “keep adequate records of the effects of regulations—old as well as new—on business.” *Id.* at 72. The necessary integration between ex ante and ex post IA was consolidated in further guidance documents. *See* UK HOUSE OF LORDS, THE MANAGEMENT OF SECONDARY LEGISLATION, 2006, HL 149-I, at 13 (UK) (proposing a policy cycle approach to integrated ex ante and ex post IA, and mentioning that officials should “use [ex ante] Impact Assessment of the starting point for the [post-implementation] review”).

169. NAT’L AUDIT OFFICE, POST IMPLEMENTATION REVIEW OF STATUTORY INSTRUMENTS: ANALYSIS OF THE EXTENT OF REVIEW BY GOVERNMENT DEPARTMENTS 7 (2009).

regulations, reform initiatives evolved from ad hoc to a sophisticated program of evaluation and reform with two distinct components. One aimed at reviewing the stock of existing regulations, often organized by sectors of policy themes, with the purpose of reducing compliance costs by repealing or improving rules (leading to the creation of an ongoing program called Cutting Red Tape).¹⁷⁰ The second component of reviewing rules included planned ex post evaluations—known as post-implementation reviews (PIR).¹⁷¹ PIRs would take place after a period of implementation of new proposed regulations in order to measure their performance against goals and decision criteria stipulated in ex ante IAs.¹⁷² After 2011, every regulation imposing regulatory burdens on businesses or civil society had to contain either a sunset or a review clause—both triggering a PIR.¹⁷³ The government has published detailed guidelines covering the method PIRs must follow.¹⁷⁴

There is also ex post evaluation of primary legislation in the U.K.—called post-legislative scrutiny (PLS).¹⁷⁵ In 2001, the Regulatory Reform Act passed by Parliament required legislative proposals to include a description of the “burdens which the existing law . . . has the effect of imposing.”¹⁷⁶ In 2004, the House of

170. HOUSE OF COMMONS, LIFTING THE BURDEN, *supra* note 166, at 1; ROLF G. ALTER ET AL., FROM RED TAPE TO SMART TAPE: ADMINISTRATIVE SIMPLIFICATION IN OECD COUNTRIES 197 (2003); HOUSE OF COMMONS, BUILDING BUSINESSES, *supra* note 166, at 4; HOUSE OF COMMONS, RELEASING ENTERPRISE, 1988, Cm. 512, AT 1 (UK). Starting in 1988, the government committed to adopting a more systematic review of the stock of existing regulations, which would take place as a rolling annual program. *Id.* at 1; *see* HM GOVT, REDUCING REGULATION MADE SIMPLE 13 (2010) (UK) (mentioning the adopting of thematic reviews); NAT'L AUDIT OFFICE, DELIVERING REGULATORY REFORM 29 (2011) (UK) (chronicling the creation of the first online platform for ongoing review of existing rules based on public input—initially called “Your Freedom”).

171. *See* ALTER ET AL., *supra* note 170.

172. Since at least 2003, the RIA guidelines mention the policy cycle approach and underscore necessary links between ex ante and ex post RIA (such as the importance of monitoring and the feedback of the resulting data into the “policy making process”). REGULATORY IMPACT UNIT, BETTER POLICY MAKING: A GUIDE TO REGULATORY IMPACT ASSESSMENT 29 (2003). These developments led OECD to consider the U.K. in the same year a “primary example of the increasing international emphasis on regulatory quality.” ALTER ET AL., *supra* note 170, at 196.

173. BETTER REGULATION TASK FORCE, REGULATION—LESS IS MORE 7 (2005). HM GOVT, *supra* note 170, at 11. In 2015, PIR gained statutory basis with the Small Business, Enterprise, and Employment Act 2015, c. 26.

174. The guidelines are stipulated in the Magenta Book, which is applicable to evaluation of other policy decisions and programs. HM TREASURY, THE MAGENTA BOOK: GUIDANCE FOR EVALUATION 11 (2011).

175. U.K. DEPT FOR BUS. INNOVATION & SKILLS, CLARIFYING THE RELATIONSHIP BETWEEN POLICY EVALUATION, POST-LEGISLATIVE SCRUTINY AND POST-IMPLEMENTATION REVIEW (2010).

176. Regulatory Reform Act 2001, ch. 6 § (2)(a). Periodic review of existing and future reviews of new legislation were considered in the U.K. since the early 1990s. HOUSE OF LORDS, PARLIAMENT & THE LEGISLATIVE PROCESS, Report, 2003-4, HL 173, at 8 (UK) (also

Lords published a report acknowledging its co-responsibility in making sure legislation was “fit for purpose.”¹⁷⁷ For achieving this goal, it proposed the adoption of PLS, which would be triggered after no longer than six years of implementation, by a review clause included in every piece of legislation.¹⁷⁸ The same policy cycle approach that influenced the design of PIR also inspired the framing of PLS by Parliament, which saw PLS as a complementary tool to pre-legislative scrutiny, and pre-legislative scrutiny as a facilitator of PLS.¹⁷⁹ Based on current guidelines, after three to five years after enactment of an Act of Parliament, the department responsible for implementation must submit a memorandum with the results of a preliminary ex post assessment of its performance.¹⁸⁰ Based on this report, a committee from Parliament decides whether to conduct a full PLS.¹⁸¹

2. European Union

Since its early years, the EU RIA program also reflected a concern for measuring the performance of existing regulations.¹⁸² Ex ante IA evolved in the European Commission from the Business Impact Assessment adopted in 1986 under the U.K. Presidency and modeled after the U.K. CCA.¹⁸³ During the 1990s, the Commission added new tools aimed at implementing ex post assessment of existing regulation.¹⁸⁴ When IA took its shape in the EU during the early 2000s, it implicitly (and, later, explicitly) followed the policy cycle model, with continual learning via integration of ex ante and ex post IA.¹⁸⁵ One decisive step in this direction coincided with the

highlighting the integration between ex ante and ex post IA, with PLS being able to work as “a means of assessing the utility of pre-legislative scrutiny). *Id.* at 43.

177. HOUSE OF LORDS, *supra* note 176, at 8 (also highlighting the integration between ex ante and ex post IA, with PLS being able to work as “a means of assessing the utility of pre-legislative scrutiny). *Id.* at 43.

178. *Id.* at 27, 44.

179. LAW COMM’N, POST-LEGISLATIVE SCRUTINY, 2006, Cm. 6945, at 9 (UK).

180. U.K. CABINET OFFICE, GUIDE TO MAKING LEGISLATION 288 (2015).

181. *Id.* at 263.

182. *See* ANDREA RENDA, IMPACT ASSESSMENT IN THE EU: THE STATE OF THE ART AND THE ART OF THE STATE 45 (2006).

183. *Id.* at 45-48. The influence of U.S. RIA was also a factor propelling the Better Regulation movement in the EU. *See* Wiener, *supra* note 108, at 451.

184. Such as the SLIM project (Simplification of the Legislation on the Internal Market), the creation of the BEST (Business Environment Simplification Task Force), in 1997; and the creation of the Business Test Panel in 1998, with the aim of acting as a permanent body for consultation of firms affected by EU regulations. ANDREA RENDA, LAW AND ECONOMICS IN THE RIA WORLD: IMPROVING THE USE OF ECONOMIC ANALYSIS IN PUBLIC POLICY AND LEGISLATION 51 (2011).

185. EUR. COMM’N, *Focus on Results: Strengthening Evaluation of Commission Activities*, at 7, SEC (2000) 1051 final (July 26, 2000) (conveying what would later be

2010 rebranding of the Better Regulation agenda to “Smart Regulation.”¹⁸⁶ Along with the explicit adoption of the policy cycle approach, the Commission announced in the document an increased emphasis on ex post evaluation.¹⁸⁷ The Commission, implementing the new vision, followed the same strategy as adopted in the U.K., of two distinct programs of reviews of existing regulations.¹⁸⁸ The first focused on the flow of new rules by requiring a review or sunset clause in every new proposed regulation, based on which ex post RIA must take place after a period of implementation (planned ex post evaluation); the second created a program of review of the stock of existing regulation.¹⁸⁹

Going beyond the U.K. model, the EU added two new features to its RIA system. For the flow of new regulations (or regulatory amendments), the EU added a requirement called the “evaluate first principle,” which links the new rule to a prior ex post RIA of the existing rule being revised.¹⁹⁰ For the stock of existing rules, the Commission created the Regulatory Fitness and Performance Program (REFIT), which included two types of review: evaluation

consolidated and made mandatory as the “evaluate first principle” and mentioning that “[a]s a rule, the preparation of proposals with budgetary and resource implications should include information on: . . . lessons learned from any past intervention, . . . ; plan for monitoring and evaluation during the course of the intervention”). In 2012, with the REFIT Program: “the evaluation process could be designed alongside the policy itself with better monitoring and reporting.” EUR. COMM’N, *EU Regulatory Fitness*, at 7, COM (2012) 746 final (Dec. 12, 2012) [hereinafter EC, *EU Regulatory Fitness*].

186. EC, *Smart Regulation*, *supra* note 22.

187. *Id.* In this key white paper, the Commission said: “[s]mart regulation policy will therefore attach greater importance than before to evaluating the functioning and effectiveness of existing legislation.” *Id.* at 3.

188. See EC, *Better Regulation Guidelines*, *supra* note 109, at 30, 37; see also *supra* notes 176 and 177.

189. See *id.* (“[l]egislative proposals should also foresee when, how and on what basis legislation will be evaluated in the future”); EUR. COMM’N, *BETTER REGULATION TOOLBOX 260* (2015) [hereinafter EC, *BETTER REGULATION TOOLBOX*]. The requirement is less stringent than in the U.K. system, where ex post RIA should take place in no longer than five years of implementation. In contrast, Directorate-Generals (DG) have discretion in the EU to stipulate when ex post RIA will take place. DEP’T FOR BUS. INNOVATION & SKILLS, *supra* note 109, at 31, 33. EC, *BETTER REGULATION TOOLBOX 260*. The decision about when to conduct an evaluation must be made at the time of the proposal, i.e., early in the policy cycle: “[l]egislative proposals should also foresee when, how and on what basis legislation will be evaluated in the future.” By not specifying limits and guidance to this decision, the guidelines give discretion to each DG to define when ex post RIA should take place. The guidelines also mention the use of sunset clauses as a possibility (“may be used”). EC, *Better Regulation Guidelines*, *supra* note 109, at 37.

190. Also differently from the U.K., the EU system describes not only the methodological details of evaluations, but also the procedure that must be followed. See EC, *Smart Regulation*, *supra* note 22, at 6; EC, *Better Regulation Guidelines*, *supra* note 109, at VI. There is a specific guideline document covering the prescribed methods for evaluations. EUR. COMM’N, *EVALSED SOURCEBOOK: METHOD AND TECHNIQUES* (2013).

and cutting red tape measures.¹⁹¹ Moreover, within the category of evaluation, it created three different species: evaluation (of individual rules), fitness checks (of a thematic body of rules), and cumulative cost studies (usually focusing on a specific industry sector).¹⁹²

Also in 2010, when the Commission formalized the adoption of the REFIT Program, the European Parliament created its Directorate for Impact Assessment and European Added Value (Directorate).¹⁹³ The new Directorate mission was defined as “enhanc[ing] Parliament’s capacity to undertake scrutiny and oversight of the executive, particularly through ex ante and ex post evaluation of EU legislation.”¹⁹⁴ Now under the umbrella of the European Parliamentary Research Service, one of the services corresponding to units of the former Directorate is aimed at “[e]valuating the results of existing European legislation.”¹⁹⁵ The Directorate issued succinct procedural guidelines for conducting supplemental ex ante IA, but not for ex post evaluations.¹⁹⁶

3. Australia

Beyond the U.S. and Europe, Australia gained the reputation of a having a strong RIA system, considered by OECD as the member country with “the most developed system [of ex post evaluation] in both primary and subordinate legislation.”¹⁹⁷ Ex ante RIA was adopted in Australia in 1985.¹⁹⁸ Three decades later, the Australian RIA system had evolved to adopt a multi-track

191. EC, *EU Regulatory Fitness*, *supra* note 185. Within cutting red tape measures, the REFIT Program includes two other sub-categories: studies and “legislative initiatives”—the latter include “consolidation, simplification, recast, and codification.” EC, *BETTER REGULATION TOOLBOX*, *supra* note 189, at 33.

192. EC, *EU Regulatory Fitness*, *supra* note 185.

193. The creation of the Directorate for Impact Assessment and European Added Value was the Parliament’s institutional solution to fulfilling its obligations under the 2003 Inter-Institutional Agreement on Better Law-Making signed with the Commission and the Council. See EUR. PARLIAMENT RESEARCH SERV., *EUROPEAN PARLIAMENT WORK IN THE FIELDS OF EX-ANTE IMPACT ASSESSMENT AND EUROPEAN ADDED VALUE: ACTIVITY REPORT FOR JUNE 2012 – JUNE 2014*, at 5 (2014).

194. EUR. PARLIAMENT RESEARCH SERV., *IMPACT ASSESSMENT AND EUROPEAN ADDED VALUE: DIRECTORATE C* (2015), http://www.europarl.europa.eu/EPRS/Welcome_to_EPRS-Dir_C-Mar2015.pdf [hereinafter EPRS, *IMPACT ASSESSMENT AND EUROPEAN ADDED VALUE*]

195. *European Parliament Research Service*, EUR. PARLIAMENT, <http://www.europarl.europa.eu/atyourservice/en/20150201PVL00031/European-Parliamentary-Research-Service> (last visited Jan. 21, 2017).

196. See EPRS, *IMPACT ASSESSMENT AND EUROPEAN ADDED VALUE*, *supra* note 194, at 9.

197. OECD, *POLICY OUTLOOK*, *supra* note 39, at 129.

198. AUSTL. PRODUCTIVITY COMM’N, *IDENTIFYING AND EVALUATING REGULATION REFORMS: PRODUCTIVITY COMMISSION RESEARCH REPORT XII* (2011).

approach addressing both the flow of new regulation and the stock of existing regulations.¹⁹⁹ One of the ten principles disciplining the work of Australian policy makers stipulates that “[a]ll regulation must be periodically reviewed to test its continuing relevance.”²⁰⁰ For new regulations, a PIR must be completed within a period of no longer than five years (in some cases, two years) of rule implementation.²⁰¹ All regulatory changes with a substantial or widespread impact on the Australian economy must undergo a PIR within five years of implementation.²⁰² The system also has links integrating ex ante with ex post RIA, representing the same idea of a policy cycle: the findings from a PIR that concludes that a regulatory change is necessary are used to inform a decision about, and incorporated into a new ex ante RIA of, a proposed regulatory revision.²⁰³ In addition, an ex ante RIA should plan and make arrangements enabling a future ex post evaluation.²⁰⁴ As to the stock of existing regulations, the Australian system promotes “stock-takes” of regulation by either relying on public input to select rules for review or choosing a specific industry sector or theme to have all regulations evaluated.²⁰⁵

199. The principle is stated in a 2011 report by the Australian Productivity Commission:

[t]he regulatory system should ensure that new regulation and the existing ‘stock’ are appropriate, effective and efficient. This requires the robust vetting of proposed regulation; ‘fine tuning’ of existing regulations and selecting key areas for reform. ... There is a range of approaches to reviewing existing regulation and identifying necessary reforms. Some are more ‘routine’, making incremental improvements through ongoing management of the stock; some involve reviews that are programmed, and some are more ad-hoc. Designed for different purposes, the techniques within these three categories can complement each other, through their usefulness varies.

Id. at X; see Lorenzo Allio, *Ex Post Evaluation of Regulation: An Overview of the Notion and of International Practices*, in REGULATORY POLICY IN PERSPECTIVE: A READER’S COMPANION TO THE OECD REGULATORY POLICY OUTLOOK 2015 at 191 (2015).

200. DEP’T OF THE PRIME MINISTER & CABINET, THE AUSTRALIAN GOVERNMENT GUIDE TO REGULATION 2 (2014).

201. OECD, POLICY OUTLOOK, *supra* note 39, at 129.

202. OFFICE OF BEST PRACTICE REGULATION, POST-IMPLEMENTATION REVIEWS: GUIDANCE NOTICE 2 (2016) (also mentioning that a PIR is required if a regulatory change that is not minor nor “machinery in nature” had not been preceded by an ex ante RIA). If the ex ante RIA prepared for a regulation is considered inadequate by the Office of Best Practice Regulation (OBPR), a PIR must be completed within two years instead of five. *Id.* at 4.

203. *Id.* at 7.

204. OFFICE OF BEST PRACTICE REGULATION, USER GUIDE TO THE AUSTRALIAN GOVERNMENT GUIDE TO REGULATION 7 (2016). One of the elements OBPR assesses when overseeing ex ante RIA reports (RIS) is whether “it ha[s] a clear implementation and evaluation plan.” *Id.* at 11. Implementation and evaluation also correspond to the topic of one of the seven RIS questions agencies must address in ex ante RIAs, according to the guidelines. See DEP’T OF THE PRIME MINISTER & CABINET, *supra* note 200, at 5.

205. AUSTL. PRODUCTIVITY COMM’N, *supra* note 198, at XXVIII (referring to this approach as “Principle-based reviews strategies”).

C. Ex Post EIA, CBA, and RA

EIA systems have seen some tentative requirements for ex post evaluation, but in a less systematized form when compared to RIA. In the U.S., for instance, NEPA directs CEQ to “review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act.”²⁰⁶ Still, this duty has not been taken by CEQ as a mandate to conduct or require ex post EIA.²⁰⁷ Neither NEPA nor the CEQ guidelines require agencies to plan and conduct a future review of ex ante EIAs in light of new information gathered from implementing the action that triggered it.²⁰⁸ Nevertheless, the topic has been adopted by the EIA epistemic community, generating significant literature on what is called follow-up, post-implementation audit of EIAs, and adaptive environmental assessment and management.²⁰⁹ Commentators

206. 42 U.S.C. § 204(3). Also, NEPA requires the preparation and submission to Congress of an annual Environmental Quality Report including “a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development, and utilization of natural resources; and . . . a program for remedying the deficiencies of existing programs and activities.” *Id.* at §§ 201(4)-(5).

207. Under EO 13,563, CEQ implemented a series of NEPA pilots, but these were not meant to conduct or promote ex post evaluation of each EIA. Rather, the pilots were meant to (a) review CEQ’s own NEPA regulations, and (b) review the evaluation of EIAs by EPA under Clean Air Act section 309. See COUNCIL ON ENVTL. QUALITY, COUNCIL ON ENVIRONMENTAL QUALITY PLAN FOR RETROSPECTIVE REVIEW OF EXISTING REGULATIONS (2011). A partial move in the direction of ex post EIA is the requirement issued by CEQ in 2010 and 2011, emphasizing the need for better post-decision monitoring when an agency issues a Finding of No Significant Impact (FONSI) and periodic reviews of categorical exclusions. *Id.* at 3.

208. See Farber, *supra* note 17.

209. On follow-up, see ANGUS MORRISON-SAUNDERS & JOS ARTS, *ASSESSING IMPACT: HANDBOOK OF EIA AND SEA FOLLOW-UP* (2004) [hereinafter MORRISON-SAUNDERS & ARTS, *HANDBOOK*]. On studies of post-implementation audits (not framed and treated under the umbrella of follow-up measures), usually focusing on the accuracy of predictions contained in ex ante EIAs, see Angus Morrison-Saunders & John Bailey, *Exploring the EIA/Environmental Management Relationship: Follow-up for Performance Evaluation* (2000) (presented at IAIA '00 Back to the Future conference, June 19-23, Hong Kong), <http://researchrepository.murdoch.edu.au/2443/>; see also Ronald Bisset, *Problems and Issues in the Implementation of EIA Audits*, 1 ENVTL. IMPACT ASSESSMENT REV. 379, 380 (1980) (identifying the ex post measurement of accuracy against ex ante predictions as one of the approaches to assessing the effectiveness of EIA); Ralf Buckley, *Environmental audit: review and guidelines*, 7 ENVTL. PLAN. L.J. 127 (1990); Ralf Buckley, *Auditing the Precision and Accuracy of Environmental Impact Predictions in Australia*, 18 ENVTL. MONIT. ASSESSMENT 1-23 (1991) (providing an example of results from multi-projects audit, assessing the accuracy of predictions in light of new information from monitoring). On adaptive environmental assessment and management, see INT’L INST. FOR APPLIED SYSTEMS ANALYSIS, *ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT* (Crawford S. Holling ed., 1978); Craig R. Allen et al., *Adaptive Management for a Turbulent Future*, 92 J. ENVTL. MGMT. 1339, 1339-45 (2011); Bernard T. Bormann et al., *Adaptive management*, in *ECOLOGICAL STEWARDSHIP: A COMMON REFERENCE FOR ECOSYSTEM MANAGEMENT* 505-34 (W.T. Sexton, A.J. Malk, R.C. Szaro, N.C. Johnson 1999

emphasize the role of ex post EIA audits in promoting learning, with the potential for improving the accuracy of future predictions.²¹⁰ The main perception, however, is that lack of institutionalized follow-up in EIA frameworks has been a systemic weakness, even though some jurisdictions have incorporated follow-up requirements in their EIA systems.²¹¹ One factor that may explain the relative lack of adoption of ex post EIA is that the typical policy decision to which EIA applies—usually involving a project, e.g., building a highway or permitting the installation of a facility—means that making changes after it has been constructed is often costly or moot.²¹²

There tend to be few autonomous and systematic ex post requirements of CBA for infrastructure projects; these analyses tend to be reviewed, if at all, through ex post RIA and ex post EIA. One prominent example of ex post CBA applied to an entire regulatory program—a kind of programmatic ex post RIA—is the requirement included in section 812 of the 1990 Amendments to the Clean Air Act (codified at 42 U.S.C. § 312), requiring EPA to conduct and report to Congress a comprehensive analysis of the impact of major programs under the CAA on the public health, economy, and environment.²¹³ The law requires EPA to consider “costs, benefits and other effects associated with compliance” with different standards defined under the authority delegated by the CAA.²¹⁴

eds.); DEPT OF THE INTERIOR, ADAPTIVE MANAGEMENT: THE US DEPARTMENT OF THE INTERIOR TECHNICAL GUIDE (2009).

210. Ben Dipper, *Monitoring and Post-auditing in Environmental Impact Assessment: A Review*, 41 J. ENVTL. PLAN. MGMT. 731, 733 (1998); see also Daniel A. Farber, *Bringing Environmental Assessment into the Digital Age*, in TAKING STOCK OF ENVIRONMENTAL ASSESSMENT (Jane Holder and Donald McGillivray ed., 2007) (advocating collection and analysis of past EIAs).

211. See MORRISON-SAUNDERS & ARTS, HANDBOOK, *supra* note 209, at 66, 158, 238-239 (describing the requirements for monitoring and auditing of EIA in Canada, the Netherlands, Western Australia, Hong Kong, and Finland, and for regional planning in the U.K.); Dipper, *supra* note 210, at 735 (reflecting on the consequences of lack of mandatory monitoring requirements by stating that from the project developer’s point of view, it really does not matter if predictions *are* accurate: the developer will suffer no consequences, and all that the developer needs ex ante is educated guesswork). There is some degree of overlap in the literature between follow-up and adaptive environmental management. Usually, follow-up measures are referred to as including monitoring, audit, ex post evaluation, and management activities. See MORRISON-SAUNDERS & ARTS, HANDBOOK, *supra* note 209, at 3; Jos Arts, Paula Caldwell & Angus Morrison-Saunders, *Environmental Impact Assessment Follow-up: Good Practice and Future Directions—Findings from a Workshop at the IAIA 2000 Conference*, 19 IMPACT ASSESSMENT PROJECT APPRAIS. 175-185 (2001).

212. For a list of EISs submitted to EPA with the description of the policy decision to which they apply, see *Environmental Impact Statement (EIS) Database*, U.S. ENVTL. PROT. AGENCY, <https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search> (last visited Jan. 21, 2017).

213. Clean Air Act, Title VIII, § 812(a), 104 Stat. 2399 (1990) (current version at 42 U.S.C. § 312 (2004)).

214. *Id.*

Ex post reviews of RA sometimes occur through statutory periodic reviews of the scientific basis for regulatory standards (as for national ambient air quality standards and drinking water quality standards, discussed above in Section III.A). One requirement that comes close to an ex ante-ex post system for RA is the post-market evaluation of drugs by the U.S. Food and Drug Administration (FDA). In 2007, Congress amended the Federal Food, Drug, and Cosmetic Act to “enhance the post-market authorities of the [FDA].”²¹⁵ The Act, as amended, provides for the possibility of a post-market surveillance system based on performance standards as “rigorous as the ones already developed for premarket review,”²¹⁶ and possibly leading to an obligation to conduct and periodically report on post-approval studies or clinical trials of a drug.²¹⁷ As a result of the post-approval study, FDA might require safety labeling changes, or other risk evaluation and mitigation strategies.

IV. THE STATE OF PLAY OF RETROSPECTIVE REVIEW IN U.S. ENVIRONMENTAL LAW

Observing the formal adoption of retrospective review or ex post RIA requirements is not the same as assessing their actual implementation. There can be a gap between adoption and implementation. Discussing the diffusion of ex ante RIA, Claudio Radaelli called attention to the idea that RIA can sometimes travel lightly and serve different justification logics.²¹⁸ The result can be a common RIA “bottle” but containing different “wines”—or “even no wine at all.”²¹⁹ This assessment has been confirmed by OECD and other studies of diffusion of ex ante RIA.²²⁰ What is true about

215. Federal Food, Drug, and Cosmetic Act, 121 Stat. 823 (2007).

216. *Id.* at § 910(6).

217. *Id.* at § 901(o)(3)(B). The goal of post-approval studies or clinical trials are: “(i) [t]o assess a known serious risk related to the use of the drug involved; (ii) [t]o assess signals of serious risk related to the use of the drug; (iii) [t]o identify an unexpected serious risk when available data indicates the potential for a serious risk.”

218. Claudio M. Radaelli, *Diffusion Without Convergence: How Political Context Shapes the Adoption of Regulatory Impact Assessment*, 12 J. EUR. PUB. POL’Y 924, 924 (2005).

219. *Id.*

220. The adoption-implementation gap issue has been mentioned by several studies. OECD, POLICY OUTLOOK, *supra* note 39, at 103; Radaelli, *supra* note 218; Fabrizio De Francesco, Claudio M. Radaelli & Vera E. Troeger, *Implementing Regulatory Innovations in Europe: the Case of Impact Assessment*, 19 J. EUR. PUB. POL’Y 491 (2012); RENDA, *supra* note 182, at 81. In 2011, OECD itself had reported after surveying the implementation of RIA in member countries: “[e]x ante impact assessment remain a weak area. Nearly all countries are struggling to establish the process so that it is taken seriously by officials and politicians;” but also that “[t]here is growing awareness that this is a key tool.” OECD, SUPPORTING ECONOMIC GROWTH, *supra* note 163, at 112, 122.

ex ante RIA can also be said about ex post IA requirements. Different institutional structures in different jurisdictions make it even harder to assess and compare what has been truly implemented. As with ex ante RIA, different systems of ex post RIA of existing regulations might be designed to work with varied institutions and toward different goals.²²¹

In the case of RIA, it becomes further complicated to compare systems and assess implementation due to the terminological imprecision of the word “review”—often used in normative requirements, oversight bodies, agency reports and academic literature to address different types of regulatory initiatives. As mentioned in Section III, in some systems, as in the U.K., EU, and Australia, there exist different programs within the broad category of reviews of existing regulation. In others, different variations can be conflated under just a single label.²²² “Regulatory review” can mean revision of an existing rule, i.e., a proposed policy change or repeal, with little or no analysis of the past performance of the rule being “reviewed.” In these cases, there might be little or no hindsight and learning. On the other hand, “regulatory review” can also mean a comprehensive ex post evaluation of an existing rule, comparing expected to realized impacts—positive and adverse—before any policy revision is considered.

Where the literature suggests an adoption-implementation gap in ex post RIA, this gap might reflect divergent understandings of what is being implemented under the heading of “ex post RIA” or “evaluation” or “retrospective review.” As noted above, Coglianese and OECD have criticized current practice as incomplete and inadequate.²²³ After trying to make sense of what kinds of “review”

221. Radaelli, *supra* note 218, at 929 (mentioning that RIA might perform different functions in different countries, and could correspond to the “rebranding” of preexisting and partial tools, with purposes that overlap with the most recent approach explicitly directed to reviewing existing regulations—e.g., administrative burden reduction).

222. OECD’s recommendation on ex post RIA attempts to measure more than just one tool or approach to assessing and improving existing regulations, as it calls for member countries to “[c]onduct systematic programme reviews of the stock of significant regulation . . .” OECD, 2012 RECOMMENDATION, *supra* note 161, at 4 (Recommendation 5). Even under Recommendation 1, it specifies that countries should “[m]aintain a regulatory management system, including both *ex ante* impact assessment and *ex post* evaluation as key parts of evidence-based decision making.” *Id.* at 6. Also, under Recommendation 3, it suggests “[c]o-ordinating ex post evaluation for policy revision and for refinement of ex ante methods.” *Id.* at 9. Finally, in Recommendation 5 itself, it uses “review” and “revision” to mean different practices, suggesting that “[t]he methods of Regulatory Impact Analysis should be integrated in programmes for the review and revision of existing regulations.” *Id.* at 12.

223. See Coglianese, *supra* note 42 (finding that retrospective review “is today where prospective analysis was in the 1970s: ad hoc and largely unmanaged.”); OECD, POLICY OUTLOOK, *supra* note 39, at 123 (“ex post evaluation by [U.S.] federal agencies remains patchy and unsystematic.”).

are actually occurring, the general impression from secondary sources is one of low or spotty implementation of ex post RIA.²²⁴ Governments have only partially implemented retrospective review, focusing on revisions to individual existing rules with the goal of cutting administrative burden (red tape).²²⁵ Often it is difficult to determine from survey responses what, if anything, has really been implemented.²²⁶

224. Allio, *supra* note 199, at 196, 221, 240 (“post-implementation evaluations have not yet been systematically implemented in most countries;” “ex post evaluation has remained relatively side-lined;” “systematic ex post evaluation is less common and the number and performance of such reviews are rarely measured systematically;” “very few OECD countries have actually deployed the tool systematically”); ORG. FOR ECON. CO-OPERATION & DEV., ASSESSING PROGRESS IN THE IMPLEMENTATION OF THE 2012 RECOMMENDATION OF THE OECD COUNCIL ON REGULATORY POLICY AND GOVERNANCE 9 (2013) (“few countries are actually doing it systematically;” “some countries have undertaken pilot projects in ex-post assessment, which have not yet been transformed into a systematic approach”); CHRISTIANE ARDNT ET AL., 2015 INDICATORS OF REGULATORY POLICY AND GOVERNANCE: DESIGN, METHODOLOGY AND KEY RESULTS 7 (2015) (“[c]ountries are less advanced in ex post evaluation where only a few countries systematically evaluate the impact of their regulations ex post”); OECD, POLICY OUTLOOK, *supra* note 39, at 112 (“[o]verall, however, very few OECD countries have actually deployed the *ex post* evaluation systematically”).

225. Allio, *supra* note 199, at 200. (“few countries assess whether underlying policy goals of regulation have been achieved, whether any unintended consequences have occurred and whether there is a more efficient solution to achieve the same objective A more frequent practice in OECD countries is partial *ex post* assessments focusing exclusively on regulatory burdens”); OECD, SUPPORTING ECONOMIC GROWTH, *supra* note 163, at 9 (“[a] more frequent practice in OECD countries is partial ex-post assessment, focusing exclusively on regulatory burdens”); OECD, POLICY OUTLOOK, *supra* note 39, at 113-14 (“[m]ost countries have had ex post evaluations based on administrative burden reduction with an assessment of compliance cost using the standard cost model;” “[t]he survey results confirm the findings by Allio (2015) that countries focus on partial *ex post* assessment of regulatory burdens and rarely assess whether underlying policy goals of regulation have been achieved”).

226. This is a problem of survey-based studies on both adoption and implementation of ex post RIA. Sometimes well-intended studies contribute to the lack of clarity on what exactly—and at what level—is being implemented. The OECD 2015 Regulatory Policy Outlook study is based on survey data, including responses from government officials. It proposed to measure, among other variables, systematic implementation of ex post evaluation by OECD member countries. The research design is vulnerable, though, in the validity and accuracy of its findings, because it is not clear if the answers truly measure different aspects of ex post evaluation as defined by OECD itself to mean an analysis of how a regulation has performed. The questionnaire on ex post evaluation uses at least seven different terms referring to ex post evaluation (“ex post evaluations,” “ex post evaluations by RIA,” “major review,” “regular reviews to examine complaints and other problems,” “internal review an evaluation by the regulator,” “reviews of existing regulation,” and “ex post evaluations of existing regulation”). The answers to questions using different terms are aggregated. This is particularly worrisome, as the report itself admits that “[t]he experience of conducting *ex post* evaluation varies considerably across countries and also domestically across different Ministries or agencies within governments” and that “[t]his is in part due to the different interpretations and understanding of what *ex post* evaluation means,” and “there is the opportunity to develop a broader understanding of ex post evaluation among OECD countries.” OECD, POLICY OUTLOOK, *supra* note 39, at 112, 113. Accuracy is also an issue in the study, because responses came from government officials (the study claims that evidence was gathered to verify the answers, but without specifying what evidence it gathered and examined), and also due to the vague character of answers. For example, to the question “do subordinate regulations include automatic evaluation requirements? (3C4b_S)” the responses could be “for some subordinate regulations;” to the question “have ex-post evaluations of

*A. Prior Assessments of the Practice
of Ex Post RIA in the U.S.*

National audit offices have played a major role in investigating and promoting implementation and compliance with RIA systems. In the U.S., the Government Accountability Office (GAO) has since the mid-1990s repeatedly assessed compliance of federal agencies with different ex post RIA requirements, among other analytical evidence-based tools used by federal agencies.²²⁷ In its analysis, GAO also addressed methodological and institutional challenges facing agency practice of ex post RIA explaining its findings.²²⁸ While trying to measure the level and quality of implementation of

existing subordinate regulations been undertaken in the last three years? (3C1-S) the response could be “yes, some” or “yes, frequently.” The same issue is seen in prior questionnaires used to measure adoption of ex post RIA systems; *see* ORG. FOR ECON. CO-OPERATION & DEV., OECD REGULATORY INDICATORS QUESTIONNAIRE 2008 22 (2008) (“periodic ex post evaluation of existing regulation,” “review,” “modification of] specific regulations”).

227. In its first reports of the kind, the focus of GAO’s analysis was agency compliance with the section 610 ex post RIA requirement of the RFA. GOV’T ACCOUNTABILITY OFFICE, REGULATORY FLEXIBILITY ACT: STATUS OF AGENCIES’ COMPLIANCE (1994) [hereinafter GAO, REGULATORY FLEXIBILITY]. In the following two decades, GAO reports addressed ex post RIA under different frameworks, including under the EOs 12,866, 13,563, 13,579, and 13,610. Audit institutions of other countries have also followed GAO’s example and taken on the task of overseeing ex post RIA practice. *See* NAT’L AUDIT OFFICE, POST IMPLEMENTATION REVIEW OF STATUTORY INSTRUMENTS: ANALYSIS OF THE EXTENT OF REVIEW BY GOVERNMENT DEPARTMENTS (2009); NAT’L AUDIT OFFICE, EVALUATION IN GOVERNMENT (2013); NAT’L AUDIT OFFICE, THE BUSINESS IMPACT TARGET: CUTTING THE COST OF REGULATION (2016).

228. On the methodological side, *see* GOV’T ACCOUNTABILITY OFFICE, ENVIRONMENTAL PROTECTION: ASSESSING THE IMPACTS OF EPA’S REGULATIONS THROUGH RETROSPECTIVE STUDIES (1999) [hereinafter GAO, ASSESSING THE IMPACTS] (determining the baseline, sorting out the effects of external sources on the behavior regulated entities, obtaining valid cost data, quantifying benefits, time lag between realization of costs and benefits, use of “black box models” in ex ante studies); GOV’T ACCOUNTABILITY OFFICE, ECONOMIC PERFORMANCE: HIGHLIGHTS OF A WORKSHOP ON ECONOMIC PERFORMANCE MEASURES 13 (2005) [hereinafter GAO, ECONOMIC PERFORMANCE] (lack of methodological guidance, qualitative instead of quantitative measurements of costs or benefits); GOV’T ACCOUNTABILITY OFFICE, REEXAMINING REGULATIONS: OPPORTUNITIES EXIST TO IMPROVE EFFECTIVENESS AND TRANSPARENCY OF RETROSPECTIVE REVIEWS 7, 11 (2007) [hereinafter GAO, REEXAMINING/REVIEWS] (too short timeframe to conduct for mandatory triggers, lack of methodological guidance by OMB/OIRA).

On institutional aspects, *see* GAO, ASSESSING THE IMPACTS (resource constraints, impartiality and authorship); *Id.* at 12 (misaligned incentives to acknowledge shortcomings in regulatory performance); GAO, ECONOMIC PERFORMANCE, at 7 (lack of resources); *Id.* at 35 (lack of time and resources, information and data limitations, overlapping schedules and review factors, scoping too broad, statutory barriers, limited public participation); GOV’T ACCOUNTABILITY OFFICE, FEDERAL RULEMAKING: REGULATORY REVIEW PROCESSES COULD BE ENHANCED (2014) (competing priorities and limited resources, difficulty in obtaining data); *see also* GOV’T ACCOUNTABILITY OFFICE, REEXAMINING REGULATIONS: AGENCIES OFTEN MADE REGULATORY CHANGES, BUT COULD STRENGTHEN LINKAGES TO PERFORMANCE GOALS 14-268 (Apr. 2014) [hereinafter GAO, REEXAMINING/AGENCIES] (finding rule revisions in more than 90% of agencies’ retrospective reviews under EO 13,563, but lack of transparency in the content of ex post RIAs).

ex post RIA requirements, GAO faced the issue of imprecise meaning of “review,” leading to different practices by each agency.²²⁹ Evidence in the reports reveal a track record of either full lack of compliance or the simpler type of regulatory “review,” i.e., cost-cutting revision of existing rules without evidence of a formal ex post analysis of their past performance—something also perceived by other oversight bodies, such as OIRA.²³⁰ OIRA emphasized the broad aims of its lookback effort, despite limited agency cooperation.²³¹ When authentic ex post RIAs were found, GAO’s perception was that agencies followed an ad hoc approach, in particular to selecting which rules to evaluate.²³² The shortcomings found by GAO throughout the years have been compounded by

229. GAO, REEXAMINING/REVIEWS, *supra* note 228, at 1 (“there is no one standard definition for the variety of activities that might be considered retrospective regulatory reviews”).

230. Reviewing the past practice of ex post RIA under the RFA during the 1980s, GAO mentions absence of follow-up actions on the plans for periodic review formulated (sometimes inadequately) by agencies. GAO, REGULATORY FLEXIBILITY, *supra* note 227, at 12. It also reports an analysis conducted by the Small Business Administration that in 1992 requires agencies to submit “a summary of the results of their regulatory reviews.” *Id.* Agencies who responded mentioned follow-up actions adopted after the reviews without specifying whether an ex post review of rule performance had taken place to inform subsequent proposed rule changes. *See id.* at 14-15. In other instances, GAO itself might have contributed to the confusion between review and revisions, such as when in 1997 it published a report measuring revision actions against the normative backdrop of ex post RIA (and without verifying or commenting on whether the revision actions were accompanied by ex post RIA studies). GOV’T ACCOUNTABILITY OFFICE, REGULATORY REFORM: AGENCIES’ EFFORTS TO ELIMINATE AND REVISE RULES YIELD MIXED RESULTS 3 (1997) [hereinafter GAO, REFORM/REVISIONS]. In a 1999 report, GAO cited a report from the Senate Committee on Governmental Affairs mentioning that “review of existing rules, as directed by [EO 12,866], ‘has met with varying degrees of failure. Clearly, getting agencies to review existing rules is much easier said than done.’” GAO, ASSESSING THE IMPACTS, *supra* note 228, at 1. In 2005, GAO reported the feedback from participants of its workshop participants (from government and academia) observing that “few of the set of regulations has ever been looked at to determine whether they have achieved their objectives, what they actually cost, and what their real benefits are. In fact, the participant added, little is known about the impact of regulations once they are adopted.” GAO, ECONOMIC PERFORMANCE, *supra* note 228, at 10; *see also* GOV’T ACCOUNTABILITY OFFICE, REGULATORY REFORM: PRIOR REVIEWS OF FEDERAL REGULATORY PROCESS INITIATIVES REVEAL OPPORTUNITIES FOR IMPROVEMENTS 7 (2005) (“[a]lthough the economic performance of some federal actions is assessed prospectively, few federal actions are monitored for their economic performance retrospectively”).

231. In its 1997 report addressing ex post RIA, GAO mentions a memorandum from OIRA to the heads of federal departments and agencies stating:

It is important to emphasize what the lookback effort is and is not. It is not directed at a simple elimination or expunging of specific regulations from the Code of Federal Regulations. Nor does it envision tinkering with regulatory provisions to consolidate or update provisions. Most of this type of change has already been accomplished, and the additional dividends are unlikely to be significant. Rather, the lookback provided for in the Executive Order speaks to a fundamental reengineering of entire regulatory systems.

GAO, REFORM/REVISIONS, *supra* note 230, at 3.

232. *See, e.g.*, GAO, ECONOMIC PERFORMANCE, *supra* note 228, at 10.

a persistent finding (contained in every GAO report): lack of transparency and publication by federal agencies of the results of the analysis and conclusions of each regulatory review and whether, why, and how to revise existing rules.²³³

Environmental regulation from EPA has received special attention by GAO in its reports on ex post RIA.²³⁴ GAO found that in the early 1980s, EPA had established a rule selection process for review based on comments actively sought from interested groups.²³⁵ Still, no evidence was examined to clarify what practical meaning EPA was attributing to regulatory review.²³⁶ In 1999, GAO published a dedicated report on “Assessing the Impacts of EPA’s Regulations Through Retrospective Studies.”²³⁷ The investigation found that even though EPA had been implementing many rule revisions with the goal of reducing administrative burdens, assessments of the costs and the benefits of EPA’s past regulations had rarely been undertaken.²³⁸ The study also revealed

233. Since its first 1994 report, GAO faced challenges in conducting its analyses of the practice of ex post RIA due to lack of publication of results of such ex post evaluations by agencies. In 1994, for instance, it based its findings predominantly on secondary sources (annual reports by the Small Business Administration on compliance with the RFA requirements). GAO, REGULATORY FLEXIBILITY, *supra* note 227, at 2, 13. Lack of transparency of ex ante RIAs also affected the quality of the few ex post RIA found by GAO. See GAO, ECONOMIC PERFORMANCE, *supra* note 228, at 13 (mentioning that attempts to rerun models used in ex ante analyses were impeded by lack of access to the models or the data used in them). In the comprehensive study of 2007, GAO mentions that agencies reported having conducted 1,300 “retrospective reviews” from 2001 to 2006. Yet, GAO could not compile a “complete tally of all review[s]” that agencies said they had completed because “agencies reported that they did not always document reviews that may have followed more informal review processes.” GAO, REEXAMINING/REVIEWS, *supra* note 228, at 5. For this reason, GAO could not also confirm whether what agencies reported as “retrospective review” truly meant what GAO itself had defined in the report as having the minimum features of an ex post RIA; see *also id.* at 7 (making as one of its recommendation the incorporation of “minimum standards for documenting and reporting review results”); *Id.* at 14 (reporting that most of “discretionary” reviews conducted by agencies are undocumented); *Id.* at 24, 28 (“[a]gencies also reported that they often do not report the results of discretionary reviews at all, if they did not result in a regulatory change;” and “[w]hile some agencies reported the analysis conducted in great detail in review reports, others summarized review analysis in a paragraph or provided no documentation of review analysis at all. Some agencies did not provide detailed reports because they did not conduct detailed analyses”). GAO, ECONOMIC PERFORMANCE, *supra* note 228 (mentioning that the semiannual progress report became the primary vehicle for agencies to report on the progress and results of their retrospective analyses).

234. In its 1994 report, GAO found that EPA was the only agency with a specific RFA compliance record mentioned in all twelve reports from the Small Business Administration on annual compliance of federal agencies with the RFA. GAO, REGULATORY FLEXIBILITY, *supra* note 227, at 3. In a 1997 report, EPA was one of the four agencies investigated. GAO, REFORM/REVISIONS, *supra* note 230, at 2.

235. GAO, REGULATORY FLEXIBILITY, *supra* note 227, at 12.

236. See *id.*

237. GAO, ASSESSING THE IMPACTS, *supra* note 228.

238. See *id.*

lack of systematic adoption of ex post RIA.²³⁹ “Of the 101 economically significant regulations issued by EPA from 1981 through 1998, only five were the subject of retrospective studies,” and all of those were completed between 1997 and 1999.²⁴⁰ From 2001 to 2006, EPA reported to GAO that it conducted only 14 ex post RIAs under RFA section 610.²⁴¹

In 2007, the GAO published its most comprehensive study of the practice of ex post RIA by U.S. federal agencies, analyzing the period from 2001 to 2006.²⁴² In the study, GAO found that EPA had “conducted numerous retrospective reviews of EPA existing regulations and standards” during the time period.²⁴³ In addition to examining agencies’ implementation of retrospective regulatory reviews, it proposed to report “the results of such reviews.”²⁴⁴ Initially, it intended to “provide insights concerning how agencies assess existing regulations,” i.e., ex post evaluation and not simple rule revisions.²⁴⁵ But due to lack of evidence of the analysis undertaken for each review on whether to revise the existing rule with an amendment or repeal, GAO had to rely on interviews.²⁴⁶ In

239. *Id.* at 3.

240. *Id.* at 2. Of non-economically significant rules, the number of retrospective studies was twenty-three in the same period. *Id.* at 3. Compare with GAO, REFORM/REVISIONS, *supra* note 230, at 13 (reporting that EPA had implemented 113 rule revision actions between October 1995 and April 1997). Among the retrospective studies was the one mandated by the Clean Air Act (section 812 of the 1990 amendments). GAO, ASSESSING THE IMPACTS, *supra* note 228, at 3.

241. GAO, REEXAMINING/REVIEWS, *supra* note 228, at 86.

242. *Id.*

243. *Id.* at 86. In the same report, GAO depicts the EPA retrospective review process, informing that after a rule is selected for review, the phase when the review occurs includes the publication of notices of review and request for comments in the Federal Register. It is unclear in the report if by the time such notices are published, the review is still ongoing or is already concluded and the report is published for comments. A search for notice of review on the web site of the Federal Register found only six instances. *Id.*

244. *Id.* at 57. The same issue occurred in the most recent GAO report on “retrospective analysis.” GAO seemed to have accepted that the initiatives reported by agencies in progress reports were all ex post RIAs, and not simply proposed revisions to existing rules without a full ex post analysis of past regulatory performance. See GAO, ASSESSING THE IMPACTS, *supra* note 228, at 9.

245. GAO, REEXAMINING/REVIEWS, *supra* note 228, at 57 (emphasis added).

246. *Id.* The report said: “[o]ur assessment of a sample of agency reports review revealed that, even for some reviews that provided a summary of their analysis, we could not completely determine what information was used and what analysis the agency conducted to form its conclusions” and “the content and detail of agency reporting varied, ranging from detailed reporting to only one-sentence summaries of results.” It still stated that “[s]ome agencies told us that they typically only document and report the results if their reviews result in a regulatory change.” *Id.* at 28. Furthermore, it said that “[b]ecause agencies did not always document discretionary reviews that they conducted, it is not possible to measure the actual frequency with which they resulted in regulatory change.” *Id.* at 32. Finally, “in our review of the Federal Register and Unified Agenda, we were not always able to track retrospective review activities, identify the outcome of the review, or link review results to subsequent follow-up activities, including initiation of rulemaking to modify the rule;” and that “[a]gencies’ reporting of reviews appears largely ineffective.” *Id.* at 44, 50.

the end, the 2007 GAO report did not answer whether in the “numerous retrospective reviews” conducted by EPA there were any ex post RIAs.²⁴⁷ The predominance of simple rule revisions rather than full ex post RIAs in the counts of supposed “retrospective reviews” was further indicated by the GAO finding that the bulk of reviews were a “response to OMB regulatory reform nominations” (116 for EPA, in total).²⁴⁸ Similarly, the GAO report acknowledged that many “retrospective reviews” it counted were informal.²⁴⁹

The informal nature of “review” as a preceding step of rule revisions, distinct from the analytical rigor (or perhaps indicating the absence) of ex post RIA, was again observed in 2014.²⁵⁰ To some extent, GAO contributed to this fact.²⁵¹ It still could not find evidence of the substance of each ex post analysis leading up to a rule revision due to lack of documented proof (which GAO calls “informal” nature).²⁵² Still, it decided to assume that each proposed rule revision was preceded by some, even informal, ex post analysis of the prior rule.²⁵³ To make things worse with respect to the terminological confusion of the term “review,” the report mentioned the response from interviews in which agency officials said that “when developing new rules, they examine existing regulations related to the rule as a normal course of conducting

247. *Id.* at 86.

248. *Id.* at 18 (emphasis added). About this category, the report states: “[i]n addition, agencies conducted reviews in response to OMB initiatives to solicit nominations for regulatory reexamination, which were not statutorily mandated reviews or required by a specific executive order, but were a part of executive branch regulatory reform efforts.” *Id.* at 13.

249. In addition, the study had some transparency issues. For instance, it describes having assessed in a “more detailed” fashion a “limited sample of retrospective reviews” conducted in the period of analysis. Yet, nowhere does the study identify these retrospective reviews, nor explain the selection criteria. See GAO, ASSESSING THE IMPACTS, *supra* note 228, at 4. Also, the study mentions that “it is not possible to compile a complete tally of all reviews that agencies completed, primarily because agencies reported that they did not always document reviews that may have followed more informal review processes.” *Id.* at 5. The study also said that even the 1,300 reviews that it found completed during the period “may understate the total because it does not account for all the undocumented discretionary reviews conducted by agencies.” *Id.* at 16. Again in 2014, GAO mentioned “agencies’ plans updates and progress reports provided only summary information about completed analyses. Agencies did not always provide citations or references in the progress reports that a reader could use to look up published rules that contain more detailed descriptions of agencies’ analyses and the underlying data.” GAO, ASSESSING THE IMPACTS, *supra* note 228, at 17.

250. See GAO, ASSESSING THE IMPACTS, *supra* note 228.

251. See *id.* at 11.

252. *Id.*

253. *Id.* (“225 of the 246 completed analyses we examined (more than 90 percent), the reviews led to agencies amending sections of the CFR to revise, clarify, or eliminate regulatory text”).

business.”²⁵⁴ This is also true for EPA.²⁵⁵ In August 2011, EPA published its Final Plan for Periodic Retrospective Reviews of Existing Regulation, responding to EO 13,563,²⁵⁶ in which it said that “[i]n fact, of EPA’s current workload, almost two-thirds of out activity is a review of an existing regulation.”²⁵⁷ For these reasons, the report also mentions that “[a]gency officials expressed frustration at the misperception that they are not reviewing existing regulations, when in fact most of their regulatory activities involve such reviews.”²⁵⁸ But these “reviews” may be informal or simply proposed rule revisions without an ex post analysis of the prior rule. Whether such reviews are, in fact, ex post RIAs, is a question that GAO could not assess given the lack of publicly available ex post RIAs.²⁵⁹

B. OMB/OIRA Reports to Congress

OIRA has played a key role in how ex post RIA has been developing in the U.S. federal government. Complying with the statutory mandate from appropriations legislation, OIRA has annually published and submitted to Congress reports on the costs and benefits of federal regulation—and, starting in 2012, on agency compliance with EO 13,563.²⁶⁰ Environmental regulation by EPA has figured prominently in the reports, scoring the highest monetized net benefits among all agencies in every year but 2004.²⁶¹ The reports follow in general the same format: reporting cost and benefits by aggregating and annualizing the ex ante

254. *Id.* at 21.

255. See U.S. ENVTL. PROT. AGENCY, IMPROVING OUR REGULATION: FINAL PLAN FOR PERIODIC RETROSPECTIVE REVIEWS OF EXISTING REGULATIONS (2011) [hereinafter EPA, FINAL PLAN].

256. *Id.*

257. *Id.* at 4.

258. GAO, ASSESSING THE IMPACTS, *supra* note 228, at 21.

259. See *id.*

260. See OFFICE OF INFO. & REGULATORY AFFAIRS, 1997 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS (1997); Sections 645(a)(1) and (4) of the Treasury, Postal Services and General Government Appropriations Act of 1996; Consolidated Appropriations Act of 2012, Pub. L. 112-74. The provisions were annually renewed in appropriations legislation until, in 2001, they became a permanent feature of what is now known as the Regulatory Right-to-know Act. Sections 625(1) and (2) of Pub. L. 105-61 (Treasury and General Government Appropriations Act of 1998); Sections 638(a)(1) and (3) of the 1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act; Sections 628(a)(1) and (3) of the FY2000 Treasury and General Government Appropriations Act; Sections 624A(a)(1) and (3) of Pub. L. 106-554 (Treasury and General Government Appropriations Act of 2001).

261. See Art Fraas & Randall Lutter, *The Challenges of Improving the Economic Analysis of Pending Regulations: The Experience of OMB Circular A-4*, 3 ANNU. REV. RESOUR. ECON. 71-85, 73 (2011). The annual OIRA reports to Congress are available at https://www.whitehouse.gov/omb/infoereg_regpol_reports_congress.

RIA estimates of all regulations grouped by the same year of initial adoption.²⁶² In addition to reporting the ex ante costs and benefits of regulations issued in the year preceding the report, each report also provides these figures for the ten previous years (in total and per each year).²⁶³

From 1997 to 2002, OIRA reported the estimates of costs and benefits of federal regulations by combining forecasts contained in both ex ante RIAs and ex post studies conducted by academics and agencies.²⁶⁴ Since its first report, OIRA has emphasized the need to track information about the real impacts from the implementation of federal regulations as a basis for recommendations on regulatory reforms or eliminations.²⁶⁵ In 2002, OIRA decided to rely solely on forecasts contained in ex ante RIAs in order to comply with the duty of reporting the aggregated costs and benefits of regulations.²⁶⁶

262. The report acknowledges the limitations of omitting information about the streams of benefits and costs during the implementation of each rule (in order to annualize the costs and benefits). The problem of aggregating annualized estimates obscuring the actual timing of benefits and costs was also noticed since early reports. See OFFICE OF INFO. & REGULATORY AFFAIRS, 1998 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS 81 (1999) [hereinafter OIRA, 1998 REPORT]. It also mentions the EPA rule for pulp and paper effluent, which included annualized benefit estimates for a stream of benefits over 30 years. *Id.* at 73.

263. See, e.g., *id.*

264. In its 1997 report, for instance, it combined the results of a 1991 study from Hahn and Hird on the costs and benefits of regulations as of 1998, supplemented by a 1990 EPA report on costs of regulations (Cost of a Clean Environment 1990), to which it added forecast information from ex ante RIAs for regulations submitted issued since 1988. OIRA, 1997 REPORT, *supra* note 152, at Introduction. In the 1998 report, it mentioned “[b]ecause there are no studies comparable to the Hahn and Hird or the EPA retrospective studies for the regulations issued after 1998, we use information about costs and benefits from agency prospective regulatory impact analyses (RIAs) to account for the major regulations that have been issued since 1998.” OIRA, 1998 REPORT, *supra* note 262, at 4. In 1998, it included the EPA report on including retrospective study of the costs and benefits of the CAA. It mentions “retrospective estimates,” meaning that it understood the “estimates” in the statutory provision as including ex post figures. *Id.* at 5. The report also discussed other retrospective studies conducted by the National Highway Traffic Safety Administration (NHTSA) and the Occupational Health and Safety Administration (OSHA). *Id.* at 35, 38-43. OIRA even mentioned in its 1998 report that “[i]n the ordinary course, therefore, the best estimates of the costs and benefits of regulation are likely to be retrospective studies” and “[h]ow well the costs and benefit estimates of prospective studies predict actual costs and benefits is a question that has not been answered.” *Id.* at 8, 18.

265. In the 1997 Report, it included in one of its recommendations a measure directed to itself, suggesting that “OIRA work toward a system to track the net benefits (benefits minus costs) provided by new regulations and reforms of existing regulations for use in determining the specific regulatory reforms or eliminations, if any, to recommend.” OIRA, 1997 REPORT, *supra* note 152, at ch. IV.

266. OFFICE OF INFO. & REGULATORY AFFAIRS, STIMULATING SMARTER REGULATION: 2002 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 39 (2002) [hereinafter OIRA, STIMULATING SMARTER REGULATION]. The report mentions the intense reaction that the methodological change caused among reviewers and commenters. In response, OIRA mentioned “many of the underlying studies are old and may no longer be reliable indicators of today’s regulatory costs and benefits.” *Id.* at 40. As the report said “[w]e plan to expand the

Eventually, the importance of ex post studies was again reflected in the reports, but mostly in the form of caveats to the tables that relied on ex ante information.²⁶⁷ A prominent exception was the 2005 report, which included a chapter on “[v]alidation of benefit and costs estimates made prior to regulation,” in which it summarized “post-regulatory information” and made comparisons with the pre-regulation estimates²⁶⁸ for several rules subject to ex post analysis.²⁶⁹ Still, the annual report of costs and benefits relied on the largely untested forecasts of ex ante RIAs.²⁷⁰

In its annual reports, OIRA has varied in how it complied with the statutory command to make “recommendations for regulatory reform.” Initially, OIRA interpreted the provision to require the nomination of specific rules in need of revision. For

number of years covered by our estimates of the costs and benefits of major rules to ten from the six-and-a-half currently included,” but, at the same time, saying “[w]e do not believe that the estimates of the costs and benefits of regulations issued over ten years ago are reliable or very useful for informing current policy decisions.” *Id.* And also, “[o]ne does not need to know full costs and benefits of all regulations to decide that regulatory costs should be held to an increase (or decrease) of a specified amount over the next year.” *Id.* at 41.

267. OFFICE OF INFO. & REGULATORY AFFAIRS, 2003 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 8 (2003) [hereinafter OIRA, 2003 REPORT].

[T]he total cost and benefits of all Federal rules now in effect . . . could easily be a factor of ten or more larger than the sum of the costs and benefits reported in Table 2. More research is necessary to provide a stronger analytic foundation for comprehensive estimates of total costs and benefits by agency and program.

Starting in the 2013 report, OIRA would add error bands to the charts showing the annual costs and benefits of the preceding ten years. *See* OFFICE OF INFO. & REGULATORY AFFAIRS, 2013 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 23 (2014) [hereinafter OIRA, 2013 REPORT].

268. Most of these ex post studies were conducted by academics, and none of the studies were prepared by EPA. OFFICE OF INFO. & REGULATORY AFFAIRS, VALIDATING REGULATORY ANALYSIS: 2005 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 42-43 (2005) [hereinafter OIRA, VALIDATING REGULATORY ANALYSIS].

269. The 2005 OIRA report stated that: “[c]ompared to the overall volume of Federal regulatory activity, it is remarkable how few rules have been subject to validation studies.” *Id.* at 47. It also recognized that ex post review can help test the accuracy of ex ante RIAs:

[i]n order to promote more and high-quality validation studies, reviewer (3) urges more investment in post-rule monitoring and data collection, including integration of data from multiple states and localities involved in implementation of rules. Two reviewers (3, 5) argued it was worth considering a requirement that major rules contain a provision requiring agencies, and possibly the regulated entities, to establish data collection systems that would facilitate ex post analysis of the rule at some point in the future.

Id. at 51. OIRA’s reaction to the comment was: “OMB agrees that these suggestions are worthy of consideration.” *Id.*

270. *See id.*

this reason, it acknowledged the absence of sufficient data to inform recommendations on major changes in regulatory programs.²⁷¹ And it reiterated the recommendation (to itself), set forth in the 1997 report, to develop a system to track the actual net benefits of regulations.²⁷² Still, OIRA endorsed ongoing regulatory reform initiatives by the agencies, which it listed in the report as proposed rule revisions—without mentioning the existence of any ex post analysis of the prior rules to justify the decision to revise these rules.²⁷³ In 2002, OIRA took a more active stance in using its implied authority to make recommendations for review; it called for and collected public comments and suggestions on regulations that would be candidates for reform (i.e., amendment or repeal), which it ranked according to its view on priority.²⁷⁴ In subsequent reports, OIRA continued to list and report on the status of such ongoing reform initiatives.²⁷⁵

Starting in the 2009 Report, OIRA increased the number of warnings about the possibility of erroneous assumptions in ex ante RIAs and, consequently, the figures it reported as costs

271. OIRA, 1998 REPORT, *supra* note 262, at 84, 89 (“At this stage we do not believe we have enough information to make definitive recommendations on specific regulatory programs based on the incomplete and uneven data that we discuss at length above.”). This was consistent with the realization that data from ex post studies were important to calculate and report on the costs and benefits of regulations.

272. *Id.* at 89.

273. For example, NHTSA proposed to revise the existing standards and regulations for the safety performance of airbags and the reflective marking on heavy truck trailers. *Id.* at 84.

274. In the 2002 report, OIRA mentioned having received suggestions addressing 316 different agency rules and guidance documents as candidates for review, “as well as to add, modify, or rescind regulations.” OIRA, STIMULATING SMARTER REGULATION, *supra* note 266, at 4. In a breakdown of suggestions reported in 2002, it is evident that almost all of these suggestions were proposed revisions, and not ex post reviews of the prior rules:

52.8 percent of the regulatory nominations sought modifications to existing or proposed rules that would increase flexibility and 7.8 percent recommended rescissions of existing rules. Over a quarter of the nominations advocated extending regulation, either by making existing and proposed rules more stringent (17.4 percent) or by promulgating new regulations (11.5 percent).

Id. at 75. See also OIRA, 2003 REPORT, *supra* note 267, at 28.

275. OIRA, 2003 REPORT, *supra* note 267, at 26-50; OFFICE OF INFO. & REGULATORY AFFAIRS, PROGRESS IN REGULATORY REFORM: 2004 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES (2004); OFFICE OF INFO. & REGULATORY AFFAIRS, 2006 REPORT TO CONGRESS ON THE BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 92-134 (2007); OFFICE OF INFO. & REGULATORY AFFAIRS, 2008 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES (2009).

and benefits of federal regulations.²⁷⁶ OIRA started to mention expressly “retrospective analysis” as “an important way of increasing accuracy” and as “a corrective mechanism.”²⁷⁷ The 2009 report also reflected a change in how OIRA perceived its role in making “recommendations for reform.”²⁷⁸ Instead of spearheading the process of public comments and prompting agencies to initiate revisions based on its classification of priorities, OIRA decided to make broad recommendations on how to improve regulatory policy in general.²⁷⁹ This new conception of “recommendations for regulatory reform” included “serious consideration . . . given to retrospective analysis of the effects of especially significant regulations.”²⁸⁰ In 2013, OIRA also emphasized the role of rule design and monitoring systems to enable future retrospective analyses—even though it did not mention whether it was reviewing this feature in *ex ante* RIAs.²⁸¹

In its 2011 report, OIRA discussed the importance of retrospective review to assess “what works and what does not,” and its role in informing decisions on how to reform existing rules.²⁸² In 2012, OIRA started to report specifically on how agencies were implementing EO 13,563, complying with a new statutory mandate from Congress.²⁸³ In the 2012 report, it included a

276. See OFFICE OF MGMT. & BUDGET, 2009 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 4, 8 (2010) [hereinafter OMB, 2009 REPORT].

277. *Id.* The caveats, present in every subsequent report and in every chart showing the yearly costs and benefits of regulations, mentioned the need to implement retrospective analysis. See OFFICE OF INFO. & REGULATORY AFFAIRS, 2010 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 4, 10 (2011) [hereinafter OIRA, 2011 REPORT] (noting the instrumental role of retrospective analysis “to improve regulations, perhaps by expanding them, perhaps by streamlining them, perhaps by reducing or repealing, perhaps by redirecting them.”); *Id.* at 4, 11, 5 (“agencies should promote retrospective analysis of existing significant rules, with careful exploration of their actual effects and, when appropriate, consideration of steps to streamline, modify, expand, or repeal them.”). On a related issue, discussing the importance of policy experimentation: *Id.* at 6; OIRA, 2012 REPORT, *supra* note 155, at 4; OIRA, 2013 REPORT, *supra* note 267, at 5; OFFICE OF INFO. & REGULATORY AFFAIRS, 2015 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND AGENCY COMPLIANCE WITH THE UNFUNDED MANDATES REFORM ACT 5, 6, 18, 21 (2016) [hereinafter OIRA, 2015 REPORT].

278. OMB, 2009 REPORT, *supra* note 276, at 4, 35-42.

279. *Id.* at 35.

280. *Id.* at 41. See OIRA, 2011 REPORT, *supra* note 277, at 49; OIRA, 2012 REPORT, *supra* note 155, at 5-6 (repeating the same recommendation in the 2011 and 2012 reports).

281. OIRA, 2013 REPORT, *supra* note 267, at 9 (“rules should be written and designed, in advance, so as to facilitate retrospective analysis of their effects, including consideration of the data that will be needed for future evaluation of the rule’s *ex post* cost and benefits”).

282. *Id.* at 60 (“retrospective analysis can help show what works and what does not, and in the process can help to promote repeal or streamlining of less effective rules and strengthening or expansion of those that turn out to do more good than harm”).

283. See OIRA, 2012 REPORT, *supra* note 155.

section on “retrospective review.”²⁸⁴ Nonetheless, similar to GAO, it either glossed over the possible mismatch between ex post RIA and simple rule revisions, allowed by the conceptual vagueness of the term “review”; or it gave credence to agencies’ suggestions that every rule revision was preceded by an ex post RIA, notwithstanding the absence of documented evidence of such analyses.²⁸⁵ OIRA referred to the agency preliminary plans for review, required by EO 13,563, and the “hundreds of reforms, candidate rules for review, and initiatives already underway,” as examples of “retrospective reviews.”²⁸⁶ The possible conflation of ex post RIA and rule revision is evident when the report mentions, after listing rule change initiatives, that “[i]n this way, and consistent with Executive Order 13,610, OIRA seeks to create a culture of retrospective analysis, in which existing rules (whether issued in the very recent past or decades ago) are subject to assessment and continuing evaluations, with public input.”²⁸⁷

Even if OIRA seemed in these reports to conflate ex post RIA with regulatory revision, and did not clarify whether rule revisions were preceded by full ex post RIAs, it did seem to notice that a more rigorous approach would be desirable in the future. In its 2013 and 2014 reports, in the chapter on recommendations for reform and agency compliance with EO 13,563, OIRA made the following statement:

The early phase of retrospective review implementation, discussed later in this chapter and in the most recent previous Reports, has been characterized by fairly straightforward reforms, such as switches from paper to electronic notifications. Moving ahead, however, OMB expects agencies will progress to more analytically-driven retrospective reviews, where the analyses are akin to currently-conducted RIAs (but have the advantage of post-implementation data) Agencies would, however, examine all or most aspects of a previous cost-benefit analysis, not just the surprising or analytically novel results that would typically receive attention from

284. *Id.* at 64.

285. *Id.* at 56.

286. *Id.* at 64. In every case, each initiative corresponds to a decision to revise an existing regulation, without any information on whether such decision was informed by a formal ex post assessment of its performance. The report includes two initiatives from EPA, both corresponding to rule revisions: a plan to propose a rule to reduce burdens on hazardous waste generators, and the elimination of an obligation for states to require air pollution vapor recovery systems at local gas stations. *Id.* at 65-66. The 2013 OIRA report also mentions rule revisions as examples of retrospective analyses. OIRA, 2013 REPORT, *supra* note 267, at 9.

287. OIRA, 2012 REPORT, *supra* note 155, at 69.

academic journals. Perhaps more importantly, agencies have the ability to facilitate retrospective analysis at the time when rules are issued; for example, in some cases, they can require—as a provision of a rule—the submission of data that would be necessary for assessing that rule’s effectiveness. OMB recommends that agencies pursue retrospective review in a comprehensive fashion—encompassing continual look-back at administrative procedures; thorough cost-benefit analysis of previously-issued, nonadministrative regulations; and the incorporation of plans for retrospective policy assessment into rulemaking currently underway.²⁸⁸

In its 2015 report, OIRA did not seem to follow through on its calls for ex post RIA of agency rules, distinct from the need to propose rule changes.²⁸⁹ Instead, the report only mentioned retrospective analysis in five of its pages—fewer than in prior reports.²⁹⁰ In addition to including the same caveats to figures on costs and benefits based on prospective RIA studies, and emphasizing the role of retrospective analysis as a corrective mechanism, the 2015 report adopted a more formal approach when reporting on how agencies are conducting (or not conducting) their ex post RIAs.²⁹¹ In the 2015 chapter on recommendations for reform, OIRA did not mention, as it had in the 2012 and 2013 reports, agency compliance with EO 13,563 or examples of retrospective review initiatives.²⁹² It simply mentioned, in a brief response to a comment, that “[w]e have stated throughout this Report, and through other avenues, that the retrospective review of regulations continues to be a very high priority for OMB.”²⁹³

C. State Experience

If studies of the adoption of ex post RIA by states are rare, even rarer have been those investigating whether and how those states that have adopted it have truly implemented ex post RIA.²⁹⁴ One

288. OIRA, 2013 REPORT, *supra* note 267, at 56; OFFICE OF INFO. & REGULATORY AFFAIRS, 2014 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 54 (2015).

289. *See* OIRA, 2015 REPORT, *supra* note 277.

290. *Id.* at 6, 18, 21, 54, 109.

291. *Id.* at 6, 8, 21.

292. *Id.* at 54. Compare with OIRA, 2012 REPORT, *supra* note 155, at 65-66.

293. OIRA, 2015 REPORT, *supra* note 277, at 109.

294. Moreover, the studies of ex post RIA in the states face the same challenge of analyses of ex ante RIA in practice: assuring validity of findings when adopting a research

of the first studies of this kind was published in 2000 by Robert Hahn, in which he found that “[s]tates do not always comply with requirements for reviews of existing regulations.”²⁹⁵ The 2010 study of regulatory review in the U.S. states, conducted by Jason Schwartz, also attempted to assess the extent of implementation of periodic retrospective review of regulations.²⁹⁶ The investigation found that that of the thirty states where periodic review of regulations was either encouraged or mandatory, only four had active (and, apparently, frequent) periodic reviews of existing regulation (Hawaii, Iowa, Maryland, and Pennsylvania);²⁹⁷ six showed some evidence of the practice (Florida, Missouri, North Dakota, Oklahoma, Vermont, and Virginia);²⁹⁸ two had only pro forma systems (Indiana and New Jersey);²⁹⁹ and two had inconsistent or sporadic practices (Michigan and California).³⁰⁰ Yet even states with evidence of frequent periodic reviews (and those with only some signs of practice) implemented partial approaches to a full ex post RIA: by either revealing a deregulatory bias (Hawaii and Iowa), restricted focus on impacts on small businesses (Hawaii), or an ad hoc nature (Pennsylvania).³⁰¹

In their 2016 study, Stuart Shapiro et al. reported the findings of the analysis of ex post RIA adoption and implementation in Delaware, Florida, Nevada, and Rhode Island.³⁰² New developments in the adoption of reviews of existing regulations had occurred in the four states since the 2010 study by Schwartz.³⁰³ With the exception of Rhode Island, governor’s EOs were the legal source for

design that relies on surveys of agency officials and questionnaires vulnerable to the review-revision conceptual mismatch. Another frequent limitation is the lack of precision and specificity regarding which documents the study analyzed in order to supplement the survey data.

295. Hahn, *supra* note 76, at 882.

296. SCHWARTZ, *supra* note 107, at 13. But the questionnaire used by the study did not provide a definition of “reviews of existing regulations” in the question about implementation of ex post RIA. *Id.* at 457 (“does your agency conduct ‘ex post’ review of existing regulations (e.g., a recurring review every so many years of the efficacy, efficiency, fairness, or legality of existing regulations)?”). For this reason, the question regarding ex post RIA could have been understood by respondents as only pertaining to a program for simple rule revisions, without necessarily reviewing past performance of the rule being revised.

297. *Id.* at 208, 231, 258, 351.

298. *Id.* at 200, 282, 326, 384, 389.

299. *Id.* at 224, 304.

300. *Id.* at 268, 173.

301. *Id.* at 208, 231, 351.

302. Shapiro, Borie-Holtz & Markey, *supra* note 159. The paper mentions that its findings were based on case studies, and that “[i]n each state we reviewed documents on retrospective review. We also interviewed numerous individuals who were involved with their state’s lookback efforts.” *Id.* at 35. Yet, it does not specify which documents it reviewed, nor the specific role of each interviewee in each state’s ex post RIA system.

303. *See id.*; compare with, SCHWARTZ, *supra* note 107.

the obligation to conduct retrospective reviews.³⁰⁴ In short periods of time, agencies reported having reviewed over a hundred rules (1,600 over 17 months, in the case of Rhode Island).³⁰⁵ The evidence suggests that the reviews were predominantly “cleaning the books exercises,” i.e., another apparent instance of cost-cutting rule revisions being reported as ex post RIA.³⁰⁶ As the authors of the study say, “[g]iven that most of the reviews in these states (which involved looking at hundreds of regulations) took a year or two, it is reasonable to conclude that there was little careful analysis of the regulations in many states where retrospective reviews were conducted.”³⁰⁷

D. EPA “Retrospective Reviews” under EO 13,563

Responding to EO 13,563, in August 2011 EPA published its Final Plan for Periodic Reviews of Existing Regulations.³⁰⁸ When describing the process of retrospective review, it includes two different steps (“conduct retrospective reviews” and “make necessary modifications”).³⁰⁹ In the report, EPA declares that it “has a long history of thoughtfully examining its existing regulations to make sure they are effectively and efficiently meeting the needs of the American people,”³¹⁰ suggesting that such examination would amount to ex post RIA. The document did not, however, actually list regulations for ex post RIA; instead, it announced that the “plan describes a large number of burden-reducing, cost-saving reforms, including thirty-five priority initiatives.”³¹¹ After publishing its final plan, EPA posted on its website ten semiannual progress reports, complying with section 6 of EO 13,563. An overview of the progress reports show that by retrospective review, EPA considers a process that starts with collecting data and ends with the publication of a final rule revising an existing rule; or with an improvement of an information collection or compliance system related to the implementation of a rule.

304. *Id.*

305. *Id.*

306. *Id.* at 35.

307. *Id.*

308. EPA, FINAL PLAN, *supra* note 255.

309. EPA describes the last step of the process as: “[a]fter collecting comments from the public and conducting our own analyses, EPA intends to make modifications to any regulation that warrants it, as determined during Step 3.” *Id.* at 52.

310. *Id.* at 4.

311. *Id.* at 5.

In examining the retrospective review initiatives in each of EPA's progress reports from January 2012 to January 2016, we found that EPA reported a total of fifty-five different "retrospective review initiatives," of which twenty changed to completed status.³¹² Review initiatives that led to new rulemaking processes (rule revisions) were only reported as completed when the final rule was published. Some of the review initiatives EPA included in its reports addressed administrative or information collection aspects of existing rules. These initiatives usually resulted in changes that did not require a new rulemaking process. Of the twenty initiatives that changed status to complete, only four led to a new rulemaking process and one represented a partial ex post RIA. The remaining fifteen initiatives with complete status resulted in the issuance of new guidelines or other policy documents, changes in websites, or even a webinar, mostly intended to reduce administrative burdens.³¹³

Of the thirty-five remaining ongoing initiatives (i.e., not reported as completed), sixteen have reached the proposed rule status, with a new rulemaking process and the publication of an NPRM. Many of the retrospective review initiatives, when first reported, already had rule revision as their stated intent.³¹⁴ Since, in theory, the conclusion of an ex post RIA informs whether a rule change is required, EPA might have completed a total of twenty-one ex post RIAs in the four year period.³¹⁵

But based on the summary description of each initiative contained in each progress report of the twenty-one retrospective review initiatives, sixteen are measures intended to promote the reduction of administrative burdens, four are other rule change initiatives with the goal of promoting other kinds of improvement, and only one corresponds to an independent (but partial) ex post RIA.³¹⁶ Of the nineteen remaining ongoing or planned initiatives that have not reached a proposed rule status, fifteen state a goal of reducing administrative burdens, with the remaining four stating a goal of implementing other types of regulatory improvements.³¹⁷

312. The total number of retrospective review initiatives reported in EPA's progress reports since Jan. 2012 is 216 (including repetitions).

313. None of these initiatives have an assigned RIN number—with the exception of RIN 2050-AG72, initiated in 2012 and concluded in 2014, leading to the publication of a Notice of Data Availability (NODA).

314. *See, e.g.*, EPA, FINAL PLAN, *supra* note 255 (this intent is evident in the "next steps" section of each planned retrospective review initiative, with many already including mentions of proposed rules).

315. The total of twenty-one corresponds to sixteen ongoing initiatives that already had an NPRM, four completed initiatives leading to new rulemaking processes, and one partial ex post RIA. *See* Figure 1.

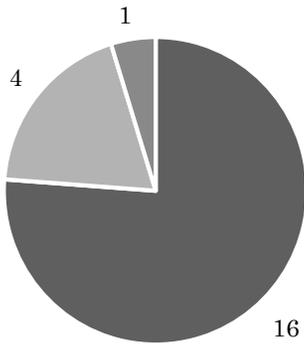
316. *See* Figure 2.

317. *See* Figure 3.

Figure 1. Retrospective Review initiatives reported in EPA's progress reports that might have employed ex post RIA

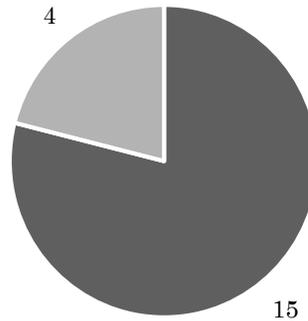
55 Retrospective Review (RR) initiatives	20 RR initiatives with “complete” status	4 new rulemakings
		1 ex post RIA
		15 non-rulemaking initiatives
	35 ongoing RR initiatives	16 initiatives with NPRM
19 initiatives without NPRM		

Figure 2. Content of review initiatives reported in EPA's progress reports with complete status or with a proposed rule revision leading to a new rulemaking process



- administrative burden reduction
- proposed improvements
- autonomous ex post RIA

Figure 3. Content of ongoing review initiatives reported in EPA's progress reports that have not reached the NPRM phase



- administrative burden reductions
- proposed improvements

Confirming the GAO findings, there was no evidence of publication of any report with the findings of ex post RIAs—assuming that they indeed took place—related to the review initiatives that EPA reported as either completed (and leading to

a final rule) or having reached the proposed rule status.³¹⁸ The third step of EPA's retrospective review ("conduct retrospective review"), as described in its final plan, remains largely opaque.³¹⁹ For the initiatives that resulted in a new rulemaking process, there is no information in the progress reports on whether the resulting new rule triggered a new ex ante RIA requirement. This information can only be found by cross-referencing the RIN number of the retrospective review initiative in the retrospective review progress report with the same number identifying the proposed rule in OIRA's database. Cross-referencing this information reveals that of the twenty initiatives classified as completed with a final rule or at the stage when a proposed rule was already published, eleven were accompanied by new ex ante RIAs. Of these eleven initiatives accompanied by new ex ante RIAs, nine were of non-economically significant rules and only two were of economically significant rules. If complying with EO 12,866, nine of the regulatory reform initiatives could not have been considered a major regulatory action to trigger an RIA.

An examination of the ex ante RIAs submitted to OIRA from August 2011 (date of EPA's final plan on retrospective review) to January 31, 2016 showed, during this time, 217 ex ante RIAs were submitted by EPA to OIRA (41 of economically significant major rules and 176 of non-economically significant major rules). Since eleven of the ex ante RIAs submitted by EPA were preceded by retrospective review initiatives reported in EPA's progress reports on retrospective review, 206 ex ante RIAs of proposed rules or rule revisions were therefore unaccompanied by the same type of retrospective review.³²⁰ No evidence was found of self-standing reports providing the conclusions of each completed retrospective

318. See GAO, REEXAMINING/AGENCIES, *supra* note 228. There is no database in the U.S. with data on retrospective review initiatives. All the information is contained in individual electronic files for semiannual progress reports of each agency.

319. See EPA, FINAL PLAN, *supra* note 255.

320. See Figure 4: Evidence of policy cycle approach in ex ante RIAs submitted by EPA during the same period of reporting of retrospective review initiatives under EO 13,563. One important piece of information is how many of these 206 ex ante RIAs, not preceded by retrospective reviews, corresponded to rule revisions (since new rules could not have been preceded by ex post RIA). Of these 206, at least 45 (43 of non-economically significant major rules and 2 of economically significant major rules) indicate rule revisions in the title (containing either the word "amendment(s)" or "revision(s)"). Still, this probably underestimates the number of proposed rule changes, because rule revisions could also use other words in the title. Of the 11 RIAs resulting from completed retrospective review processes, only 4 had in the title one of the two words mentioned above. If the proportion (4 out of 11) is the same for all RIAs, i.e., if rules with one of the two revision-indicating words in the title correspond only to 36.3% of all the rules that are in reality rule revisions, then the total amount of rule revisions of the 206 ex ante RIAs without following a completed retrospective review process would amount to 123 RIAs, not 45.

review initiative (as EPA publishes for RFA section 610 reviews).³²¹ Instead, the only documentation available that might contain information related to such analyses is what accompanies the NPRM and ex ante RIA reports of rule revisions that follow a complete retrospective review process. Searching for any such evidence, we examined the eleven ex ante RIAs that followed a formal retrospective review process, as reported in the OIRA database as matching the same RIN numbers of proposed rules or final rules mentioned in EPA's progress reports on retrospective review during the same period.³²² Only two of these eleven ex ante RIAs mention that the proposed rule revision was a result of a preceding retrospective review initiative. Some report the publication of notices before an NPRM, with the goal of inviting comments (e.g., an Advanced Notice of Proposed Rulemaking or a Notice of Data Availability.) Others mention the use of data generated during the period of implementation of the preceding rule as an input to formulate the proposed revision being accompanied by the ex ante RIA. None mentioned any ex post assessments of the accuracy of the predictions made in the ex ante RIA of the rule now being revised.

Figure 4. Evidence of policy cycle approach in ex ante RIAs submitted by EPA during the same period of reporting of retrospective review initiatives under EO 13,563

RIAs	Economically significant	Non-economically significant
Preceded by a retrospective review	2	9
Not preceded by a retrospective review	39	167

Since August 2011, the only retrospective review initiative reported by EPA under EO 13,563 with the features of a true ex post RIA was first identified in the September 2012 progress report, under the title "the costs of regulations: improving cost

321. See *infra* n. 352-54 and accompanying text.

322. The ex ante documentation of these eleven proposed rule changes are related to the following RINs: 2040-AF16, 2060-AQ97, 2060-AQ91, 2050-AG20, 2070-AK02, 2050-AG39, 2050-AG70, 2050-AG77, 2060-AS02, 2060-AQ54, and 2060-AQ86. See dataset published at <http://bit.ly/2cDOiGt>.

estimates.”³²³ It was eventually published in August 2014 as an ex post study of five regulations, distinct from any proposed rule revisions.³²⁴ The purpose of the study was to compare the ex ante cost estimates with the ex post realized costs during the implementation of these five EPA regulations.³²⁵ The research goal was to look for patterns of overestimation or underestimation of costs and identify the factors that might explain them, thus improving the accuracy of new ex ante studies (and RIAs),³²⁶ and to identify key uncertainties in the ex ante estimates.³²⁷ This study stands out as at least seeking the kind of insights on ex ante RIA accuracy that we argue could come from broader application of ex post RIA to multiple rules. Five economically significant rules were selected for review, organized by environmental media, source categories, and regulatory mechanisms (e.g., performance standard versus prescriptive regulation).³²⁸ EPA intended this study to be one of many, with the subsequent studies adopting a stratified random sampling strategy to define which rules should be evaluated.³²⁹

The study reached tentative results, given the low availability of compliance cost information, in particular at the facility level.³³⁰ The

323. U.S. ENVTL. PROT. AGENCY, EO 13563 PROGRESS REPORT, SEPTEMBER 2012, 5 (2012), <https://www.epa.gov/sites/production/files/2015-09/documents/eparetroreviewprogressrpt-sept2012.pdf>.

324. U.S. ENVTL. PROT. AGENCY, RETROSPECTIVE STUDY OF THE COSTS OF EPA REGULATIONS: A REPORT OF FOUR CASE STUDIES (2014) [hereinafter EPA, RETROSPECTIVE STUDY].

325. *Id.* at vii. The report detailed, “[a] careful assessment of ex post cost drivers could help identify systematic differences between ex post and ex ante compliance cost estimation and, ultimately, allow for improvements in the way in which ex ante analyses are done.” *Id.* at 1.

326. *Id.* One interesting feature of the study was the acknowledgment by EPA of the limited number of retrospective analyses. The study was published in 2014, almost three years after EPA had begun to report semiannually its retrospective review initiatives under the mandate of EO 13,563. This fact suggests further evidence that in EPA’s perspective, “retrospective review initiatives” correspond predominantly to rule revisions, without necessarily being preceded or informed by an ex post RIA of the rule being revised. *See id.* at Acknowledgements, v, vii.

327. *Id.* at vi-vii. For example, yield losses associated with different alternative pesticides, in the case of the Methyl Bromide critical use exemption rule. *Id.* at 78.

328. *Id.* at vii. The five rules were: (1) the National Primary Drinking Water Regulation for Arsenic (2001/2004); (2) the Integrated National Emission Standards for Hazardous Air Pollutants (NESHAP) and Effluent Guidelines for Pulp and Paper (also known as the Cluster Rule) (1998); (3) the NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfitic and Stand-Alone Semichemical Pulp Mills (2001); (4) the Locomotive Emission Standards (1998); (5) the Methyl Bromide Critical Use Nomination for Preplant Soil Use for Strawberries Grown for Fruit in Open Fields on Plastic Tarps (2004-08). *Id.* at 16.

329. *Id.* at 16. The study criticized the existing literature of ex post cost assessment as “unlikely to form a representative sample of the universe of environmental rules that have been promulgated. Many of the survey articles summarize the same sets of underlying studies, which means that there is substantial overlap.” *Id.* at 6. In the concluding chapter of the report, it indicated additional rules for retrospective analysis. *Id.* at 228.

330. *Id.* at 227.

study team had to consult industry compliance experts to gather ex post data for all but one regulation, since publicly available data sources were incomplete.³³¹ In addition to the challenge of having little or no information, the study also highlighted the difficulty of forming a reasonable counterfactual and disentangling compliance costs from other factors.³³² In conclusion, the study found mixed results in terms of overestimation and underestimation of costs, and overestimation of costs for one rule.³³³ Notwithstanding the final report mentioning the intention of conducting future studies of the same kind, in an interview in 2016, one of the authors of the report said that other analyses of the type were not high on the priority agenda of EPA, with no other ex post study of the kind being planned.³³⁴

At least one of the rules studied by EPA had a subsequent revision (and a new rulemaking process) for which an ex ante RIA was prepared—Protection of Stratospheric Ozone: The 2016 Critical Use Exemption from the Phaseout of Methyl Bromide, with an NPRM published in June 2015.³³⁵ We examined its ex ante RIA report to search for any mention of the prior ex post study and any evidence of a concerted effort to improve monitoring and data collection on input information—one of the main limitations found in the ex post study. But nothing in the ex ante RIA or the NPRM mentions the previous ex post study. In the electronic docket, there is a document in which EPA explains why there was no economically feasible alternative to the use of methyl bromide for the specific use studied in the 2014 report.³³⁶ The 2014 ex post study had identified information on agricultural yield losses associated with alternative fumigants as being key missing data, possibly leading to overestimation of costs.³³⁷ In the 2016 proposed rule, there is no discussion or additional information on that key input to estimating the costs of alternative policy decisions.³³⁸

331. *See id.* at viii.

332. *Id.*

333. The ex post review of National Primary Drinking Water Regulation for Arsenic and the 1998 Locomotive Emission Standards found mixed results (ranging from -12% to +69% on capital costs, and -58% to -19% on operation costs for the former). *Id.* at 142, 205. The review of the Cluster Rule found overestimation of capital costs, ranging from 30% to 100%, and a review of the MACT II rule found overestimation of capital costs by 25% and 200+% on annual costs. *Id.* at 52, 205.

334. Anonymous EPA official, on file with authors.

335. 80 Fed. Reg. 33,460 (proposed June 12, 2015) (to be codified at 40 C.F.R. pt. 82).

336. U.S. ENVTL. PROT. AGENCY, 2016 Critical Use Nomination for Strawberries 3-4, (2016), <https://www.regulations.gov/document?D=EPA-HQ-OAR-2013-0369-0011> [hereinafter EPA, Strawberries].

337. EPA, RETROSPECTIVE STUDY, *supra* note 324, at 69, 74, 75, 77, 78, 81, 91, 93.

338. EPA, Strawberries, *supra* note 336. There is no specific RIA document for the 2016 Critical Use Exemption Rule in the electronic docket.

EPA has also conducted Section 610 reviews mandated by the RFA. A page of its website lists a total of forty-one ongoing, planned, and completed such reviews since 1997.³³⁹ From August 2011 to January 2016 (the period covered by the Final Plan and progress reports on retrospective review under EO 13,563), the website lists six completed and two ongoing reviews; however, neither the final plan nor the semiannual retrospective review progress reports contain any mention of the Section 610 reviews.³⁴⁰ The database provides a link to the semiannual agenda, which in turn reports the number of the electronic docket for each review. In contrast to the “retrospective review initiatives” reported under EO 13,563,³⁴¹ the Section 610 reviews are not proposed rule revisions. All six reviews concluded between August 2011 and January 2016 have reports distinct from any rule revision, and all six concluded that there was a continued need for the regulation.³⁴² Only one review conducted additional analysis compared to the preceding ex ante RIA;³⁴³ all others made qualitative claims that it was not necessary to revise the rule, mostly relying on and simply responding (qualitatively) to public comments received during the review process.³⁴⁴ None of the reports mention the assessment of the accuracy of ex ante data in light of information from costs and benefits from implementation of each rule being reviewed.

Compared to other jurisdictions with dedicated ex post RIA programs—distinct from rule revisions supported by only simplified analyses—the reality of EPA’s implementation of ex post RIA is not

339. *Section 610 Reviews*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/reg-flex/section-610-reviews> (last visited on Jan. 21, 2017).

340. Even in the Final Plan, EPA mentioned that it intended to “coordinate our small business retrospective reviews, required by Section 610 of the Regulatory Flexibility Act, with other required reviews (e.g., under the CAA). This will aid in meeting EO 13563’s directive to reduce or eliminate redundant, inconsistent, or overlapping requirements.” EPA, FINAL PLAN, *supra* note 255, at 47.

341. See EPA, RETROSPECTIVE STUDY, *supra* note 324.

342. National Primary Drinking Water Regulations: Ground Water Rule, 81 Fed. Reg. 37,373; Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel, 79 Fed. Reg. 76,771; National Emissions Standards for Hazardous Air Pollutants (NESHAP): Reinforced Plastic Composites Production, 78 Fed. Reg. 44,315; National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines Standards for Concentrated Animal Feeding Operations (CAFOs), 79 Fed. Reg. 76,771; Heavy-Duty Engine Emission Standards and Diesel Fuel Sulfur Control Requirements, 79 Fed. Reg. 1216; and National Primary Drinking Water Regulations: Arsenic and Clarifications to Compliance and New Source Contaminant Monitoring, 77 Fed. Reg. 8004.

343. National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines Standards for Concentrated Animal Feeding Operations (CAFOs), 79 Fed. Reg. 76,771.

344. Most review reports are short in length, ranging from two to sixteen (average of six) pages. No review—not even the two containing new ex post data—mentioned ex post assessment of the impact of the regulation on large, medium, or small businesses. No review contained any quantitative assessment of benefits.

significantly different.³⁴⁵ The European Commission database contains reports of thirty-four ex post evaluations of environmental policies, of which fourteen are related to primary and secondary legislation (the remaining address programs and plans).³⁴⁶ In the U.K., after the first five-year period for triggering review clauses, the results of the first post-implementation reviews have still not been reported in the IA database (so far, there are only five).³⁴⁷ According to the U.K. DEFRA Better Regulation Team, as of November 2015 no post-implementation reviews had been completed, and most reviews had taken place under the red tape challenge program.³⁴⁸ In Australia, only four ex post evaluations of environmental primary and secondary legislation have been completed and reported.³⁴⁹ In these three jurisdictions, as at EPA, there have been many more rule revisions with the goal of promoting simplification and reduction of administrative burdens and far fewer ex post RIAs designed to test the accuracy of ex ante RIAs or to learn about what works in policy design.

V. GOING RETRO: ADVANCING REGULATORY HINDSIGHT

Our review of retrospective review and ex post RIA in U.S. and international environmental regulatory policy illustrates the gap between adoption and implementation. Our findings indicate increasing adoption yet limited implementation of retrospective analysis. Meanwhile, most retrospective review that does occur appears to be aimed at reducing cost or administrative burden through specific rule revisions, while little use of ex post RIA is aimed at a broader scope of impacts or at testing the accuracy of ex ante RIA or the performance of policy design. What EPA has been reporting as retrospective review initiatives are mostly, it seems, revisions of individual existing rules, often without a documented

345. Admittedly, a proper benchmark should take into account the fact that requirements for periodic review of regulations have been adopted in the U.S. much earlier than in other jurisdictions—at least since 1978. *See supra* Section II.

346. Including only evaluations from the DG Environment and DG Climate Action, from 2001 to the present. *Smart-regulation Evaluation Search*, EUR. COMM'N, <http://ec.europa.eu/smart-regulation/evaluation/search/search.do> (last visited on Jan. 21, 2017) [hereinafter EC, *Smart-regulation Evaluation Search*].

347. NAT'L ARCHIVES, *UK Impact Assessments Post Implementation Review*, <http://www.legislation.gov.uk/ukia.access?stage=Post%20Implementation%20Review> (last visited on Jan. 21, 2017).

348. Email on file with authors.

349. Office of Best Practice Regulation, Best Practice Regulation Updates, *List of Post-implementation Reviews Completed and Published*, AUSTRALIAN GOV'T DEP'T OF THE PRIME MINISTER & CABINET (2016), <http://ris.pmc.gov.au/sites/default/files/compliance-reporting/pir/list-pir-completed-and-published.pdf> (last visited on Jan. 21, 2017).

analysis of the prior rule and its ex ante RIA. The majority of such revisions tend to lead to non-economically significant rule changes, aimed at cutting red tape or implementing minor improvements. And compared to ex post RIA, retrospective review of EIA appears even more scant.

The potential role of retrospective review or ex post IA in learning—as a mechanism to track and compare the performance of existing regulations, and thereby to learn how to improve ex ante IA estimates and ex ante policy design decisions—lies largely unrealized to date. Environmental regulation is going retro more in rhetoric than in reality. While individual rule revisions may help reduce compliance costs, they do not seize the opportunity for broader learning that ex post RIA can offer about the full impacts of the past rule (including not only administrative burden but full social costs, benefits, and ancillary impacts), the accuracy of ex ante RIA methods, and the merits of alternative policy designs.³⁵⁰ Errors in ex ante estimation methods may persist, leading to lower net social benefits than expected from new and existing policies. Even narrow retrospective review initiatives that yield a revision of an individual rule may be based on inaccurate estimates of cost savings, if they are only comparing the revision to the ex ante cost estimates—and not to the ex post realized costs—of the rule being revised. If regulatory policy continues to be formed by a sequence of largely untested forecasts, human foresight is fallible and learning from hindsight is playing too small a role.

There is also little indication of a policy cycle linking ex ante to ex post RIA. Few new agency rules (and their ex ante RIAs) appear to plan for ongoing data collection and future ex post RIA.³⁵¹ Few of the rule revisions by EPA and other agencies (and their ex ante RIAs) appear to draw on ex post RIAs of the prior rules. Although OIRA is prodding agencies to conduct retrospective reviews under EOs 13,563, 13,579, and 13,610, and reporting the agency responses, most of these appear to be individual rule

350. Our study team at Duke outlined this broader approach to learning from retrospective review, in our peer review comments on the OMB/OIRA 2015 annual report. JONATHAN B. WIENER ET AL., PEER REVIEW OF THE U.S. OFFICE OF MANAGEMENT AND BUDGET DRAFT 2015 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATION 5 (2015), https://www.researchgate.net/publication/286780416_Peer_Review_of_the_US_Office_of_Management_and_Budget_Draft_2015_Report_to_Congress_on_the_Benefits_and_Costs_of_Federal_Regulations.

351. See Miller, *supra* note 41. President Carter's EO 12,044, section 2(d)(8), called for new rules to include plans for future retrospective reviews. See Exec. Order No. 12,044, 43 Fed. Reg. 12,661 (1978). That type of ex ante planning for future ex post review could be renewed by EO, or it could be mandated by statute; see S. 1817, 114th Cong., The Smarter Regulations through Advance Planning and Review Act (July 21, 2015), <https://www.congress.gov/bill/114th-congress/senate-bill/1817> (co-sponsored by Sen. James Lankford, R-OK, and Sen. Heidi Heitkamp, D-ND).

revisions rather than ex post RIAs of the performance of the past rule to inform the design of subsequent rule revision. Only a small number of EPA's proposed rule changes in response to EO 13,563 were based on a retrospective review initiative mentioned in EPA's progress reports.

Retrospective review systems in the EU, U.K., and Australia, while similarly generating few full ex post RIAs that test and learn about the accuracy of ex ante RIAs, are putting in place clearer requirements and more sophisticated frameworks for comprehensive and regularized evaluation and learning. Their provisions include mandatory review clauses for most or all regulations, and the duty to prepare, publish, and submit to oversight institutions the findings of each ex post RIA, irrespective of a new ex ante RIA or proposed rule revisions. After the U.S. pioneered ex ante RIA and served as the model for its international diffusion, these other jurisdictions are now moving ahead with ex post RIA, thereby offering opportunities for mutual learning by comparing the unfolding institutional experience across regulatory systems.³⁵²

Demanding too much or too costly retrospective review could also have perverse consequences. Agencies have limited resources and other priorities including promulgating new rules. Imposing a duty to prepare a full ex post RIA for every rule might be excessive, or just lead to formalistic and symbolic results. Ex post RIA could become just a form of monitoring and reporting indicators during implementation, rather than truly measuring the impacts of the existing rules compared to alternatives.³⁵³ Some process is needed to select the rules warranting ex post review, and to frame the methods of ex post analysis to foster learning about the accuracy of ex ante analysis and improved policy design. Here we offer recommendations for the future of retrospective review.

Several factors may help explain the low levels of implementation that this investigation and other studies have found in retrospective review such as ex post RIA or EIA. First, a key limitation is lack of data. Establishing monitoring arrangements earlier, when conducting ex ante RIA or EIA and promulgating a rule, can be important to the subsequent success of ex post IA.³⁵⁴ Yet monitoring may be costly to agencies

352. See Wiener & Ribeiro, *supra* note 3; Wiener, *supra* note 11; DE FRANCESCO, *supra* note 108.

353. This would be a gain compared to the low levels of transparency over monitoring indicators; but this would still not amount to true ex post RIA.

354. Studies of adaptive policy management have emphasized the importance of monitoring and reveal how adaptive approaches fail to deliver intended results when

and regulated actors with already constrained budgets.³⁵⁵ When reducing administrative burdens is a priority, imposing even well-justified monitoring obligations can be difficult. New developments in information and sensing technologies may enable more comprehensive, less costly, and more effective monitoring in the near future.³⁵⁶

Second, even with effective monitoring systems, serious retrospective review requires more than just reporting data on what happened under the policy. Measuring policy impacts retrospectively requires comparing the actual policy to a counterfactual scenario of what the world would have been like without the policy. “It is no exaggeration to say that developing a credible counterfactual or baseline analysis is one of the most demanding aspects of a retrospective study.”³⁵⁷ Whenever these techniques are applied, methodological rigor and transparency are essential.

Third, agencies face (perhaps understandable) disincentives to conducting ex post IAs of their own policies. Retrospective review of past policies is time consuming, imposing opportunity costs on busy agency staff who are trying to carry out the new policies demanded by the legislature, executive, courts, and the public. Framing retrospective review more broadly—to study the full scope of impacts, and to learn from multiple policies about the

monitoring is defective or absent. William H. Moir & William M. Block, *Adaptive Management on Public Lands in the United States: Commitment or Rhetoric?*, 28 ENVTL. MGMT. 141, 141 (2001) (arguing that monitoring is the crux of adaptive management and its weakest point); BYRON K. WILLIAMS ET AL., DEPARTMENT OF THE INTERIOR, ADAPTIVE MANAGEMENT: THE US DEPARTMENT OF THE INTERIOR TECHNICAL GUIDE 12 (2d ed. 2009) (stating that “adaptive management is not possible without effective monitoring”). On the need for broad monitoring to ensure learning about full impacts and policy design, see Jonathan B. Wiener, *Towards an Effective System of Monitoring, Reporting and Verification*, in TOWARDS A WORKABLE AND EFFECTIVE CLIMATE REGIME 183-200 (Scott Barrett et al. eds., CEPR Press & FERDI ed. 2015), <http://www.voxeu.org/content/towards-workable-and-effective-climate-regime>.

355. Rebecca J. McLain & Robert G. Lee, *Adaptive Management: Promises and Pitfalls*, 20 ENVTL. MGMT. 437, 444 (1996).

356. Nicola Lettieri, *Computational Social Science, the Evolution of Policy Design and Rule Making in Smart Societies*, 8 FUTURE INTERNET 1, 4-6 (2016); Melanie Swan, *Sensor Mania! The Internet of Things, Wearable Computing, Objective Metrics, and the Quantified Self 2.0*, 1 J. SENSOR & ACTUATOR NETWORKS 217 (2012); Sujan Sarker et al., *Tradeoffs Between Sensing Quality and Energy Efficiency for Context Monitoring Applications*, in PROCEEDINGS OF 2016 INTERNATIONAL CONFERENCE ON NETWORKING SYSTEMS AND SECURITY (NSYSS) 73, 73-80 (2016), http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=7400699; Nicholas D. Lane et al., *A Survey of Mobile Phone Sensing*, 48 IEEE COMM. MAG. 140 (Sept. 2010); *Sensors and Sensitivity*, ECONOMIST (July 4, 2009), <http://www.economist.com/node/13725679>.

357. Morgenstern, *RFF*, *supra* note 24, at 2; see also ALDY, *supra* note 22, at 4; EC, BETTER REGULATION TOOLBOX, *supra* note 189, at 270 (“When evaluating EU legislation, it is particularly difficult to identify a robust counter-factual situation”); HM TREASURY, THE GREEN BOOK: APPRAISAL AND EVALUATION IN CENTRAL GOVERNMENT 45, 46-48 (2011); Coglianese, *supra* note 42, at 62-63.

accuracy of ex ante analyses—increases the social benefits of retrospective review but also heightens the cost on agency staff. Moreover, an ex post IA may demonstrate shortcomings in the ex ante IA and the initial policy choice, which may be awkward for the agency.

These considerations point to asking an outside body to conduct the ex post IA, or to conduct the broader learning reviews after the agency reports its own review of each rule.³⁵⁸ Assigning retrospective review to an outside body would relieve the agency staff of some costs, while enabling the outside body to develop more consistent methodologies for counterfactual scenarios. And the outside body could use ex post analysis to promote learning about ex ante methodologies and about policy designs, by studying multiple policies and IAs from multiple agencies. This outside body might be an interagency working group, an oversight body (such as OIRA, GAO or CBO, or CEQ for EIAs), a panel of the NAS, a think tank, or a university research institute. Yet, it is the promulgating agency that likely has the best information and expertise on each past policy. Thus, there will be some need for ex post analysis of each policy by the agency, as well as for broader multi-impact multi-policy review by an outside body.

One measure to improve current ex post IA is to increase the transparency and access to information regarding both ex ante and ex post IA, so that outside groups can make better use of this information. The ex post RIA framework in the U.S. needs to move beyond the equivocal language in section 6(b) of EO 13,563 that provides: “retrospective analyses, including supporting data, should be released online whenever possible.”³⁵⁹ Publishing online the analytical and procedural steps and results of ex post RIA should be the norm with exceptions only in rare cases. Transparency is a core feature of EIA, and should be as well in RIA. A day after President Obama gave his first inaugural speech, he published a memorandum committing to creating “an unprecedented level of openness in Government.”³⁶⁰ Here, the

358. We suggested this to OMB/OIRA in WIENER ET AL., *supra* note 350 (peer review comment on 2015 annual report). See also Wiener, *supra* note 46 (advocating national regulatory outcomes studies); WORLD BANK, RISK AND OPPORTUNITY: MANAGING RISK FOR DEVELOPMENT 278 (2013) (recommending that each country establish a National Risk Board to assess risks, resolve tradeoffs, and evaluate overall performance of existing policies).

359. (Emphasis added). See WIENER ET AL., *supra* note 350, at 3.

360. In the memorandum, Obama said:

Transparency promotes accountability and provides information for citizens about what their Government is doing. Information maintained by the Federal Government is a national asset. My Administration will take appropriate action, consistent with law and policy, to disclose information rapidly in forms that the

Latin *maxim quod non est in actis non est in mundo* should be adapted and work as the guiding principle to promote accountability of ex post RIA requirements. It is not enough for agencies to report that they conducted a retrospective review; the content of that ex post analysis needs to be published. Outside experts, oversight bodies, and reviewing courts will then be able to assess the relation of the ex post review to full policy impacts, proposed rule revisions, better ex ante methodologies, and better policy designs.

With the same goal of improving transparency, the U.S. should have a central database aggregating information about the status of ongoing, planned, and the results of completed, ex post RIAs and EIAs, rather than obliging researchers to search for each IA separately at each agency. The information could be organized by agency, year, economic significance of the rule reviewed, and links to the online documents of the regulatory actions that precede and follow from the review. Here, the European Commission database offers a good example, including search functions and filters by year and policy domain of completed ex post evaluation.³⁶¹ The U.K. also offers a good model to emulate, with an online database containing similar search functions and filters and assembling all the information on ex ante and subsequent ex post RIA of primary and secondary legislation organized by each rule.³⁶² The U.S. could take a step further by linking to this proposed database the monitoring data that each agency collects throughout its programs and ex post IAs, and by building a continuous timeline of IAs through the policy cycle of project decision or rulemaking.

Another measure to improve ex post RIA in the U.S. system is to rethink and redesign criteria for selecting rules for ex post RIA. The logic informing the selection of which rules undergo a review should be similar to a CBA, assessing the net benefits of not only rule revision but also broader learning. This is intuitively captured by the principle of “proportionate level of analysis” in Europe and, analytically, by methods to calculate the value of information versus

public can readily find and use. Executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public. Executive departments and agencies should also solicit public feedback to identify information of greatest use to the public.

Memorandum from President Barack Obama for the Heads of Executive Departments and Agencies (Feb. 24, 2009) (on file with the White House) (available at https://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment).

361. EC, *Smart-regulation Evaluation Search*, supra note 346.

362. See U.K. *Legislation*, NAT'L ARCHIVES, <http://www.legislation.gov.uk> (last visited Jan. 21, 2017).

the cost of information in decision science.³⁶³ Thus, just as not every new rule requires a full ex ante RIA, and not every federal action requires a full EIA, so not every rule revision or existing rule should require a full ex post RIA. The point is to select those for full ex post analysis from which we will gain the most net benefits, including in learning how to improve ex ante analysis accuracy and policy design. Implementing simple rule revisions (to reduce the cost of the rule, but without a full ex post RIA) can make sense when the information costs are high and the learning benefits are low. The rules selected for ex post RIA should not necessarily be the same as the rules needing revisions. For ex post RIA to serve its learning function, the rules selected should be those for which the most value can be gleaned from comparing ex post to ex ante RIAs. These might include rules that are apparently successful (not in need of revision) as well as those that need revision. Purposive selection criteria applied to a larger sample of rules would enhance the opportunity to learn how to improve the accuracy of ex ante RIAs and learn which policy designs are associated with which outcomes. This broader learning-based ex post analysis of multiple policies and multiple impacts might then be best handled by an interagency group or other outside body, as noted above.

On the same logic of value of information, a good ex post RIA should take a more comprehensive look at not only administrative costs, but also full social costs, benefits and ancillary impacts (as required for ex ante RIAs under Circular A-4).³⁶⁴ That said, the depth of analysis should be proportional to the significance of each impact combined with the uncertainty around its estimates and the opportunity to learn to improve such estimates.

Sensitivity analysis can also help in selecting existing rules for review, planning future triggers for review of new rules, and deciding the scope of each ex post RIA. The forecast of the effects of a new rule (or rule revision) and the projected baseline may have different ranges of uncertainty and valuations, influencing the ranking of alternatives in an ex ante RIA. Sensitivity analysis can help assess the relative importance of each input to the final ranking of alternatives across the same scale of valuations.

Agencies and/or other actors conducting ex post RIA could combine the purposeful selection criteria based on value of

363. See Fumie Yokota & Kimberly M. Thompson, *Value of Information Literature Analysis: A Review of Applications in Health Risk Management*, 24 MED. DECISION MAKING 287-98 (2004); GRAHAM & WIENER, *supra* note 52, at 21; Wiener, *supra* note 108, at 477, 482, 487, 491 (on proportionate analysis in Europe); HOWARD RAIFFA, *DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY* (1968).

364. See OMB, A-4, *supra* note 103.

information with a random selection of a representative sample of all rules.³⁶⁵ This supplemental rule selection could capture aspects that might be overlooked in a standard value of information selection method, such as unintended consequences (unforeseen ancillary benefits and harms), inaccurate characterization of uncertainty over each input, and other factors that could bias the value of information calculus. A broader sampling approach could also be useful in learning how different policy designs such as instrument choice, implementation methods, and monitoring techniques may affect variation in regulatory success. Learning is central to both approaches, with lessons from ex post RIA leading to improvement in methods of ex ante RIA, more accurate estimates of costs and benefits associated with different policy designs, and hence better design of new rules. Another important advantage of rule selection for ex post RIA informed by calculating the value of information, and by a representative random sampling, is to correct the bias that seems likely to result from a selection based on stakeholder input or public nomination of rules for retrospective review. Although important, stakeholder views might focus agencies' attention on rules with high costs to specific constituencies, but might omit from ex post RIA those other rules that might have been more socially costly (to the diffuse public), more successful (more cost-effective, higher net benefits), and rules that have generated ancillary impacts on populations not organized into stakeholder groups,³⁶⁶ each of which is quite important in testing and improving the accuracy of ex ante RIA.

Beyond the stages of ex ante and ex post analysis, an even more agile policy cycle can eventually evolve toward continuous adaptive monitoring and updating, at least for the most important impacts and design elements that warrant such an investment in ongoing analysis.³⁶⁷ The selection of which rules, design elements, and impacts would deserve such continuous monitoring and adaptive re-evaluation will depend on the benefits of costs of obtaining and analyzing this information. Replacing the distinction

365. For a discussion on the value and methods for studying representative samples of rules (rather than selecting only the costliest or most visible rules, which may yield biased inferences), see James K. Hammitt et al., *Precautionary Regulation in Europe and the United States: A Quantitative Comparison*, 25 RISK ANALYSIS 1215 (2005); Brendon Swedlow et al., *Theorizing and Generalizing about Risk Assessment and Regulation through Comparative Nested Analysis of Representative Cases*, 31 LAW POL'Y 236 (2009); Jonathan B. Wiener et al., *Better Ways to Study Regulatory Elephants*, 2 EUR. J. RISK REG. 311 (2013).

366. See WIENER ET AL., *supra* note 350, at 5.

367. See *id.* at 6. For a more complete analysis, see Daniel L. Ribeiro, *Adaptive Regulatory Impact Assessment: Beyond The Foresight-Hindsight Divide* (SJD Dissertation, Duke University School of Law, forthcoming 2017).

between ex ante and ex post RIA with an ongoing system of adaptive RIA (ARIA) would be an ambitious step. ARIA would work by combining foresight and hindsight as a strategy and tool of continual regulatory management. Core features of ARIA would include the comprehensive quantification of effects, implementation strategies conducive to counterfactual analysis (e.g., with pilot projects and other forms of mechanism experimentation³⁶⁸), continuous monitoring systems of indicators selected with the use of sensitivity analysis and value of information calculation, and periodic adjustments. ARIA would provide a dynamic trigger for regulatory adaptation, potentially leading to continually adaptive rules. External audits could add confidence to an ARIA system, randomly selecting rules (stratified by ranges of expected costs and benefits) for validating the analyses—with the same or new information. By embracing uncertainty and adaptation, ARIA could dispel one significant negative incentive of ex post RIA: instead of the idea that a policy was either right or wrong, ARIA would instill the idea that policies are “perpetual betas,” always learning about changing conditions and ready to adapt when necessary.³⁶⁹

Rethinking ex ante and ex post RIA systems provides a valuable opportunity to reflect on the possibility of integrating different evidence-based tools in a tiered deployment of different degrees of IA to different levels of policy.³⁷⁰ There is no one-size-fits-all type of IA that must be applied everywhere. Prospective ex ante IA is a major advance over no IA, but ex ante IA needs to be tailored to ensure it yields benefits in policy improvements that justify its costs and delays. Retrospective ex post IA is a major advance to supplement ex ante IA, but again needs tailoring to ensure its net benefits. Retrospective review that focuses only on administrative cost and on one rule at a time is too narrow to gain the benefits of learning to improve ex ante forecasts and policy designs, but that does not mean that full ex post IA must be applied everywhere. Meanwhile, applying IA only to agency rules may be missing opportunities to learn at other stages of the policy cycle, such as downstream IA of enforcement and upstream IA of primary legislation (requiring some selection process for which pending

368. See Jens Ludwig, Jeffrey R Kling & Sendhil Mullainathan, *Mechanism Experiments and Policy Evaluations*, 25 J. ECON. PERSP. 17-38 (2011); see also Greenstone, *supra* note 47; Lawrence E., McCray, Kenneth A. Oye & Arthur C. Petersen, *Planned Adaptation in Risk Regulation*, 77 TECH. FORECASTING & SOC. CHANGE 951 (2010).

369. See TETLOCK & GARDNER, *supra* note 6, at 190 (explaining how “superforecasters” are perpetual betas, i.e., incorporating a cycle of “try, fail, analyze, adjust, try again.”).

370. Wiener & Ribeiro, *supra* note 3.

legislative proposals warrant analysis, and some expert body to conduct this analysis). The concept and practice of tiering, employed in EIA, could be applied to RIA.³⁷¹ Governments could experiment with integrated systems of IAs, providing feedback data on the entire policy cycle, from legislation to regulation to enforcement actions.

Regulatory oversight bodies, such as U.S. OMB/OIRA and the EU Regulatory Scrutiny Board, play a key role in ensuring the quality of RIA systems, and in narrowing the gap between formal adoption and implementation of both ex ante and ex post RIA.³⁷² The task is analytically and institutionally difficult, and agencies can sometimes avoid oversight in various ways.³⁷³ To improve the quality of ex post RIA in the U.S., OIRA could implement several measures. First, it could promote transparency and open access to ex post RIA content and data by requiring that ex post RIAs be made publicly available. Second, OIRA (or the President in a new EO) could require that every important new proposed rule include a plan for how the regulation will be monitored, how data will be gathered and shared, and when a subsequent retrospective review will be undertaken.³⁷⁴ Third, OIRA could supplement Circular A-4 regarding ex ante RIA with new guidelines on selecting rules for, and methods for conducting, ex post RIA.³⁷⁵ These OIRA guidelines for retrospective review should highlight the need to assess not only administrative costs but rather a comprehensive scope including full social costs, benefits, and ancillary impacts (unintended benefits and harms). OIRA could follow the same model as the U.K. and EU guidelines and combine in a single document its guidelines for ex ante and ex post RIA. Fourth, OIRA itself could include, in its annual reports to Congress on the costs and benefits of rules, not just the aggregate sum of their ex ante estimates (as OIRA has traditionally reported), but also the findings of ex post analyses on those same rules, how those ex post analyses compare to the ex ante estimates, and what can be learned about the accuracy of ex ante methodology and the history of actual implementation.³⁷⁶ If the ex

371. *Id.*

372. See Wiener, *supra* note 2; see also Jonathan B. Wiener & Alberto Alemanno, *Comparing Regulatory Oversight Bodies in the US and EU: The US Office of Information and Regulatory Affairs and the EU Regulatory Scrutiny Board*, in *COMPARATIVE ADMINISTRATIVE LAW* (Edward Elgar 2d ed. forthcoming 2017).

373. See Nina A. Mendelson & Jonathan B. Wiener, *Responding to Agency Avoidance of OIRA*, 37 HARV. J.L. & PUB. POL'Y 447 (2014).

374. See *supra* note 351 (regarding Carter EO 12,044 and Bill S.1817 in 114th Congress, on prospective plans for retrospective review).

375. See Coglianese, *supra* note 42, at 61-62; WIENER ET AL., *supra* note 350, at 7.

376. WIENER ET AL., *supra* note 350, at 2-3; see also *supra* note 47.

post information is unavailable, this itself is valuable to report. Fifth, when exercising its oversight of ex ante RIAs of agencies' proposed rule revisions, OIRA could better scrutinize how agencies report the findings of the ex post RIAs (if any) of their prior rules—which in theory should inform the problem definition and the baseline for the new proposed rule revision.³⁷⁷ Sixth, OIRA could convene an interagency group, a NAS panel, or another outside group, to conduct broader retrospective reviews of multiple rules and multiple ex ante RIAs (selected using the value of information and representative sampling methods discussed above), in order to test the accuracy of ex ante methodologies and the actual performance of policy designs. OIRA could cooperate with its counterparts in Europe and elsewhere to share learning on ex post evaluation methods. Findings from these broader reviews might be used by OIRA to adjust estimates in ex ante RIAs, and to revise the guidance in Circular A-4. OIRA could seize the opportunity offered by retrospective review to learn from hindsight how to improve prospective foresight.

GAO should continue to play its key role in providing an extra layer of external oversight of the RIA system by investigating the real practice of ex ante and ex post RIA. GAO should not take at face value the agencies' survey responses or the information in progress reports published under EO 13,563; in addition, GAO should seek and report the findings documented in ex post RIA reports (or, at the very least, in the problem definition section of ex ante RIAs of rule revisions), as already called for under EO 13,563. GAO should emphasize the need for transparency, with open and easy access to documentation of ex post RIA processes. In this regard, GAO could also investigate and call attention to how an improved U.S. database of ex ante and ex post RIAs could be developed, borrowing from the EU and U.K.³⁷⁸

Independent external research is crucial to promote accountability, transparency, and reduce the adoption-implementation gap in IA systems. Researchers should be alert

377. See WIENER ET AL., *supra* note 350, at 6.

378. In the U.S., there is not, in normative requirements of practice, standardization of a central database of RIA. Part of the RIA information is published in the NPRM or in the Final Rule, in the Federal Register and in a web page in the Regulations.gov website. These web pages are identified by a RIN number, but there are rules without assigned RIN. The remaining RIA information is scattered in a folder of "supporting documents," across different files, with different names (sometimes "economic analysis," sometimes "draft RIA"). There are rules with different files for different types of impacts; and in some cases there are many other RIA files, of other rules, in the same folder. On the other side of the Atlantic, the U.K. and EU have central databases of RIAs, with a single digital file for each RIA. RIAs follow a standardized format (for name and content—at least the executive summary). In the EU database, opinions from oversight bodies are also published in the same database.

to the possible vagueness of terms used to indicate retrospective regulatory “review,” and should be careful when designing survey questionnaires to assess implementation of ex post RIA.³⁷⁹ Surveys used to assess the practice of IA should carefully distinguish the meaning of terms such as “review,” “evaluation” and “RIA,” and should inquire about the actual content of I. Surveys and interviews, if used, should be complemented by descriptions of what documented evidence was analyzed to validate the survey results.³⁸⁰

The evolution of ex post IA systems offers the chance to experiment with, and make relevant comparisons among, different institutional designs. Different approaches to who conducts ex post IA could be tested, both within the U.S. federal government, and through interstate and international variation. As we have suggested above, ex post IA could be performed by agencies, oversight bodies (such as OIRA, GAO and CBO, or CEQ for EIA), interagency working groups, external contractors, panels of the NAS, think tanks, and academics.³⁸¹ Agencies and the offices within them that promulgated the original rule may have the most information about the rule’s effects, but they may also face incentives to avoid spending their time doing an ex post RIA amidst other pressing demands, and to avoid criticizing their original RIA and rule. External researchers may have better incentives to conduct broader arrays of ex post RIAs on multiple rules and multiple impacts, to test the accuracy of ex ante RIA methods, but they may have less information about the rule’s details than would agency staff.

More broadly, the IA system could benefit significantly from the creation of a transnational network of experts with access to key IA data, building toward a global policy laboratory.³⁸² Testing different approaches across borders would enhance opportunities for comparing the IA methods (ex ante and ex post), counterfactual scenarios, policy designs, and institutional arrangements for the conduct and oversight of such reviews. It would also ease the path for new adopters (in particular developing countries) of ex ante and ex post IA systems by reducing information costs and improving accuracy. If well developed, retrospective review can be a powerful

379. See *supra* notes 226 and 296.

380. See Radaelli, *supra* note 218, at 927. The OECD 2015 study itself acknowledges that in-depth country reviews are necessary to complement the findings. See also ARDNT ET AL., *supra* note 224, at 9-10, 12-13.

381. See WIENER ET AL., *supra* note 350, at 7-8.

382. Jonathan B. Wiener & Alberto Alemanno, *The Future of International Regulatory Cooperation: TTIP as a Learning Process toward a Global Policy Laboratory*, 78 LAW & CONTEMP. PROBS. 103-36 (2015); Wiener, *supra* note 108, at 516.

tool to promote a learning, adaptive, and more cost-effective path to international regulatory cooperation.³⁸³

VI. CONCLUSION

Good governance requires both foresight and hindsight. Back in the 1770s, after taking Benjamin Franklin's advice on how to make a good decision, Joseph Priestley decided to accept the offer made by Lord Shelburne, becoming his adviser and tutor of his children.³⁸⁴ One of the attributes that seemed to matter most to Priestley before his decisions was the degree to which he would be able to conduct his own scientific research while working as a tutor. While working under Lord Shelburne, Priestley published five of the six volumes of his pneumatic chemistry studies, announcing the discoveries of ammonia, sulphur dioxide, nitrous oxide, nitrogen dioxide, and oxygen.³⁸⁵ The relationship lasted for about seven years, until Priestley decided to leave and move to Birmingham.³⁸⁶ One cannot help but wonder if Priestley, having used Franklin's Prudential Algebra to make his initial decision, applied the method again to change his plans, and whether Priestley compared the experience *ex post* with how he had foreseen it *ex ante*. Evidently, Priestley looked back ruefully, remarking in hindsight that "[r]eflecting on the time that I spent with Lord Shelburne, being as a guest in the family, I can truly say that I was not at all fascinated with that mode of life."³⁸⁷ Perhaps, from his retrospective review, Priestley learned valuable lessons for making future decisions.³⁸⁸ In other words, he may have improved his foresight from hindsight.

Today, applying the Franklin-Priestley logic, environmental regulation is going retro. Governments, stakeholders, and researchers are seeking not only good *ex ante* analysis, but also *ex post* evaluation. Following the diffusion of *ex ante* IA systems, *ex post* IA continues to advance and diffuse across regulatory systems. In our view, retrospective review is needed not just to revise particular rules, and not just to reduce their costs, but to deal with the inevitable march of change and the inescapably uncertain character of forecasting the future effects of policies. The normative criteria for *ex ante* IA—thinking ahead, considering intended and

383. *Id.*

384. ROBERT E. SCHOFIELD, *THE ENLIGHTENMENT OF JOSEPH PRIESTLEY: A STUDY OF HIS LIFE AND WORK FROM 1733 TO 1773*, at 372 (1997).

385. *Id.* at 372.

386. *Id.*

387. RUTT, *supra* note 10, at 205.

388. There is also some evidence that this might have been the case, as Priestley narrates in one of his letters that, after leaving Lord Shelburne, he received a second offer to engage again in his service—which Priestley declined. *Id.* at 207.

unintended consequences, improving accountability, and promoting greater net benefits—should in turn require monitoring and reassessing policy decisions by comparing prospective estimates to retrospective observations. Yet, ex post IA has advanced more on paper than in implementation. Ex post EIA is scant. Ex post RIA is growing, but remains focused narrowly on revising individual rules to reduce specific costs, rather than on learning from multiple rules and multiple impacts to improve the accuracy of ex ante IA and to design better policies. It also remains hidden from full view, as retrospective reviews are often reported but not released.

Complementing ex ante IA with ex post IA has the potential to advance a continual learning process, in which the ability to foresee the future consequences of today's policy decisions becomes stronger via learning from past efforts. Ex post IA has been sought by presidential orders and statutory mandates for decades, yet remains elusive. There are reasons to expect better results with increased transparency, enhancements to analytic approaches, improved roles for oversight bodies, study of multiple impacts and multiple rules to test and improve the accuracy of ex ante IAs and policy designs, a greater role for outside experts, and networks to experiment and compare findings across jurisdictions. Through these and other steps we may yet learn better foresight from hindsight.

**BEYOND THE PLANT PEST TRIGGER:
LAW, SCIENCE AND RATIONAL OVERSIGHT
OF TRANSGENIC CROPS**

JOHN J. PERONA*

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I. INTRODUCTION

A road trip through America’s heartland takes on a new dimension when one recognizes that the rising stalks of corn are probably genetically engineered. Genetically engineered (GE) corn, cotton, and soybeans occupied over half the United States arable cropland in 2013, with 90 to 93% of these crops consisting of GE varieties.¹

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1. JORGE FERNANDEZ-CORNEJO, SETH WECHSLER, MIKE LIVINGSTON & LORRAINE MITCHELL, GENETICALLY ENGINEERED CROPS IN THE UNITED STATES, ERR-162 U.S. DEP’T AGRIC. ECON. RES. SERV., 1, 9 (2014), [http://www.beyondpesticides.org/assets/media/documents/USDA_GE\[smallpdf.com\].pdf](http://www.beyondpesticides.org/assets/media/documents/USDA_GE[smallpdf.com].pdf).

Federal regulators in the Animal and Plant Health Inspection Service (APHIS) regularly approve GE crops, first for experimental field testing, and then for fully unregulated dissemination.² So far, most GE crops are “first-generation” varieties engineered for herbicide resistance (HR), insect resistance (Bt crops), or both.³ However, increasing numbers of “second-generation” GE crops with value-added traits, such as soybeans with distinctive lipid profiles, low-nicotine tobacco, and high-lysine corn are now becoming available.⁴ Studies demonstrate that consumers are willing to pay higher prices for these second-generation products,⁵ even though their efficacies are often not well-established. A “third-generation” of GE crops, engineered to produce pharmaceuticals and other non-food products, is now also envisioned.⁶

The spread of first-generation GE crops deepens and reinforces the paradigm of industrial agriculture in the U.S. that began in the post-World War II era.⁷ Natural soil replenishment and pest control mechanisms are greatly attenuated on today’s industry farms, because ecological cycles are disrupted by large-scale monocultures and the artificial separation of plants and animals.⁸ The current system demands the use of copious quantities of chemical herbicides, insecticides, and fertilizers, and is thus facilitated by GE commodity crops that are herbicide-resistant, pest-resistant, or both. Destructive impacts of industrialized agriculture include the reduction of biodiversity engendered by monoculture crops, and

2. APHIS is located within the U.S. Department of Agriculture (USDA). To date, it has authorized more than 38,000 permits and notifications for the safe importation, interstate movement, and environmental release (field testing) of GE organisms. After some years of field-testing and upon petition, APHIS may grant a determination of “non-regulated status” if it finds that the GE organism is unlikely to pose a plant pest risk. After this determination, the GE organism is no longer regulated. See *Permits, Notifications, and Petitions*, USDA ANIMAL & PLANT HEALTH INSPECTION SERV. (last visited Nov. 27, 2016), https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/permits-notifications-petitions/ct_submissions_home. Over 100 GE crops have been deregulated since 1987. See ANIMAL & PLANT HEALTH INSPECTION SERV., BIOTECHNOLOGY RESEARCH SERVICE STRATEGIC PLAN FY2015-FY2018 at 2, https://www.aphis.usda.gov/biotechnology/downloads/brs_strat_plan_15-18.pdf.

3. See *infra* Section II.A., for a description of GE crops.

4. See Fernandez-Cornejo, Wechsler, Livingston & Mitchell, *supra* note 1, at 1. Second-generation traits are often introduced as further alterations within a genetic background already modified for herbicide resistance.

5. *Id.* at 37-38.

6. *Id.* at 1.

7. CAROLYN DIMITRI, ANNE EFFLAND & NEILSON CONKLIN, USDA ECON. RESEARCH SERV., EIB-3: *THE 20TH CENTURY TRANSFORMATION OF U.S. AGRICULTURE AND FARM POLICY*, 1, 6 (2005), https://www.ers.usda.gov/webdocs/publications/eib3/13566_eib3_1_.pdf?v=41055.

8. *Industrial Agriculture: The Outdated, Unsustainable System that Dominates U.S. Food Production*, UNION OF CONCERNED SCIENTISTS, <http://www.ucsusa.org/our-work/food-agriculture/our-failing-food-system/industrial-agriculture#.VSFRIDr3U0s> (last visited Nov. 27, 2016).

greatly increased levels of air and water pollution, particularly from fertilizer use.⁹ GE plants add to these challenges in specific new ways, including adverse impacts from the increased use of toxic herbicides engendered by HR crops, proliferation of herbicide-resistant weeds, and economic damages associated with contamination of organic crops.¹⁰ Concerns about long-term health risks from the pervasiveness of HR crops also persist. For example, an active controversy exists regarding the possible carcinogenicity of glyphosate, the most widely used herbicide in the U.S. and the active ingredient in Monsanto's Roundup products.¹¹

In light of these issues, U.S. citizens might reasonably expect that the federal government would exercise stringent, rational governance of the GE crops released on America's farms. It does not. Instead, in 1986, U.S. regulatory agencies adopted the Coordinated Framework for the Regulation of Biotechnology (Coordinated Framework), which adopted the position that GE organisms require no particular oversight that cannot be provided under existing statutes.¹² A consequence of this choice is that jurisdiction over GE crops is now spread across three agencies: Department of Agriculture (USDA), Food and Drug Administration (FDA), and Environmental Protection Agency (EPA), with a myriad of overlapping, inconsistent, and inefficiently operating programs that allow significant gaps in oversight.¹³ The regulatory scheme is particularly inept in its response to rapid advances in agricultural biotechnology and the underlying, driving science of molecular genetics, which provide new experimental tools enabling the

9. *See id.*

10. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, *THE IMPACT OF GENETICALLY ENGINEERED CROPS ON FARM SUSTAINABILITY IN THE UNITED STATES*, 59-60 (2010) (ebook).

11. The cancer agency of the World Health Organization (WHO) designated glyphosate as a probable carcinogen. *See* Kathryn Z. Guyton et al., *Carcinogenicity of Tetrachlorvinphos, Parathion, Malathion, Diazinon, and Glyphosate*, LANCET ONCOLOGY (2015), [http://dx.doi.org/10.1016/S1470-2045\(15\)70134-8](http://dx.doi.org/10.1016/S1470-2045(15)70134-8). However, this was contradicted by a co-analysis from the WHO and the U.N.'s Food and Agriculture Organization (FAO), which stated that glyphosate was unlikely to pose a carcinogenic risk from exposure through diet. *See Joint FAO/WHO Meeting on Pesticide Residues, Summary Report* (May 16, 2016), <http://www.who.int/foodsafety/jmprsummary2016.pdf?ua=1>. An EPA scientific panel will soon meet to consider the issue. *See* Mark Heller, *EPA Panel to Study Whether Glyphosate Causes Cancer*, E&E NEWS (July 26, 2016), <http://www.eenews.net/greenwire/2016/07/26/stories/1060040801>.

12. Coordinated Framework for Regulation of Biotechnology, 51 Fed. Reg. 23302 § I(A) (June 26, 1986).

13. Gregory N. Mandel, *Gaps, Inexperience, Inconsistencies, and Overlaps: Crisis in the Regulation of Genetically Modified Plants and Animals*, 45 WM. & MARY L. REV. 2167 (2004).

increasingly sophisticated genomic manipulations associated with second- and third-generation GE crops.¹⁴

Many scholars and practitioners have called for new approaches to agricultural policy and environmental law to meet these challenges.¹⁵ As a contribution to these efforts, this paper offers a new analysis that addresses the challenges to regulation associated with novel scientific approaches for creating transgenic crops. Section II sets the stage by describing the nature of GE crops and the basis for how the Coordinated Framework functions in agricultural biotechnology.¹⁶ Oversight of GE crops under the Plant Protection Act (PPA) is then described. Under this law, GE plant releases to the environment are regulated only if the new, recombinant plant is created by a particular genetic methodology involving the use of plant pest DNA.¹⁷ From an analysis of how pest DNA is used to create a GE plant, the conclusion reached is that the regulatory scheme under the PPA does not rest on a solid foundation. This is because all GE crops constructed by these techniques use a modified version of the pest DNA that is unable to cause tumors in any plant.¹⁸

Section III reviews new approaches to the creation of transgenic plants that do not require use of any plant pest DNA, and thus fall outside the scope of the PPA's plant pest trigger as interpreted by APHIS and the courts.¹⁹ This is a significant loophole that further underlines the weakness of the present regulatory scheme. Indeed, developments in the science of plant genetic engineering are now proceeding so rapidly that they threaten to render the framework for oversight obsolete, perhaps within a decade or less. This real prospect of a regulatory vacuum should motivate comprehensive reforms. Substantive discussions that consider the challenges posed by the new technologies have begun in the international arena.²⁰

14. See Alex Camacho, Allen Van Deynze, Cecilia Chi-Ham & Alan B. Bennett, *Genetically Engineered Crops that Fly Under the US Regulatory Radar*, 32 *NATURE BIOTECHNOLOGY* 1087-91 (2014).

15. For a collection of recent scholarship in the field, see MARY JANE ANGELO, JASON J. CZARNEZKI & WILLIAM S. EUBANKS II, *FOOD, AGRICULTURE AND ENVIRONMENTAL LAW* (Envtl. Law Institute, 2013).

16. See Coordinated Framework for Regulation of Biotechnology, *supra* note 12.

17. George A. Kimbrell, *Regulating Transgenic Crops Pursuant to the Plant Protection Act*, in *FOOD, AGRICULTURE AND ENVIRONMENTAL LAW* 1, 281-99 (Mary Jane Angelo, Jason J. Czarnezki & William S. Eubanks II, eds. 2013).

18. Tzvi Tzfira & Vitaly Citovsky, *Agrobacterium-Mediated Genetic Transformation of Plants: Biology and Biotechnology*, 17 *CURRENT OPINION BIOTECHNOLOGY* 147 (2006).

19. See Camacho, Van Deynze, Chi-Ham & Bennett, *supra* note 14, at 1088-89.

20. See generally Maria Lusser & Howard V. Davies, *Comparative Regulatory Approaches for Groups of New Plant Breeding Techniques*, 30 *NEW BIOTECHNOLOGY* 437 (2013).

Section IV confronts the question of how these issues can be best resolved within the framework of the U.S. regulatory system. It is unlikely that Congress will enact changes to the PPA, since oversight of GE organisms has never been part of its rationale for establishing protections against plant pests or noxious weeds.²¹ APHIS has also been reluctant to forcefully apply its regulatory authority under the law.²² However, an alternative and more feasible approach is for the Office of Science and Technology Policy (OSTP) to amend its scope document guiding agencies as to how they should interpret the Coordinated Framework.²³ The new guidance should indicate the importance of a regulatory floor for all transgenic organisms, since without some examination it is impossible for agencies to judge whether new GE crops are substantially similar to existing varieties derived by classical plant breeding.²⁴ This is particularly relevant when the gene donor organism and the recipient crop plant are from geographically and environmentally disparate regions such that little or no capacity for gene transfer in the wild is plausible. In its new guidance, OSTP should also provide incentives or requirements for APHIS to consult with EPA before approving field trials of new GE crops. This consultation can fruitfully occur in the context of APHIS' required evaluation of whether to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA).²⁵ Consultation is justified by the complexity of the new science, comprising a field within EPA's, but not APHIS' expertise, and by the fact that EPA already has a significant role in the oversight of agricultural practices.²⁶ If successful, this process might have long-term beneficial impacts in fostering interagency collaborations in the food and agriculture fields more generally.

21. Enactment of the PPA in 2000 repealed or amended nine previous statutes, including the Federal Plant Pest Act and parts of the Federal Noxious Weed Act, 66 Fed. Reg. 21049 (Apr. 27, 2001). For the Congressional findings motivating the laws, see 7 U.S.C. § 7701 (2012).

22. See Kimbrell, *supra* note 17, at 290-93. See also *infra* Section II.C.

23. This bypasses Congress via executive order. See Exercise of Federal Oversight Within Scope of Statutory Authority: Planned Introductions of Biotechnology Products Into the Environment, 57 Fed. Reg. 6753-01 (1992) [hereinafter, 1992 Scope Document].

24. "Substantial similarity" to existing varieties from classical plant breeding is one criteria now used for risk assessment of GE crops. See NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., ENVIRONMENTAL EFFECTS OF TRANSGENIC PLANTS: THE SCOPE AND ADEQUACY OF REGULATION 83 (2002) (ebook).

25. 7 C.F.R. §§ 372.5(c)(3)(ii), 372.5(d) (1995).

26. See Kimbrell, *supra* note 17, at 293-94.

II. REGULATION OF GENETICALLY ENGINEERED CROPS IN THE U.S.

A. Essential Characteristics of GE Crops

Most GE crops in the U.S. are considered to be “first-generation” products, and are distinguished from non-GE crops by the incorporation of one or a few new genes. HR crops incorporate a modified version of a gene already present in all plants, which is essential to the plant’s metabolism.²⁷ The active chemical in Monsanto’s Roundup herbicide, glyphosate, is able to attach itself to the natural version of the protein encoded by the essential gene, blocking its required function and thus killing the plant.²⁸ In contrast, the new, altered protein in the GE plant retains its metabolic function but, because of its slightly altered structure, is no longer susceptible to inhibition by glyphosate.²⁹ Hence, the GE plant is able to withstand the application of Roundup while surrounding weeds are not. HR crops presently widespread in the U.S. include soybeans, corn, cotton, alfalfa, canola, and sugarbeets.³⁰

Bt crops are distinguished by the introduction of a naturally occurring gene from the common soil bacterium *Bacillus thuringiensis* (Bt). This gene encodes a protein that allows the plant to resist predation by insect pests.³¹ Proteins of this class form crystalline structures that are toxic to many beetles, mosquitoes, leafworms, moths, and other insect pests. The toxicity of the protein crystals is specific to certain classes of insects, allowing for targeted applications in agriculture depending on which pests are present in a particular area.³² GE Bt plants incorporate the genes encoding the crystal-forming proteins into their own DNA, and the proteins are

27. Through the operation of the universal genetic code present in all life, this essential gene encodes a protein known as EPSP synthase. In plants, this protein catalyzes a key step in a metabolic pathway that ultimately produces certain key amino acids essential to the life of the cell. In general, modified versions of genes often encode altered proteins, which may have distinct properties. See T. Funke et al., *Molecular basis for the herbicide resistance of Roundup Ready crops*, 103 No. 35 PROC. NATL. ACAD. SCI. U.S. 13010, 13010-15 (2006).

28. Robert Douglas Sammons & Todd A. Gaines, *Glyphosate resistance: state of knowledge*, 70 PEST MGMT. SCI. 1367, 1367-77 (2014).

29. One mechanism for glyphosate resistance in weeds is that their EPSP synthase genes naturally acquire similar mutations to those deliberately engineered into the crop plant. *Id.* at 1371. Profligate use of glyphosate has generated more distinct resistance mechanisms than are known for any other herbicide. *Id.* at 1367.

30. See FERNANDEZ-CORNEJO, WECHSLER, LIVINGSTON & MITCHELL, *supra* note 1.

31. Liliana Pardo-Lopez, Mario Soberon & Alejandra Bravo, *Bacillus thuringiensis insecticidal three-domain Cry toxins: mode of action, insect resistance and consequences for crop protection*, 37 FEMS MICROBIOL. REV. 3, 3-22 (2013); see also Funke et al., *supra* note 27 (noting the relationship of genes to proteins).

32. *Id.* at 4.

then referred to as plant-incorporated protectants (PIPs) by EPA.³³ U.S. crops incorporating PIPs include corn and cotton.³⁴ Some GE crops have been engineered to incorporate both HR and Bt traits. Such crops are referred to as “stacked cultivars”.³⁵

Second- and third-generation GE crops also incorporate one or a small number of genes, which are derived from a variety of other organisms depending on what trait is desired. As of September 2013, about 20% of the crops approved by APHIS for deregulation were second- or third-generation. It is likely that this fraction will increase substantially in the near future, since many new products are in development.³⁶

B. Coordinated Framework for the Regulation of Biotechnology

In 1986, the Coordinated Framework established the administrative basis for regulating GE plants in the U.S.³⁷ This document describes how authority is divided among EPA, USDA and FDA for oversight of organisms and foods developed with recombinant DNA techniques.³⁸ When the Coordinated Framework was released, the context for regulation was still based upon *process*: use of the new gene-splicing techniques itself was intended to be the basis of oversight.³⁹ However, in the next few years, both the National Academy of Sciences and the National Science Foundation issued

33. Plant-incorporated protectants (PIPs) are pesticidal substances produced by plants and the genetic material necessary for the plant to produce the substance. *See Biopesticides*, ENVTL. PROT. AGENCY, <http://www.epa.gov/pesticides/biopesticides> (last visited Nov. 27, 2016). Alternatively, Bt cells in a suitable suspension can be applied directly to the susceptible crop plants as a microbial bioinsecticide. This is an effective approach to pest management that does not require construction of a transgenic crop. APHIS has jurisdiction over the transgenic Bt plants, while EPA regulates the Bt bioinsecticide and the pesticide in the transgenic plant under FIFRA.

34. *See* FERNANDEZ-CORNEJO, WECHSLER, LIVINGSTON & MITCHELL, *supra* note 1.

35. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 10, at 30.

36. *See* Camacho et al., *supra* note 14, at 1088.

37. *See* 51 Fed. Reg. at 23,302-01. Authority for the Coordinated Framework is provided by the Nat'l Science and Technology Policy, Organization, and Priorities Act of 1976, 42 U.S.C. § 6601 (1976).

38. *See* 51 Fed. Reg. at 23304. Recombinant DNA molecules are defined as (i) molecules that (a) are constructed by joining nucleic acid molecules and (b) that can replicate in a living cell, i.e., recombinant nucleic acids; (ii) nucleic acid molecules that are chemically or by other means synthesized or amplified, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules, i.e., synthetic nucleic acids, or (iii) molecules that result from the replication of those described in (i) or (ii) above. NAT'L INST. OF HEALTH, NIH GUIDELINES FOR RESEARCH INVOLVING RECOMBINANT OR SYNTHETIC NUCLEIC ACID MOLECULES 9 (Apr. 2016).

39. *See* 51 Fed. Reg. at 23304. The process-based context is evident in the regulation of intergeneric combinations, or “deliberately formed microorganisms which contain genetic material from dissimilar source organisms.”

reports arguing that regulation should instead be *product-based*.⁴⁰ These reports made the argument that no specific, unique harms emerge solely from the use of genetic engineering methods to construct transgenic crops or microbes.⁴¹ Based upon these analyses, administrators envisioned that oversight should be based solely on the intrinsic characteristics and environments of the organisms, and not on the new methodologies by which they are derived. The essential idea was that classical plant breeding techniques such as tissue culture and hybridization also alter the genetic makeup of crop plants, yielding variants that may require regulatory oversight. No fundamental distinction was therefore seen between these earlier methods and the more recent, highly precise approaches to specifically introduce new genes.⁴² Of course, recombinant DNA technology allows construction of new GE plants that could never occur naturally or be derived from traditional plant breeding, since genes from any organism in nature can be combined.⁴³ Nonetheless, the judgment of the expert committees at the time was that no focused oversight of this particular aspect of the technology was warranted.⁴⁴

This early scientific consensus also influenced the decision to regulate GE plants and microorganisms within preexisting statutory frameworks.⁴⁵ Guidelines for oversight were developed under the auspices of an interagency working group, the Biotechnology Science Coordinating Committee (BSCC), formed in October of 1985. BSCC is part of the Federal Coordinating Council for Science,

40. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., FIELD TESTING GENETICALLY MODIFIED ORGANISMS: FRAMEWORK FOR DECISIONS (1989) (ebook); COMMITTEE ON THE INTRODUCTION OF GENETICALLY ENGINEERED ORGANISMS INTO THE ENVIRONMENT, NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., INTRODUCTION OF RECOMBINANT-DNA ENGINEERED ORGANISMS INTO THE ENVIRONMENT: KEY ISSUES (1987) (ebook).

41. See NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 40, at 14-15. Findings were based in part on the absence of attributable harms from genetic engineering experiments in many academic, industry and government laboratories. The rationale for an early self-imposed moratorium on recombinant DNA experiment is described in Paul Berg et al., Summary statement of the Asilomar conference on recombinant DNA molecules, 72 PROC. NATL. ACAD. SCI. US 1981, 1981-84 (1975). For the subsequent lifting of the ban see W.R. Grace and Co.; Filing of Food Additive Petition 46 Fed. Reg. 40331 (1981).

42. See NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 40, at 15; NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., GENETICALLY MODIFIED PEST-PROTECTED PLANTS: SCIENCE AND REGULATION (2000) (ebook). This report reiterated the findings of the 1989 analysis and provided further support for the paradigm of product-based regulation.

43. Genes are made entirely of DNA, and all DNA has the same overall structure. Hence, DNA segments can usually be interchanged without adversely affecting the capacity of the cell to replicate its DNA or to divide into daughter cells.

44. The final scope document released by OSTP in 1992 eliminated the notion of "intergeneric combinations" in its guidelines for agency action. See 57 Fed. Reg. at 6753-01; 51 Fed. Reg. at 23,304; *infra* Section IV.

45. See Coordinated Framework for Regulation of Biotechnology, 51 Fed. Reg. 23308 (June 26, 1986).

Engineering and Technology (FCCSET), a statutory interagency coordinating mechanism managed by the Office of Science Technology and Policy (OSTP) in the Executive Office of the President (EOP).⁴⁶ The BSCC-led process produced a scheme by which GE plants and microorganisms used in agricultural biotechnology are regulated under two statutes. First, new regulations were developed by APHIS under the PPA to evaluate all GE plants that fit the statutory definition of a plant pest.⁴⁷ Second, new rules were formulated under the authority of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), which is administered by EPA. This statute regulates the manufacture, sale and use of GE plants that incorporate pesticides, and microbial bioinsecticides that are applied in U.S. agriculture.⁴⁸ Other important aspects of the Coordinated Framework included a new authority to regulate all GE microbes as toxic substances under the Toxic Substances Control Act (TSCA), which is also administered by EPA.⁴⁹ The Coordinated Framework also specified several important roles for the Food and Drug Administration (FDA) in regulating GE foods and animals.⁵⁰

The Coordinated Framework envisioned that EPA, USDA, and FDA work “in an integrated and coordinated fashion, and together should cover the full range of plants, animals, and microorganisms

46. See Coordinated Framework for Regulation of Biotechnology, 51 Fed. Reg. 23,306 (June 26, 1986).

47. Introduction of Organisms and Products Altered or Produced Through Genetic Engineering Which are Plant Pests or Which There is Reason to Believe are Plant Pests, 52 Fed. Reg. 22908 (proposed June 16, 1987) (to be codified at 7 C.F.R. pt. 340); Genetically Engineered Organisms and Products: Notification Procedures for the Introduction of Certain Regulated Articles and Petition for Nonregulated Status, 58 Fed. Reg. 17044 (proposed Mar. 31, 1993) (to be codified at 7 C.F.R. pt. 340); Genetically Engineered Organisms and Products: Simplification of Requirements and Procedures for Genetically Engineered Organisms, 62 Fed. Reg. 23945 (proposed May 2, 1997) (to be codified at 7 C.F.R. pt. 340).

48. For an overview of FIFRA, see STEVEN FERREY, ENVIRONMENTAL LAW 640-47 (Wolters Kluwer Law & Business, 6th ed. 2013). Regulations for transgenic plants engineered to express pesticides are found at Plant-Incorporated Protectants (Formerly Plant Pesticides), Supplemental Proposal, 66 Fed. Reg. 37,855-69 (July 19, 2001) (to be codified at 40 C.F.R. pt. 140).

49. See David Markell, *An Overview of TSCA, its History and Key Underlying Assumptions, and its Place in Environmental Regulation* 32 WASH. U. J.L. & POL'Y 333 (2010). For the final EPA regulations governing GE microbes under TSCA, see Microbial Products of Biotechnology; Final Regulation Under the Toxic Substances Control Act, 62 Fed. Reg. 17,910 (proposed Apr. 11, 1997) (to be codified at 40 C.F.R. pt. 700, 720, 721, 723, 725); At EPA, FIFRA is administered by the Office of Pesticide Programs, while TSCA is administered by the Office of Pollution, Prevention and Toxics (OPPT). The recent amendments to TSCA do not specifically address EPA's authority to regulate GE microbes. Bergeson & Campbell, P.C., *TSCA Reform: An Analysis of Key Provisions and Fundamental Shifts in the Amended TSCA*, NAT'L LAW REV. (May 31, 2016), <http://www.natlawreview.com/article/tsca-reform-analysis-key-provisions-and-fundamental-shifts-amended-tsca>.

50. The FDA regulates both GE foods that are not exposed to pesticides, and transgenic animals. Transgenic foods are classified as food additives under the Federal Food, Drug and Cosmetic Act (FFDCA), while transgenic animals are classified as new animal drugs. See Kimbrell, *supra* note 17, at 286-87.

derived by the new genetic engineering techniques.”⁵¹ For example, EPA is the lead agency on pesticide regulation and is expected to coordinate with USDA and FDA in fulfilling its mission.⁵² However, in reviewing the multiagency approach of the Coordinated Framework, a study commissioned by the National Research Council (NRC) raised substantial concerns regarding regulatory overlap and failures in interagency communication.⁵³ These issues may become more acute in light of the fact that increasingly sophisticated scientific methods are becoming employed to create new second- and third-generation GE products.⁵⁴ Bringing additional scientific expertise to bear in the oversight process and improving mechanisms for collaboration between agencies are key challenges that must be faced in reimagining the regulatory scheme.

C. *The Plant Protection Act*

Authority for oversight of GE crops on America’s farms is derived from the PPA.⁵⁵ This statute authorizes the USDA Secretary to restrict the importation, movement, and means of conveyance of plants, plant products, biological control organisms, plant pests, and noxious weeds to prevent their introduction and interstate movement within the U.S.⁵⁶ Reflecting its early origins, the law and its associated regulations address the need to protect U.S. agriculture from invasion of plant pests and noxious weeds from other countries, and classify these harmful organisms into very specific taxonomic categories. Both the plant pest and noxious weed authorities allow petitions for the purpose of adding new organisms.⁵⁷ Regulation of transgenic plants was added under the authorities of several of the PPA’s precursor statutes, the Federal Plant Pest Act and Federal Plant Quarantine Act, shortly after the

51. See Coordinated Framework for Regulation of Biotechnology, 51 Fed. Reg. 23304 (June 26, 1986).

52. Plant Insecticides Subject to the Federal Insecticide, Fungicide, and Rodenticide Act; Proposed Rule, 59 Fed. Reg. 60,519-35 (proposed Nov. 23, 1994) (to be codified at 40 C.F.R. pt. 152, 174); Regulations Under the Federal Insecticide, Fungicide, and Rodenticide Act for Plant-Incorporated Protectants (Formerly Plant-Pesticides), 66 Fed. Reg. 37,771-37,817 (July 19, 2001) (to be codified at 40 C.F.R. p. 152, 174).

53. See *supra* note 44, Section 4.3, at 155.

54. See *infra*, Section III.

55. 7 U.S.C. §§ 7701-7784 (2012).

56. CONG. RESEARCH SERV., SUMMARIES FOR THE AGRICULTURAL RISK PROTECTION ACT OF 2000. TITLE IV. PLANT PROTECTION ACT, <https://www.govtrack.us/congress/bills/106/hr2559>.

57. 7 C.F.R. § 360.500; 7 U.S.C. § 7711(c)(2) (2012).

Coordinating Framework was established.⁵⁸ These regulations were then imported with no substantive changes into the PPA when it was enacted in 2000.⁵⁹ They have not been updated since.⁶⁰

1. The Noxious Weed Authority

The noxious weed provisions of the PPA confer broad regulatory authority. A noxious weed is defined as: “Any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment.”⁶¹

On its face, this definition should readily encompass, for example, HR commodity crop seeds that escape to contaminate a nearby organic farm, thereby causing economic damages to that agricultural interest. Showings that the liberal application of herbicides leads to dissemination of damaging HR “superweeds,” or increases health risks of farmworkers, would also appear to be cognizable harms accommodated under the statute’s mandate to protect the natural resources of the U.S., the public health, or the environment.⁶²

However, while a plain reading of the statute suggests that many GE crops could well be regulated as noxious weeds, USDA has yet to affirmatively employ its authority to do so.⁶³ Specific regulations in the PPA addressing transgenic crops are described only within the bounds of the plant pest authority.⁶⁴ This suggests that at the time it formulated the regulations, APHIS chose not to view its mandate to regulate noxious weeds as an appropriate vehicle to

58. See *supra* note 21.

59. Plant Protection Act, Revisions to Authority Citations, 66 Fed. Reg. 21,049 (proposed Apr. 27, 2001) (to be codified at 7 C.F.R. pts. 300-302, 318, 319, 322, 330, 340, 351-56, 360, 361, 371, 372, 380; 9 C.F.R. pts. 1-3, 11, 49-54, 70-75, 77, 79, 80-82, 85, 89, 91, 92, 94-99, 101-109, 112-18, 122-24, 145, 147, 151, 156, 160-62, 166, 167); Plant Pest Regulations; Update of Current Provisions, 66 Fed. Reg. 51,340 (proposed Oct. 9, 2001) (to be codified at 7 C.F.R. pt. 340).

60. On October 9, 2008, USDA published a proposal to amend the regulations for GE crops under the PPA. See *Importation, Interstate Movement, and Release Into the Environment of Certain Genetically Engineered Organisms*, 73 Fed. Reg. 60008-48 (proposed Oct. 9, 2008) (to be codified at 7 C.F.R. pt. 340). However, the proposed rule was withdrawn on March 4, 2015. *Importation, Interstate Movement, and Release Into the Environment of Certain Genetically Engineered Organisms*, 80 Fed. Reg. 11598 (proposed Oct. 9, 2008) (to be codified at 7 C.F.R. pt. 340).

61. 7 U.S.C. § 7702(10) (2012). Current regulations enumerate over 100 distinct varieties of noxious weeds that are regulated under the statute. 7 C.F.R. § 360.200 (2012).

62. See Kimbrell, *supra* note 17, at 292-93, for further description of harms that are arguably included within the agency’s statutory mandate.

63. *Id.* at 292.

64. 7 C.F.R. § 340.2 (2016); see also *infra*, Section II.C.2.

oversee GE crops. The agency did later propose new rules, apparently envisioning application of the noxious weed authority to this end, but those rules were withdrawn in early 2015.⁶⁵ Further, in *International Center for Technology Assessment v. Johanns (Johanns)*,⁶⁶ the D.C. Circuit clearly stated that APHIS is under no obligation to add to the list every plant that fits the statutory definition.⁶⁷ Instead, the court emphasized that, in responding to petitions to add new noxious weeds, APHIS retains discretion that is constrained only by the need to provide a reasoned explanation based upon sound science.⁶⁸ From the withdrawal of the proposed rule and the court's decision in *Johanns*, it appears that general application of the noxious weed authority to all GE plants may be unlikely in the near future. However, extension of the authority in particular, well-justified cases could be possible.⁶⁹ Any choice at all to regulate under the noxious weed authority would certainly mark a significant moment in the evolution of the PPA.

2. The Plant Pest Authority

The primary basis for regulation of GE crops in the U.S. derives from their classification as plant pests under the PPA. Plant pests are defined as follows:

Any living stage (including active and dormant forms) of insects, mites, nematodes, slugs, snails, protozoa, or other invertebrate animals, bacteria, fungi, other parasitic plants or reproductive parts thereof; viruses; or any organisms similar to or allied with any of the foregoing; or any infectious agents or substances, which can directly or indirectly injure or cause disease or damage in or to any plants or parts thereof, or any processed, manufactured, or other products of plants.⁷⁰

65. *See id.*

66. *Int'l Ctr. for Tech. Assessment v. Johanns*, 473 F. Supp. 2d 9 (D.D.C. 2007). This is the only case that addresses application of the PPA's noxious weed authority to GE plants.

67. *Id.* at 26.

68. *Id.* at 26-27.

69. For example, in March of 2014, the Center for Food Safety (CFS) petitioned USDA to regulate several multiple herbicide resistant plants as noxious weeds. At the time of publication, USDA-APHIS had not yet responded to the petition. CTR. FOR FOOD SAFETY, COMMENTS ON USDA APHIS'S PROPOSED PLANT PROTECTION ACT APPROVAL OF DOW'S 2, 4-D-RESISTANT CORN AND SOY; NOXIOUS WEED PETITION (2014), http://www.centerforfoodsafety.org/files/cfs-24-d-corn-and-soy_legal_3_11_2014_final_77612.pdf.

70. 7 C.F.R. § 340.1 (2016).

GE crops are not likely to come within this definition, since they are not infectious agents or substances, nor are they parasitic.⁷¹ It has been argued that GE crops could be classified as plant pests based upon the indirect injuries that they cause to organic agriculture (economic damages from contamination) and to biodiversity (transgenic pollution).⁷² However, this claim was rejected in a case involving Roundup Ready (RR) alfalfa, in which a panel of the 9th Circuit Court of Appeals emphasized that these harms, while significant, are not plant pest harms within the meaning of the PPA.⁷³ Instead, the court upheld the agency's claim that only direct or indirect physical damage or destruction of plants is a protected injury.

If transgenic crops by their nature do not constitute plant pests, then why are they regulated under the PPA? Remarkably, oversight is based instead on the fact that the new genes are introduced by using the plant pest *Agrobacterium tumefaciens*.⁷⁴ *Agrobacterium* is common in many soils and is the causative agent of crown gall disease, which generates damaging tumors in many plants.⁷⁵ The mechanism of tumor formation involves the transfer of certain genes from the bacterial cell into the plant.⁷⁶ In 1983, it was demonstrated that the oncogenic (tumor-generating) genes of *Agrobacterium* could be replaced by other genes of interest,⁷⁷ offering an approach to plant transformation that now provides the most common and efficient method for generating new GE crops.⁷⁸ In the laboratory, the DNA of desired, external genes is combined with a larger *Agrobacterium*-derived DNA that is able to integrate into the plant chromosome. This newly engineered DNA is incorporated into the living *Agrobacterium* cells, which are then co-cultivated with cells

71. Parasitic plants possess specific root structures that connect them to another plant, through which they acquire nutrients and thus damage the capacity of the host to fully flourish. See Daniel L. Nickrent and Lytton J. Musselman, *Introduction to Parasitic Flowering Plants*, THE PLANT HEALTH INSTRUCTOR (2010), <http://www.apsnet.org/edcenter/intropp/pathogengroups/pages/parasiticplants.aspx>.

72. Center for Food Safety v. Vilsack, 718 F.3d 829 (9th Cir. 2013).

73. *Id.* at 839-41.

74. E.W. Nester, *Agrobacterium: Nature's Genetic Engineer*, 5 FRONTIERS IN PLANT SCIENCE 1 (2015), <http://journal.frontiersin.org/article/10.3389/fpls.2014.00730/full>.

75. *Id.* at 1, 10.

76. Mary-Dell Chilton et al., *Stable Incorporation of Plasmid DNA into Higher Plant Cells: the Molecular Basis of Crown Gall Tumorigenesis*, 11 CELL 263, 263 (1977).

77. A. Hoekema et al., *A binary plant vector strategy based on separation of the Vir- and T region on the Agrobacterium tumefaciens Ti plasmid*, 303 NATURE 179, 179-80 (1983).

78. While the natural range of *Agrobacterium* is restricted to dicotyledonous plants (a subset of all flowering plants), it has been possible to find conditions in the laboratory that allow infection of many more species. This considerably expands the scope of the technology. "Transformation" means introduction and stable uptake of DNA into cells. See Tzfira & Citovsky, *supra* note 18.

or tissues harvested from the crop of interest.⁷⁹ Transgenic shoots are later recovered for generation of new, stable crop lines.

GE crops are thus considered “regulated articles” because some of the donor DNA comes from a plant pest.⁸⁰ However, the tumor-promoting genes of all *Agrobacterium* strains used in laboratory GE plant derivations have been removed, rendering the bacteria disabled. Indeed, in the RR alfalfa case, the court ruled against the plaintiff’s assertions that GE alfalfa is a plant pest in part because the pest DNA used was disabled.⁸¹ The court stated that the *Agrobacterium* “can no longer injure other plants *once the bacterium’s genetic material is inserted into the genetic structure of conventional alfalfa.*”⁸² The reality, however, is that the lack of oncogenic DNA in the *Agrobacterium* strain means that no plant pest-related injury is possible *at any stage* of the process—and this is true for any GE crop constructed with this technology.⁸³ This could form the basis for a challenge to the regulations as outside of the authority of the statute, in which the question to be litigated would be whether an engineered *Agrobacterium* lacking oncogenic sequences is a plant pest within the meaning of the PPA.⁸⁴ Regulation of GE plants under the plant pest authority of the PPA, the sole present basis for all GE crop regulation in the U.S., thus, rests on highly uncertain grounds.

III. THE MUSHROOMING REGULATORY LOOPHOLE

Administrative oversight may languish, yet science continues to advance. This dynamic is now provoking new concerns that even the existing weak regulatory paradigm may not endure much longer. Novel techniques increasingly enable the creation of GE plants

79. Sylvester Anami et al., *Higher plant transformation: principles and molecular tools*, 57 INT. J. DEV. BIOL. 483, 483 (2013).

80. 7 C.F.R. § 340.1 (1997). Gene(s) of interest may be taken from any organism, but all GE crops generated using *Agrobacterium* are regulated because all have the *Agrobacterium* DNA sequences necessary to insert the foreign DNA.

81. See Vilsack, 718 F.3d 829 at 840-41.

82. *Id.* (emphasis added).

83. The recombinant DNA manipulations are carried out using the common laboratory bacterium *Escherichia coli*, and the DNA segment containing the gene of interest is then introduced into a modified *Agrobacterium* strain that lacks the oncogenic DNA, prior to infection of the plant cells. *Agrobacterium* cells that have plant pest properties are not present at any stage of the genetic engineering process. See Tzifira & Citovsky *supra* note 18, at 147.

84. A modified *Agrobacterium* with oncogenic sequences removed is obviously “similar to” the natural organism that is a plant pest, and is also “infectious” in the sense that part of its DNA is transferred to the crop plant. However, the DNA that is transferred is not the oncogenic segment, but the new external gene, which may not “cause disease or damage . . .” See *infra*, Section II.C.2 for the regulatory definition of “plant pest”; See discussion *infra* Part IV.

without any use of *Agrobacterium*, and thereby allow developers to circumvent regulation entirely.⁸⁵ As suggested, APHIS could respond by asserting its noxious weed authority to ensure some oversight,⁸⁶ but it has chosen not to do so. Instead, private and public entities seeking to avoid regulation are invited to send the Biotechnology Regulatory Services (BRS) bureau of APHIS a brief letter describing the transformation method, the DNA constructs used, the donor and recipient organisms, and the new genetic trait that they seek to introduce.⁸⁷ APHIS considers these inquiries and usually responds rapidly with an even briefer letter, often within just a few months. A reply affirming the firm's view ends the matter, assuring no regulation. Twenty-six such inquiries were made between 1994 and 2012; of these, 22 were ruled outside the scope of regulation.⁸⁸ Thirty more determinations of nonregulated status were then made publicly available by APHIS between 2013 and March 2016.⁸⁹ Some of these inquiries come from small private firms and public sector institutions, suggesting that GE seed developers lacking deep pockets are deliberately adopting the new technologies to avoid oversight.⁹⁰ It is apparent that the continued viability of the U.S. regulatory scheme for GE crops is now wholly dependent on how rapidly the new approaches can be brought on line at sufficiently low cost to compete with the well-established *Agrobacterium* technology. Given the sharp, recent increase in the number of inquiries to BRS, and a parallel recent rise in scientific publications and patent applications,⁹¹ this timeframe could be quite short.

A. New Approaches for Delivering Foreign DNA into Plants

Since *Agrobacterium* is used to deliver foreign DNA into plant cells (the *transformation* process), the most direct challenges to regulation come from the invention of new delivery techniques. The most common alternative, which has been available for some time,

85. See Camacho et al., *supra* note 14, at 1088.

86. See *supra* Section II.C.2.

87. See *Biotechnology Regulatory Services (BRS)*, USDA ANIMAL & PLANT HEALTH INSPECTION SERV., <http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/biotechnology?1dmy&urile=wcm%3Apath%3A/> (last visited Nov. 27, 2016).

88. See Camacho et al., *supra* note 14, at 1090.

89. See *Petitions for Determination of Nonregulated Status*, USDA ANIMAL & PLANT HEALTH INSPECTION SERV., https://www.aphis.usda.gov/biotechnology/petitions_table_pending.shtml (last visited Nov. 27, 2016).

90. See Camacho et al., *supra* note 14, at 1088.

91. See Maria Lusser, Claudia Parisi, Damien Plan & Emilio Rodríguez-Cerezo, *Deployment of New Technologies in Plant Breeding*, 30 NATURE BIOTECHNOLOGY 231, 231 (2012).

is biolistics.⁹² DNA containing the gene of interest is attached to the surface of a very small, metal sphere (a “microparticle”), which is fired at high speed into the plant cell.⁹³ The break in the plant cell wall from the microparticle bullet is repaired by natural processes, and the DNA then integrates into the plant chromosome.⁹⁴ A broad range of plants, including all common commodity crops in the U.S., have been successfully transformed with this approach.⁹⁵ The success of biolistics in any particular application, however, and its efficacy as compared to *Agrobacterium*, depend on a wide range of experimental variables that have to be optimized in each case. Most of the time, biolistics results in the integration of many copies of the desired genes into the chromosome, which often has deleterious effects on the consequent properties of the GE plant.⁹⁶ This explains why *Agrobacterium* has been the method of choice to date, although the recent regulatory approvals by APHIS of many biolistics-derived GE plants demonstrate that these hurdles are increasingly surmountable.⁹⁷

Other direct gene transfer systems that bypass the need for *Agrobacterium* have also been developed. One set of methods involves the preparation of protoplasts, which are plant cells lacking the rigid exterior cell wall.⁹⁸ This makes the uptake of DNA much easier to accomplish, by techniques involving treatment with chemical reagents or application of electric fields. Although only a small number of plants, most notably tobacco, have so far been successfully transformed by this approach, ongoing work holds potential to expand the number of applications.⁹⁹ Alternatively, DNA has been introduced using viruses that have a broad host range and are capable of infecting many plants.¹⁰⁰ In this case, the delivery system may be regulated under the PPA as a plant pest, since plant viruses are an enumerated category under the statute.¹⁰¹ However, modification of the virus to eliminate its pathogenic

92. J.C. Sanford, F.D. Smith and J.A. Russell, *Optimizing the Biolistic Process for Different Biological Applications*, 217 *METHODS ENZYMOL* 483, 483-85 (1993).

93. Nigel J. Taylor & Claude M. Fauquet, *Microparticle Bombardment as a Tool in Plant Science and Agricultural Biotechnology*, 21 *DNA AND CELL BIOLOGY* 963, 964 (2002).

94. *Id.* at 971-72.

95. *Id.* at 967.

96. *Id.* at 972.

97. See Camacho et al., *supra* note 14.

98. Jeffrey A. Townsend et al., *High frequency modification of plant genes using engineered zinc finger nucleases*, 459 *NATURE* 442, 442 (2009).

99. J. Shen et al., *Isolation, Culture and Transient Transformation of Plant Protoplasts* 63 *CURRENT PROTOCOLS IN CELL BIOLOGY*, 2.8.1, 2.8.1-2.8.2 (2014).

100. Ira Marton et al., *Nontransgenic Genome Modification in Plant Cells*, 154 *PLANT PHYSIOLOGY* 1079, 1079 (2010).

101. See *supra* Section II.C.2.

properties while maintaining its capacity as a gene delivery vehicle is also possible, as demonstrated for *Agrobacterium*.¹⁰² This would threaten jurisdiction under the PPA. Finally, there is potential for delivering not an external gene, but instead, its encoded protein enzyme directly into a plant cell—where it is then capable of modifying the DNA of the plant to create a GE organism.¹⁰³ Given so many new developments in recent years, it seems unlikely that the ingenuity of plant genetic engineers has been fully exhausted. Further regulation-threatening technologies are almost certainly in the pipeline.

B. The Blurred Line Between Transgenic and Non-Transgenic Plants

Other aspects of the new biotechnology-based plant breeding techniques challenge the existing regulatory paradigm because they threaten to eliminate any clear distinction between plants that are transgenic and those that are not. For example, in contrast to the use of *Agrobacterium* in first-generation applications, where control of gene placement in the plant chromosomes was not possible, new site-specific mutagenesis approaches allow for highly targeted and usually much more limited modifications.¹⁰⁴ These techniques make it possible to knock out or modify specific plant gene functions by introducing targeted changes, insertions, and/or deletions of DNA at specific positions.¹⁰⁵ The recently approved bruise-resistant apple is an example of a GE crop created by this approach.¹⁰⁶ Further, in many of these methods, the external recombinant DNA molecules and proteins are introduced solely for the purpose of modifying existing plant genes, and are then removed before propagation of

102. See *supra* Section III.A.

103. See Susana Martin-Ortigosa et al., *Mesoporous Silica Nanoparticle-Mediated Intracellular Cre Protein Delivery for Maize Genome Editing via loxP Site Excision*, 164 *PLANT PHYSIOLOGY* 537, 537 (2014).

104. Yuriko Osakabe & Keishi Osakabe, *Genome Editing with Engineered Nucleases in Plants*, 56 *PLANT CELL PHYSIOL.* 389, 389-90 (2015). There are many distinct approaches, but the common idea is that the newly introduced DNA does not itself encode a desired function (such as a plant-incorporated protectant), but rather encodes an enzyme system, such as a zinc-finger nuclease (ZFN), that is capable of specifically modifying the pre-existing DNA of the plant cell. After the enzyme has done its work, its gene is eliminated during further cell propagation, so that the final stable line lacks any integrated transgene.

105. Some techniques rely on ribonucleic acid (RNA) to silence specific plant genes or to cause epigenetic modification of the plant genome. These approaches are known, respectively, as “reverse breeding” and “RNA-dependent DNA methylation” (RdDM). See Lusser et al., *supra* note 91, at 232.

106. For a recent APHIS press release on bruise-resistant apples, see *Questions and Answers: Arctic Apple Deregulation*, USDA ANIMAL & PLANT HEALTH INSPECTION SERV. (2015), http://www.aphis.usda.gov/publications/biotechnology/2015/faq_arctic_apples.pdf.

the new, stable plant line. This avoids stable integration of a transgene into the genome, while generating a precisely modified nontransgenic plant. Indeed, with this technology, it is virtually impossible to later distinguish whether the final engineered plant has been derived from genetic engineering approaches or from classic plant breeding.¹⁰⁷

Another challenge arises from techniques known as cisgenesis and intragenesis, by which genetic engineering methods are used to alter plants using a source gene pool that is drawn from plants with some capacity to interbreed with the plant that is modified.¹⁰⁸ These approaches employ *Agrobacterium* or biolistics to introduce the new DNA, but in the case of cisgenesis, the resulting transgenic organism could also have been produced using classical plant genetics.¹⁰⁹ In transgenesis, more varied combinations of genes and regulatory elements are introduced, making generation of the resulting plant by classical approaches unlikely. In both approaches, the transgenes are again segregated out in subsequent strain propagation, so that the new plants are not transgenic but are instead the progeny of a GE plant.¹¹⁰ It is of interest to note that cisgenesis and transgenesis were developed in part to quell anxiety about GE crops, since surveys have repeatedly shown that many consumers are more comfortable with traditional plant breeding than with recombinant DNA approaches—even when the resulting products are indistinguishable.¹¹¹

Two other developments complicate the regulatory picture. First, using traditional plant breeding methods, it is now possible to graft the vegetative component of a non-GE plant (the scion) onto the rootstock of a GE plant.¹¹² This raises the question of whether the fruit of this plant should be considered a GE food. Second, a suspension of non-tumor generating *Agrobacterium* can be used to infiltrate non-germline plant tissues (usually leaves) to enable high local expression of an external gene that is not inherited by the plant's progeny.¹¹³ Again, this raises questions regarding the meaning of "plant pest" and the extent to which only transient GE modifications should be regulated.

107. Nancy Podevin, Yann Devos, Howard Vivian Davies & Kaare Magne Nielsen, *Transgenic or Not? No Simple Answer!*, 13 EUR. MOLECULAR BIOLOGY ORG. REPORTS 1057, 1057 (2012).

108. See Lusser & Davies, *supra* note 20, at 441.

109. New *Agrobacterium* vectors that eliminate the possibility of introducing any plant pest DNA into the plant chromosome have been developed for some cisgenesis applications. This introduces yet another regulatory wrinkle. See *id.* at 442.

110. See *id.* at 443.

111. See Podevin et al., *supra* note 107, at 1057.

112. See Lusser & Davies, *supra* note 20, at 444.

113. This is one of three approaches collectively termed "agro-infiltration." See Lusser et al, *supra* note 91, at 232.

IV. BEYOND THE PLANT PEST TRIGGER

Driven by scientific breakthroughs, the landscape of agricultural biotechnology has expanded tremendously in the nearly thirty years since the Coordinated Framework was established, exposing the inadequacies of a regulatory system built on laws not designed to accommodate such advances. The clear threat of further devolving to a condition where there is effectively no oversight at all should now lend substantial impetus for reform. Arguments for change should focus on emphasizing particular aspects of the present system that are relevant to all GE products, and that have potential to resonate across the broadest possible political spectrum. These arguments are essentially economic. One clear approach is to emphasize the imbalance between the weak U.S. oversight of GE products and the much stronger regulation abroad, particularly in the European Union (EU) and South America.¹¹⁴ In most foreign jurisdictions, GE organisms are regulated under a process-based framework in which the essential criterion is whether its genetic material was produced in ways that could not occur naturally.¹¹⁵ An active international debate is underway with respect to what the scope of oversight should be, with many key unresolved issues focused on the new plant breeding techniques that blur the lines between transgenic and non-transgenic products.¹¹⁶ The U.S. has yet to substantively participate actively in these exchanges. However, the outcome of the discussions could clearly have important impacts on the development of international trade agreements.¹¹⁷ U.S. corporations seeking foreign markets for GE products, and U.S. consumers desiring access to international goods, clearly each have a stake in establishing common international norms.¹¹⁸

114. See Podevin et al., *supra* note 107, at 1060.

115. *Id.* It is noteworthy that only the U.S. and Canada have adopted product-based regulatory frameworks.

116. See Lusser & Davies, *supra* note 20; *supra* Section III.

117. Provisions of the Trans-Pacific Partnership (ustr.gov/tpp) may work against the regulation of GE products. This could cause substantial disruption as it would create a block of Pacific nations operating under rules substantially opposed to the EU and South America. See Adam Needelman, *Whose Century is it?: The Trans-Pacific Partnership, Food, and the 21st Century "Trade Agreement"*, INST. FOR AGRICULTURE & TRADE POLICY (Aug. 27, 2014), http://www.iatp.org/files/2014_08_22_TPP_AN_0.pdf.

118. For a discussion of the problems of "asynchronous" regulation between the EU and others, see Alexander J. Stein & Emilio Rodriguez-Cerezo, *International trade and the global pipeline of new GM crops*, 28 NATURE BIOTECHNOLOGY 23, 23-25 (2010).

The large and growing market for organic agricultural products may also offer impetus to reexamine the regulatory structure. Consumer demand for organics continues to expand,¹¹⁹ yet achieving a reasonable balance between agricultural biotechnology proponents and organic farmers has been elusive.¹²⁰ Contamination of organic crops with GE seeds is a problem in many agricultural sectors, and threatens to cause substantial economic disruption given that the value of the organic produce may be completely eliminated by these incidents.¹²¹ Recognition of these genuinely competing interests and the threats to the lucrative organic farming industry from continued, unregulated GE crop proliferation might also help motivate a fresh look at the regulatory framework.

*A. Broadening Regulatory Scope
by Executive Authority*

Identifying a few areas of common concern among stakeholders is clearly necessary, but where in the government might advocates of more robust oversight most effectively focus their efforts? To imagine how the U.S. could enact a more rational, science-based system of oversight for GE crops, it is well to begin by recognizing that the present regulatory architecture was created almost entirely by the executive branch, with no direct input from Congress. In passing the National Science and Technology Policy, Organization, and Priorities Act (NSTPOPA) of 1976,¹²² legislators did establish OSTP within the EOP, and also provided that appointment of the OSTP Director be subject to the advice and consent of the Senate.¹²³ By establishing this typical level of involvement for the creation of new executive agencies, Congress, of course, retained the right to oversee the Director's activities.¹²⁴ The Director also is

119. Organic foods have recently experienced double-digit growth rates and presently represent about 4% of the U.S. food supply. See *Organic Agriculture: Overview*, USDA, <http://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture.aspx> (last updated June 2, 2015); see also Stephanie Strom, *Paying Consumers to Go Organic, Even Before the Crops Come In*, N.Y. TIMES (July 14, 2016), http://www.nytimes.com/2016/07/15/business/paying-farmers-to-go-organic-even-before-the-crops-come-in.html?_r=0; *Big food companies underwriting switch to organic*, GREENWIRE (July 15, 2016), <http://www.eenews.net/greenwire/stories/1060040348/print>.

120. See CENTER FOR FOOD SAFETY, A REPORT BY THE CENTER FOR FOOD SAFETY: MONSANTO V. U.S. FARMERS (2005), <http://www.centerforfoodsafety.org/reports/1401/monsanto-vs-us-farmers>.

121. See Kimbrell, *supra* note 17, at 284-86.

122. 42 U.S.C. § 6601 (2012).

123. *Id.* § 6612.

124. The role of the Director "is to provide, within the Executive Office of the President, advice on the scientific, engineering, and technological aspects of issues that require attention at the highest levels of Government." *Id.* § 6613.

obligated to keep Congress informed of the OSTP's work in yearly Science and Technology Reports.¹²⁵ However, Congress's monitoring role has remained just that: the key decisions to regulate GE organisms based on the risks of the product rather than the process, and within the context of existing statutes, were made by OSTP and then implemented in the agencies quite independently of the legislative branch. Indeed, on its own initiative, Congress has never revealed an intent or belief that GE organisms should be subjected to any oversight other than that which presently operates—or indeed to any oversight at all. Although many commentators have suggested that Congress should amend the PPA to address the regulatory shortfalls described above,¹²⁶ given its manifest lack of interest, not to mention the difficulties of negotiating an issue as divisive as genetic engineering in such a politically polarized body, it seems highly unlikely that statutory revisions will be forthcoming.

Those seeking more thorough oversight of GE organisms also should not expect assistance from the judicial branch. In addition to the discretion that appellate courts have granted APHIS with respect to its interpretation of the noxious weed and plant pest authorities of the PPA,¹²⁷ a complaint directed at the Coordinated Framework itself was also turned aside.¹²⁸ In this early case, plaintiffs sought to enjoin operation of the Coordinated Framework by asserting that the definitions employed were incomplete and inexact, and that ecological harm could ensue from the inadequate oversight of potentially dangerous GE organisms. The court denied the plaintiff's claim on standing grounds, and in so doing emphasized that the Coordinated Framework plainly did not impose any limitations or requirements for future regulations, but served merely as an organizing, enabling document that agencies could rely on in formulating those regulations.¹²⁹ This rationale would surely also determine the outcome of any challenges to the 1992 Scope Document.¹³⁰ OSTP guidelines apply only to agency discretion

125. *Id.* §§ 6614-15.

126. See, e.g., Sheryl Lawrence, *What Would you do with a Fluorescent Green Pig: How Novel Transgenic Products Reveal Flaws in the Foundational Assumptions for the Regulation of Biotechnology*, 34 *ECOLOGY L. Q.* 201, 281-82 (2007) (arguing that existing laws create a regulatory *infrastructure* too inflexible to address the spectrum of unforeseen risk potentials); Mary Jane Angelo, *Regulating Evolution for Sale: An Evolutionary Biology Model for Regulating the Unnatural Selection of Genetically Modified Organisms*, 42 *WAKE FOREST L. REV.* 93, 155-56 (2007) (suggesting that a completely new legal approach drawing on the principles of evolutionary biology should be considered).

127. See 7 C.F.R. § 360.2 (2016) (noxious weed authority); 7 C.F.R. § 330 (2016) (plant pest authority).

128. *Found. on Econ. Trends v. Johnson*, 661 F. Supp. 107 (1986) [hereinafter, Johnson].

129. *Id.* at 110.

130. See 1992 Scope Document, *supra* note 23.

within the scope of preexisting statutory authority, and do not “displace[] agencies’ duties under applicable statutes, nor provide[] additional authority not available under applicable law.”¹³¹ Therefore, challenges would fail because of the necessarily highly attenuated link between these general principles and any actual injury sustained by a plaintiff. As in *Johnson*, plaintiffs would simply be redirected to challenge the agency action as a violation of a particular statute or of the Administrative Procedures Act (APA).¹³²

Since Congress is highly unlikely to revise the PPA, and direct challenges to the OSTP Scope Document also do not provide a viable approach, the best option to effect broader regulatory oversight of GE crops is for the President to exert executive authority through the OSTP Director, to introduce limited changes to the 1992 Scope Document. Taking this path avoids the need to overcome Congressional paralysis, and, if properly formulated, could redirect how oversight is conducted to move APHIS away from its permissive culture and, perhaps, its strict adherence to the plant pest standard.¹³³ As with the present authority, an amended Scope Document similarly would not face a serious judicial challenge. Pushback from Congress is, of course, possible, but, especially given its general disinterest in the subject, should be mitigated if the new policy is carefully formulated to lie clearly within existing statutory authorities and to balance stakeholder interests.

B. Amending the 1992 Scope Document

The 1992 Scope Document provides final guidance for all planned introductions of biotechnology products into the environment, and indicates that agencies must apply their oversight authorities in a manner consistent with the risk-based principles contained therein.¹³⁴ A bedrock principle of the Scope Document is that oversight must be *product-based*, with characteristics and risks evaluated in the context of the environment into which it is introduced. It may not be *process-based*, because biotechnology “processes do not *per se* pose risks to human health and the environment.”¹³⁵ These notions are consistent with regulation in the

131. *Id.* at 6753.

132. *See Johnson*, 661 F. Supp. 107, 110.

133. APHIS’ permissive culture is revealed in its expediting of the requests to BRS to avoid regulation (*See Lusser et al., supra* note 91), and its withdrawal of the rulemaking that envisioned a more robust interpretation of the noxious weed authority (*See supra* note 64).

134. *See* 1992 Scope Document, *supra* note 23, at 6757.

135. *Id.* at 6756 (emphasis added).

context of existing statutes.¹³⁶ They are firmly embedded in the work of all three primary agencies that oversee GE products and organisms, and are almost certainly not susceptible to change.

Two other principles in the Scope Document also have profound influence on the regulatory environment. First, oversight must be based on evidence that the risk presented by environmental release for a particular application is unreasonable.¹³⁷ Second, organisms with new traits conferring no greater risk to the environment than the parental organisms should not be subject to greater oversight than the unmodified organism.¹³⁸ The first of these principles, of course, relies on the appropriate exercise of agency discretion for its effective implementation. The second principle is that of familiarity—the notion that agencies may take guidance from their experience with evaluating the behavior of similar organisms in the past.

The principle that biotechnology oversight should be based on product and not process does not imply that no new regulatory attention is needed. As cogently stated immediately after the 1992 Scope Document was issued, “The fact that the process of genetic engineering does not always produce risky organisms does not imply that the risky organisms that it does produce present no new or unique types of risk.”¹³⁹ This insight offers key perspective on how APHIS is failing in its mission to properly oversee the environmental release of transgenic plants. First, nothing in the 1992 Scope Document suggests that APHIS should limit its regulation to GE plants that are plant pests or are created with the use of technology that employs plant pests. Second, the 1992 Scope Document is entirely consistent with the notion that APHIS’ regulation should protect against all types of harms, not just those that cause injury to plants. Importantly, APHIS is an outlier compared to both EPA and FDA in both of these areas. Under TSCA, EPA regulates almost all engineered microorganisms,¹⁴⁰ not just a limited subcategory causing certain harms, and it has at least some authority to consider hazards outside the main focus of decision-making, including

136. If biotechnology *were* held to pose inherent risks, new statutes would almost certainly be required to protect the public from its consequences. The choice to regulate within existing statutes, which may well have been driven by internal agency dynamics, thus effectively demands a finding that the technology is inherently safe. See Peter Mostow, *Reassessing the Scope of Federal Biotechnology Oversight*, 10 PACE ENVTL. REV. 227, 240-43 (1992).

137. See 1992 Scope Document, *supra* note 23, at 6756.

138. *Id.*

139. See Mostow, *supra* note 136, at 242.

140. EPA has retained use of the term “intergeneric microorganism” for its authority under TSCA. See *supra* note 52.

environmental effects.¹⁴¹ EPA's authority to consider hazards of PIPs is also broader than that adopted by APHIS over transgenic plants generally.¹⁴² Similarly, FDA regulates all transgenic animals, although its authority to consider hazards is limited to those impacting human and animal health.¹⁴³

There is little doubt that APHIS could choose to employ its noxious weed authority to regulate all transgenic plants, thus bringing its practices in line with those of FDA and EPA. Instead, APHIS' choice to operate within an extremely narrow scope implies that it is ignoring possible hazards not related to plant pest harms to plants. OSTP cannot amend the 1992 Scope Document to directly require APHIS to broaden its regulatory scope, because it lacks authority to substitute its judgment for that of the agency in the area of its Congressional mandate. However, OSTP may certainly review the effectiveness of any agency's approach and revise its guidance as it deems necessary. Indeed, the 1992 Scope Document envisioned changes in regulatory structure as needed to accommodate advances in scientific knowledge.¹⁴⁴ To this end, an effective step that OSTP can take to encourage APHIS to broaden its regulatory scope is to require consultation with EPA for all inquiries to BRS, and considerations for field releases under notifications or permits.

EPA's expertise in genetic engineering and its existing authorities to regulate microbial biopesticides and PIPs provide a strong basis for interagency consultation with APHIS. EPA operates a Biotechnology Office to oversee intergeneric microorganisms under TSCA,¹⁴⁵ and the molecular genetics methods used in microbe engineering and reviewed in this office also provide the basis for the new plant transformation techniques. No such expertise exists at APHIS, suggesting that the consultation process can be productive in identifying hazards that would otherwise be overlooked. Such hazards might include defects in the construction of the organism, such as unwitting modification of untargeted DNA,¹⁴⁶ and in how it interacts with its environment. It is essential that OSTP develop the

141. Sarah Carter et al., J. CRAIG VENTER INSTITUTE, *Synthetic Biology and the U.S. Biotechnology Regulatory System: Challenges and Options* 20-22 (2014), <http://www.jcvi.org/cms/research/projects/synthetic-biology-and-the-us-biotechnology-regulatory-system/overview/>.

142. See *supra* note 33.

143. See Kimbrell, *supra* note 17; see *supra*, Section III.

144. See 1992 Scope Document, *supra* note 23, at 6760.

145. See *Regulation of Biotechnology under TSCA and FIFRA*, ENVTL. PROT. AGENCY, http://www.epa.gov/biotech_rule/ (last visited Nov. 27, 2016).

146. Eva Sirinathsinghji, *Beware the Changing Face of Genetic Modification*, INST. OF SCIENCE IN SOC'Y (2013), http://www.i-sis.org.uk/Beware_the_Changing_Face_of_Genetic_Modification.php.

scientific justification for this consultation in detail, because the 1992 Scope Document also specifies that oversight should be exercised only “when the value of the reduction in risk obtained by additional oversight is greater than the cost thereby imposed.”¹⁴⁷ It is unlikely that OSTP would find sufficient support among stakeholders to remove this principle from the revised guidance.

EPA exercises rigorous oversight over transgenic microorganisms under TSCA. It requires that initial small-scale field trials first be subjected to the approval of a TSCA Experimental Release Application (TERA), while manufacture or import for commercialization requires approval of a Microbial Commercial Activity Notice (MCAN).¹⁴⁸ While TERAs are regularly approved by EPA,¹⁴⁹ very few MCAN submissions are successful,¹⁵⁰ EPA’s record thus stands in stark contrast to the permissive approval of environmental releases of transgenic plants by APHIS. This suggests that interagency collaboration with EPA may positively influence the regulatory culture at APHIS. It is important to note, however, that the level of EPA regulatory activity on intergeneric microorganisms has been low, but may increase if the promise of synthetic biology is realized.¹⁵¹ Interagency consultations with APHIS would also tax EPA resources, and would likely require budget increases to expand the infrastructure and personnel conducting oversight.

A productive basis for EPA consultation could be at the level of NEPA review, since for each notification or permitting application APHIS must decide whether to grant an exception to the exclusion

147. See 1992 Scope Document, *supra* note 23, at 6753.

148. ENVTL. PROT. AGENCY, MICROBIAL PRODUCT OF BIOTECHNOLOGY SUMMARY OF REGULATIONS UNDER THE TOXIC SUBSTANCES CONTROL ACT (2012), https://www.epa.gov/sites/production/files/2015-08/documents/biotech_fact_sheet.pdf.

149. For a list of approved TERAs from 1998 to the present, see *TSCA Biotechnology Notifications Status*, ENVTL. PROT. AGENCY, <https://www.epa.gov/regulation-biotechnology-under-tsca-and-fifra/tsca-biotechnology-notifications-status#mcan>.

150. This approval was for a bacterial strain that improves nitrogen fixation in alfalfa. See ENVTL. PROT. AGENCY, FACT SHEET: COMMERCIALIZATION OF SINORHIZOBIUM (RHIZOBIUM) MELILOTI, RMBPC-2 (2012), http://www.epa.gov/biotech_rule/pubs/factdft6.htm. See also *supra* note 145, at 34-35. More recently, EPA has approved TERAs for engineered bacteria useful in detecting the presence of land mines and unexploded ordnance in soils, and for other purposes. See, e.g., TSCA EXPERIMENTAL RELEASE APPLICATION APPROVED FOR PSEUDOMONAS PUTIDA STRAINS, ENVTL. PROT. AGENCY, <https://www.epa.gov/regulation-biotechnology-under-tsca-and-fifra/tsca-experimental-release-application-approved-0> (last visited Nov. 27, 2016).

151. Synthetic biology is a rapidly developing field that transforms the scale of microbial engineering by enabling wholesale redesign of biological functions and chemical synthesis of large segments of DNA. Applications that may lead to environmental release include nitrogen-fixing bacteria, biopesticides, and engineered algae for biofuels production. For a comprehensive assessment of regulatory implications at EPA, USDA-APHIS, and FDA, see *supra* note 145.

for field releases.¹⁵² Exceptions are granted for actions that have the potential for significant environmental impact.¹⁵³ Because such impacts may extend beyond plant pest harms, and environmental harms and human health impacts are protected under the broad noxious weed authority, all applications would undergo the new interagency review process. This consultation would include the preliminary inquiries to BRS inquiring whether a GE product is regulated.¹⁵⁴ The essential notion is that, by mandating interagency review, OSTP eliminates the possibility of cursory oversight that examines only the capacity for plant pest harms. The interagency consultation requirement should then be the subject of a new rulemaking by APHIS.¹⁵⁵ This rule may make clear, if APHIS insists, that environmental releases still could be limited to those encompassing plant pest harms. However, findings of broader risks across many products, during consultations, would exert substantial pressure to remotivate APHIS to reconsider expansion of its noxious weed authority.

Robust oversight of GE microorganisms and GE foods in the agricultural sector is clearly less effective when entire categories of GE plants are exempt from any oversight at all. The joint mission of USDA, EPA, and FDA is compromised by APHIS' unwillingness to apply its authority, and this invites OSTP to reinvigorate its own mandate in the biotechnology sector. In general, the application of executive authority can be an effective tool to advance regulatory goals, enabling the President to put his stamp on policy, and helping agencies to solve problems that implicate multiple jurisdictions.¹⁵⁶ It is encouraging that the Obama administration, recognizing that new advances in biotechnology must be accounted for, has finally begun a process to update the Coordinated Framework to clarify agency roles.¹⁵⁷ This process includes commissioning of an external, independent analysis of the future landscape of biotechnology products, and recognizes the need to improve coordination

152. See 7 C.F.R. §§ 372.5(c)(3)(ii), 372.5(d) (1995).

153. Exceptions can be granted for field releases that involve new species or organisms or novel modifications that raise new issues. Many of the new plant breeding techniques described in Section III may raise such issues. *Id.* § 372.5(d)(4).

154. See *supra* Section III.

155. An alternative to a formal rulemaking could be an OSTP-mediated memorandum of understanding (MOU) between APHIS and EPA that would allow APHIS access to EPA's expertise.

156. Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131, 1174 (2012). This article recommends a comprehensive executive branch effort to promote stronger interagency coordination and to improve coordination instruments.

157. EXEC. OFFICE OF THE PRESIDENT, MEMORANDUM FOR HEADS OF FOOD AND DRUG ADMINISTRATION, ENVIRONMENTAL PROTECTION AGENCY, AND DEPARTMENT OF AGRICULTURE (2015), https://www.whitehouse.gov/sites/default/files/microsites/ostp/modernizing_the_reg_system_for_biotech_products_memo_final.pdf.

among agencies. Therefore, improved prospects for better regulation of transgenic crops under the PPA may at last be on the horizon.

V. CONCLUSION

All contemporary regulation of GE plants in the U.S. rests on an incorrect premise. The engineered *Agrobacterium* strains used to create GE plants cannot induce tumors, and are fully disabled with respect to their capacities to cause plant pest harms. Today, even this fundamentally flawed basis for oversight is increasingly threatened by the emergence of new plant transformation methods. It is clear that a strong normative basis for strengthening GE plant regulation exists based on the precautionary principle, and that practical economic considerations are present that also should unite stakeholders. Nonetheless, the capture of APHIS by private interests, legislative gridlock at the Federal level, and political polarization engendered by activists on both sides renders meaningful change difficult. The best approach to break this gridlock is for OSTP to amend its 1992 scope guidance document to better incorporate evolving innovations in agricultural biotechnology, domestic interests in organic farming, and international norms for regulation of GE organisms. The new guidance should include a regulatory floor ensuring some review of all new GE plants, and incentives for consultation to bring EPA's expertise in molecular genetics to bear on APHIS' review of new plant products. These changes can be manifested in revised regulations under the PPA, without the need for changes in the statute. Development of a model for interagency collaboration in this context should be carried out with a view toward eventually integrating all authorities for GE governance within a single umbrella.

**REJECTING CLIMATE CHANGE:
NOT SCIENCE DENIAL,
BUT REGULATION PHOBIA**

EDWARD L. RUBIN*

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I. INTRODUCTION

At this juncture, after the COPE 21 conference in Paris, it seems clear that the most significant impediment to a worldwide effort to combat the disastrous consequences of climate change is the United States.¹ It seems equally clear that the reason why the United States has assumed such a counterproductive role is the existence of a set of attitudes within its political discourse that is generally described as climate change denial.

Climate change denial springs from a number of sources. The most obvious is the energy industry, whose largest firms derive their

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1. Coral Davenport, *Nations Approve Landmark Climate Accord in Paris*, N.Y. TIMES, Dec. 12, 2015, at 5. "A deal that would have assigned legal requirements for countries to cut emissions at specific levels would need to go before the United States Senate for ratification. That language would have been dead on arrival in the Republican-controlled Senate, where many members question the established science of human-caused climate change, and still more wish to thwart Mr. Obama's climate change agenda." See ANTHONY GIDDENS, THE POLITICS OF CLIMATE CHANGE 89 (2d ed. 2011) ("At present, the US, the country with the greatest responsibility to develop a far-reaching climate change policy, has done nothing at all on a national level. It is almost alone among industrial nations in this respect.").

income from the extraction and combustion of fossil fuels.² The most visible is political leadership, in particular the Republican Party, which holds a majority in both houses of Congress.³ Underlying these two groups of elite actors,⁴ however, is a broad base of support within the American populace. Business firms, whose self-interest is obvious, would have difficulty persuading people of something they were not prepared to believe. Politicians whose positions depend on being elected are unlikely to announce or support views that are antithetical to a large majority of their constituents.⁵ While there is much to be learned by studying the role of elite actors in the development of American climate change denial, the process cannot be fully explained without understanding its sources of support within the general public.

There are, by now, a vast number of studies that assess public attitudes toward climate change.⁶ While these studies vary in their

2. See, e.g., GIDDENS, *supra* note 1, at 89; MICHAEL E. MANN, *THE HOCKEY STICK AND THE CLIMATE WARS: DISPATCHES FROM THE FRONT LINES* (2012); NAOMI ORESKES & ERIC M. CONWAY, *MERCHANTS OF DOUBT: HOW A HANDFUL OF SCIENTISTS OBTAINED THE TRUTH ON ISSUES FROM TOBACCO SMOKE TO GLOBAL WARMING* (reprt. ed. 2011); ERIC POOLEY, *THE CLIMATE WAR: TRUE BELIEVERS, POWER BROKERS, AND THE FIGHT TO SAVE THE EARTH* (2010); William C. Tucker, *Deceitful Tongues: Is Climate Change Denial a Crime?* 39 *ECOLOGICAL L.Q.* 831 (2012).

3. Climate change denial is the official position of the Republican Party. See *REPUBLICAN PLATFORM: WE BELIEVE IN AMERICA* (2012). The platform speaks at length about the need to encourage all forms of energy production. *Id.* at 15-16. It studiously avoids any reference to global warming or climate change, and promises to "[e]nd the EPA's war on coal and encourage the increased safe development in all regions of the nation's coal resources, the jobs it produces, and the affordable, reliable energy that it provides for America." *Id.* at 16. It appends to its section expatiating on the benefits of coal a single sentence about proposals to combat global warming: "[W]e oppose any and all cap and trade legislation." *Id.* James Inhofe, Republican Senator from Oklahoma, and currently chair of the Senate Committee on Environment and Public Works, has written a book declaring climate change to be a hoax. JAMES INHOFE, *THE GREATEST HOAX: HOW THE GLOBAL WARMING CONSPIRACY THREATENS YOUR FUTURE* (2012). For views of other leading figures in the Republican Party, see *infra* Section III.A.

4. A third, perhaps less obvious set of elite actors consists of conservative "think tanks." See, e.g., Peter J. Jacques, Riley E. Dunlap & Mark Freeman, *The organisation of denial: Conservative think tanks and environmental scepticism*, 17 *ENVTL. POL.* 349 (2008); Aaron M. McCright & Riley E. Dunlap, *Challenging Global Warming as a Social Problem: An Analysis of the Conservative Movement's Counter-Claims*, 47 *SOC. PROBS.* 499 (2001). These are mainly off-shoots of both the energy industry and conservative politicians, and their impact on public policy is similarly dependent on the reception of their products (books increasingly written by authors lacking academic degrees in natural science disciplines).

5. In fact, popular attitudes about climate change are strongly correlated with party affiliation. A recent study by Pew Research Center found that "[a] substantial majority of Democrats (79%) say there is solid evidence that the average temperature on earth has been increasing over the past few decades, and 53% think the earth is warming mostly because of human activity. Among Republicans, only 38% agree the earth is warming and just 16% say warming is caused by humans." PEW RESEARCH CENTER, *LITTLE CHANGE IN OPINIONS ABOUT GLOBAL WARMING: INCREASING PARTISAN DIVIDE ON ENERGY POLICIES* (2010), <http://www.people-press.org/2010/10/27/little-change-in-opinions-about-global-warming/>.

6. See Matthew C. Nisbet & Teresa Myers, *The Polls—Trends: Twenty Years of Public Opinion About Global Warming*, 71 *PUB. OPINION Q.* 444, 444-45 (2007).

methodology, content and conclusions, they tend to agree on several basic observations regarding those who deny that anthropogenic global warming is a reality. First, the deniers are willing to reject an overwhelming scientific consensus that the problem exists and poses a serious or possibly catastrophic threat to the welfare of future generations.⁷ Second, the attitudes of the deniers, like those of their opponents, are strongly correlated with their political views on other subjects.⁸ Specifically, the deniers tend to endorse conservative views on political and social matters, many of them substantively unrelated to climate change, such as race relations, abortion, and GLBT rights.

This article is an effort to discern the motivations that lie behind the deniers' attitudes, that is, the structure of meaning that leads the deniers to their conclusions. Its basic thesis is that the climate change deniers do not harbor any particular hostility toward science or technology. Rather, they perceive the climate change issue, and more particularly the regulatory initiatives designed to address it, as a direct and intentional assault on their personal lifestyles and moral attitudes.

Section II of the article raises doubts about the increasingly common view that the denial springs from a rejection of science as a methodology or a source of truth. It begins by noting the lack of any general hostility to science in our society, distinguishes climate change denial from other notable rejections of scientific consensus, specifically the safety of genetically modified food and the reality of Darwinian evolution, and then observes that the deniers' affinity to conspiracy theorists does not indicate an anti-scientific bias. Section III argues that climate change denial is in fact a reaction to the regulatory initiatives that have been advanced to combat the impending crisis. Subsection A explains this reaction by relying, first, on George Lakoff's theory of conceptual and metaphorical frameworks, and second, on a phenomenon that survey researchers describe as a boomerang effect. Subsection B re-characterizes this reaction as a type of collective phobia, following Richard Hofstadter's idea that conspiracy theories can be described as collective paranoia. It then explores the underlying cultural and

7. See *infra* Section III.A.

8. The divergence of view based on party affiliation, *see* note 5, *supra*, becomes even more pronounced when attitudes are taken into account and liberal Democrats are compared to conservative Republicans. Asked whether they "trust climate scientists a lot to give full and accurate information about the causes of climate change" 70% of liberal Democrats said yes, as opposed to only 15% of conservative Republicans; asked whether climate change research represents the best available evidence most of the time, the respective figures were 55% versus 9%. CARY FUNK & BRIAN KENNEDY, PEW RESEARCH CENTER, THE POLITICS OF CLIMATE CHANGE (2016), <http://www.pewinternet.org/2016/10/04/the-politics-of-climate/>; *see infra* Section III.A.

historical sources of this reaction, specifically the transition in moral attitudes that has been occurring during the High Modern Era (1800 to the present). Section IV attempts to derive some tentative policy recommendations from these observations. It explores some possible ways of changing individual behavior that contributes to climate change without triggering people's phobic reaction and the intense political opposition that results from it.

II. CLIMATE CHANGE DENIAL AND SCIENCE

A. The Idea of Science Denial

Any plausible explanation for climate change denial must account for the deniers' willingness to ignore the overwhelming scientific evidence supporting anthropogenic climate change.⁹ Discussions of the subject often characterize this attitude as “science denial” and attribute it to the cultural phenomenon that people interpret scientific findings in accordance with their personal predilections.¹⁰ This represents a rejection of the older deficit model of science communication, which holds that people's views diverge from scientific conclusions when they lack adequate

9. The consensus is an established fact, and the underlying reality of anthropogenic warming is not open to serious question. UNITED NATIONS INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS (2013); see John Cook, et al., *Quantifying the consensus on anthropogenic global warming in the scientific literature*, 8 ENVTL. RES. LETTERS 024024, 3 (2013) (meta-analysis finding that 97.1% of 11,944 articles published in peer reviewed scientific journals between 1991 and 2011 concluded that anthropogenic warming was occurring); Stephen J. Farnsworth & S. Robert Lichter, *The Structure of Scientific Opinion on Climate Change*, 24 INT'L J. ON PUB. OPINION RES. 93 (2011) (84% of 489 members of the American Geophysical Union and American Meteorological Society believe that anthropogenic climate change is occurring); JOINT NAT'L SCI. ACADEMIES' STATEMENT: GLOBAL RESPONSE TO CLIMATE CHANGE, <http://nationalacademies.org/onpi/06072005.pdf> (statement by science academies of G8 nations); Naomi Oreskes, *The Scientific Consensus on Climate Change*, 306 SCIENCE 1686, 1686 (2004) (meta-analysis finding that articles in peer edited scientific journals are nearly unanimous in concluding that anthropomorphic climate change is occurring).

10. See, e.g., ANDREW J. HOFFMAN, HOW CULTURE SHAPES THE CLIMATE CHANGE DEBATE (2015); Robert J. Brulle, Jason Carmichael & J. Craig Jenkins, *Shifting public opinion on climate change: an empirical assessment of factors influencing concern over climate change in the U.S., 2002-2010*, 114 CLIMATIC CHANGE 169 (2012); Donald Braman, et al., *The polarizing impact of science literacy and numeracy on perceived climate change risks*, 2 NATURE CLIMATE CHANGE 732 (2012). An alternative theory is that rejection of scientific finding about climate change results from inborn characteristics, specifically, the way our brains are “wired.” GEORGE MARSHALL, DON'T EVEN THINK ABOUT IT: WHY OUR BRAINS ARE WIRED TO IGNORE CLIMATE CHANGE (2015). But the same argument can be made for many complex modern problems, and this approach does not explain why climate change is not only differentially accepted, but that these differences correlate with different political positions.

information about those conclusions.¹¹ The cultural explanation is more convincing, but it requires further analysis.

To begin with, the term science denial can refer to at least two different attitudes. The first is a rejection of science itself, that is, the refusal to accept any naturalistic explanation for a given physical phenomenon. The second is the rejection of a prevailing consensus about a particular naturalistic explanation, perhaps on the basis of an alternative explanation that is couched in equally naturalistic terms. Given the complexity of social attitudes, and the ability of humans to behave and argue strategically, neither of these positions is likely to be unalloyed, nor is the distinction between them likely to be inviolable. But it is important to recognize that there is a difference between rejecting science as a possible explanation and rejecting a particular explanation that represents the consensus view of scientists.

The idea that people's interpretation of scientific findings is based on their political or social attitudes is sometimes attributed to the well-established social science principle that our sense of reality is socially constructed.¹² In the 1930s, Evans-Pritchard demonstrated this point in striking fashion by interviewing traditional African healers and confronting them with the ineffectiveness of their spells in curing disease.¹³ He reported that the healers remained unfazed by the disconfirming evidence; if the spell didn't work, they said, it was because it has been performed incorrectly.¹⁴ The analogy to climate change denial is an appealing one, but the problem is that the social construction process operates at too lofty a level to explain the current debate in the United States. It concerns the way an entire culture processes reality, and in some sense, it defines what culture itself means, but it usually does not provide a useful explanation for intra-cultural debate.¹⁵ In fact, even fairly simple cultures provide extensive

11. See, e.g., Robert K. Goidel, Todd G. Shields & Mark Peffley, *Framing Theory and RAS Models: Toward an Integrated Perspective of Media Influence*, 25 AM. POL. Q. 287 (1997); Matthew C. Nisbet, *The Competition for Worldviews: Values, Information, and Public Support for Stem Cell Research*, 17 INT'L J. PUB. OPINION RES. 90 (2005); Matthew C. Nisbet & Robert K. Goidel, *Understanding citizen perceptions of science controversy: bridging the ethnographic—survey research divide*, 16 PUB. UNDERSTANDING OF SCIENCE 421 (2007).

12. See generally PETER L. BERGER & THOMAS LUCKMANN, *THE SOCIAL CONSTRUCTION OF REALITY: A TREATISE IN THE SOCIOLOGY OF KNOWLEDGE* (1966); NELSON GOODMAN, *WAYS OF WORLDMAKING* (1978).

13. E. E. EVANS-PRITCHARD, *WITCHCRAFT, ORACLES AND MAGIC AMONG THE AZANDE* (Oxford Univ. Press 1st ed., 1937); See E. E. EVANS PRITCHARD, *THEORIES OF PRIMITIVE RELIGION* (1965).

14. *Id.*

15. To say that it does commits the error made by those who argue that dissent within a culture disproves the validity of cultural relativism. Moral relativism means that ethical systems are shaped by culture; it definitively does not claim, except in its vulgar and

resources for disagreement among their members. The social construction of reality establishes a framework for dissent within a given culture. It can explain why a particular issue lies outside the conceptual framework of a given society and thus is never debated within the society but cannot, by itself, explain which issues within the society's framework will be debated and which will be agreed upon.¹⁶

As a matter of society-wide social construction, modern Western society accepts the validity of science.¹⁷ Science is, in fact, our prevailing measure of truth. We live in a world suffused with science; we teach it in schools, read about its discoveries in the media, and cheerfully accept the technological products that it generates.¹⁸ Very few of our current debates turn on the validity of science, or raise serious questions about its conclusions.¹⁹ Leading books that challenge the reality of anthropomorphic climate change

indefensible forms, that everyone in a given culture has identical moral views. For discussions of moral relativism, see STEVEN LUKES, *MORAL RELATIVISM* (2008); J. L. MACKIE, *ETHICS: INVENTING RIGHT AND WRONG* (London: Penguin 1980); DAVID WONG, *MORAL RELATIVITY* (Univ. of California Press ed. 1985).

16. Gadamer develops the image of a cultural horizon. See HANS-GEORG GADAMER, *TRUTH AND METHOD* 269-74, 336-41 (John Cumming trans. 1975). The horizon places a limit on the range of one's vision, but not on content of one's vision within that range. Certain modes of thought will be inaccessible to a particular society, but there will still be many beliefs that are accessible and that form the basis of societal debate.

17. Modern epistemology has raised important doubts about the extent to which we can demonstrate the truth of natural science propositions. See, e.g., PAUL FEYERABEND, *AGAINST METHOD*, (Verso, 4th ed. 2010). THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS*, (Univ. of Chicago, 2d ed. 1970). It seems fair to say, however, that this debate does not challenge the role of science in modern thought and culture, but rather points out that this role is a social construction, see *supra* note 12, that cannot sustain its epistemological claim to definitive truth.

18. See, e.g., HERBERT BUTTERFIELD, *THE ORIGINS OF MODERN SCIENCE 187-202* (Free Press, rev. ed. 1997) (development of modern science exercised a transformative effect on contemporary attitudes); A. RUPERT HALL, *THE SCIENTIFIC REVOLUTION, 1500-1800* (1966) (Scientific Revolution produced a transformative impact on the way modern people think); BRUNO LATOUR, *THE PASTEURIZATION OF FRANCE* (Alan Sheridan & John Law trans., 1993) (influence of Louis Pasteur depended on deep and widespread scientific orientation in the general public); JOHN D. MILLER, *THE AMERICAN PEOPLE AND SCIENCE POLICY: THE ROLE OF PUBLIC ATTITUDES IN THE POLICY PROCESS* (1983) (although low levels of public knowledge and attentiveness about science issues are a source of concern to scientists, public has been largely accepting of science-based initiatives); STEVEN SHAPIN, *THE SCIENTIFIC REVOLUTION* (1998) (development of scientific attitudes was not a revolution but a gradual change in people's mode of thought); Jon D. Miller, *Public understanding of, and attitudes toward, scientific research: what we know and what we need to know*, 13 *PUB. UNDERSTANDING OF SCI.* 273 (2004) (while scientific literacy in the U.S. is relatively low, there is deep and widespread belief about the value of scientific research).

19. In fact, the reverse is true. All participants in public policy debates try to marshal scientific evidence in support of their position, and government agencies regularly claim scientific support for their policies, even if they need to be cavalier or outright dishonest about the evidence in order to do so. See, e.g., THOMAS O. MCGARITY & WENDY E. WAGNER, *BENDING SCIENCE: HOW SPECIAL INTERESTS CORRUPT PUBLIC HEALTH RESEARCH* 20-127 (2008); Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 *COLUM. L. REV.* 1613 (1995).

do not base their challenge on the rejection of science; rather, they fully subscribe to the scientific method and assert that proponents of climate change have distorted scientific evidence to serve their political purposes.²⁰ The essence of the exaggerated, if not manufactured Climategate incident that the deniers seized upon was the claim that scientists who believed in anthropogenic global warming had violated the norms of scientific research by falsifying evidence.²¹

The level of comfort that Americans evince toward technology also belies any general hostility toward science. In the past two decades, for example, truly life-altering innovations, such as cell phones and personal computers, have been adopted with enthusiasm by the public. If one considers particular constituencies that are associated with Republicans, that is, the political party that currently denies climate change, the same attitude seems to prevail. Factory workers spend their days in a technologically structured setting, American farmers are noted for the extent to which they have applied technology to this most traditional of occupations, and gun owners are committed to what is, after all, a technological product. According to the prevailing cultural stereotype it is Republicans, not Democrats, who seem most fond of cars, motorcycles and large-screen TV's.²² In fact, at least one study based on survey data concludes that "respondents with high confidence in

20. See, e.g., CALVIN FRAY, CLIMATE CHANGE REALITY CHECK: BASIC FACTS THAT QUICKLY PROVE THE CLIMATE CHANGE CRUSADE IS WRONG AND DANGEROUS (2016); LAWRENCE SOLOMON, THE DENIERS: THE WORLD-RENOWNED SCIENTISTS WHO STOOD UP AGAINST GLOBAL WARMING HYSTERIA, POLITICAL PERSECUTION, AND FRAUD (2008); MARK STEYN, A DISGRACE TO THE PROFESSION (2015). Far from attacking science itself, these authors strive to establish their credentials as scientists.

21. Climategate involved the release of internal communications among scientists in Britain's Climatic Research Unit at the University of East Anglia. A few phrases from these documents, when taken out of context, sounded result-oriented or cavalier. See POOLEY, *supra* note 2, at 425-27. There was an immediate outcry from the deniers; one opinion piece in a British newspaper declared that the "[m]ost shocking revelation of the leaked documents is how they show the scientists trying to manipulate data through their tortuous computer programmes, always to point in only the one desired direction – to lower past temperatures and to 'adjust' recent temperatures upwards...." Christopher Booker, *Climate change: this is the worst scientific scandal of our generation*, THE TELEGRAPH (Nov. 28, 2009), <http://www.telegraph.co.uk/comment/columnists/christopherbooker/6679082/Climate-change-this-is-the-worst-scientific-scandal-of-our-generation.html>; see also BRIAN SUSSMAN, CLIMATEGATE: A VETERAN METEOROLOGIST EXPOSES THE GLOBAL WARMING SCAM (2010) (released messages reveal a wider effort to falsify evidence).

22. See Aaron M. McCright & Riley E. Dunlap, *Cool Dudes, The Denial of Climate Change Among Conservative White Males in the United States*, 21 GLOB. ENVTL. CHANGE 1163 (2011) (concluding that conservative white males are more likely to deny climate change when all other factors are controlled for). It is difficult to see this group as hostile to science and technology.

scientists feel less responsible for global warming, and also show less concern for global warming."²³

B. Exceptions: The Safety of GMOs and the Validity of Darwinian Evolution

There are of course exceptions to our society's general acceptance of science and technology. The two most notable ones are the doubts about the safety of genetically modified food products (GMOs) and the validity of Darwinian evolution. Neither of these beliefs, however, can be readily linked to climate change denial as part of a general explanation. They each display distinguishing features that make any effort to place them in a single category with climate change denial unconvincing.

With respect to GMOs, and possibly the use of pesticides as well, what is being rejected is not science itself but the predictions scientists are making about the future safety of particular agricultural techniques.²⁴ The general feeling is not so much that scientists are wrong, but that unexpected consequences might arise that create additional dangers. The result has been a demand for government regulation, either by restricting the use of GMOs or at least requiring that their use be disclosed on food packaging. This demand emerges largely from the political left, and is much stronger in Europe than in the U.S.²⁵ All these features distinguish the concern about GMOs from climate change denial, which is a direct rejection of scientific findings, vociferously opposes regulation, emerges exclusively from the political right, and is uniquely prevalent in the U.S.²⁶ In other words, the opposition to GMOs,

23. Paul M. Kellstedt, Sammy Zahran & Arnold Vedlitz, *Personal Efficacy, the Information Environment, and Attitudes Toward Global Warming and Climate Change in the United States*, 28 RISK ANALYSIS 113, 113 (2008).

24. See, e.g., STEVEN M. DRUKER, *ALTERED GENES, TWISTED TRUTH: HOW THE VENTURE TO GENETICALLY ENGINEER OUR FOOD HAS SUBVERTED SCIENCE, CORRUPTED GOVERNMENT, AND SYSTEMATICALLY DECEIVED THE PUBLIC* (2015); JEFFREY M. SMITH, *SEEDS OF DECEPTION: EXPOSING INDUSTRY AND GOVERNMENT LIES ABOUT THE SAFETY OF THE GENETICALLY ENGINEERED FOODS YOU'RE EATING* (2003).

25. See, e.g., MARK A. POLLACK & GREGORY C. SHAFFER, *WHEN COOPERATION FAILS: THE INTERNATIONAL LAW AND POLITICS OF GENETICALLY MODIFIED FOODS* (2009); DAVID VOGEL, *THE POLITICS OF PRECAUTION: REGULATING HEALTH, SAFETY, AND ENVIRONMENTAL RISKS IN EUROPE AND THE UNITED STATES* 73-97 (2012).

26. See *supra* note 1. See also ANTHONY LEISEROWITZ, *INTERNATIONAL PUBLIC OPINION, PERCEPTION, AND UNDERSTANDING OF GLOBAL CLIMATE CHANGE* (2007-08), http://www.climateaccess.org/sites/default/files/Leiserowitz_International%20Public%20Opinion.pdf. Although the United States lags only slightly behind other developed nations in the number of its inhabitants who are aware of the issue, *id.* at 4, it is the only developed nation in a GlobeScan 2006 survey where less than half the population thought climate change is a "very serious problem." *Id.* at 6. In a 2006 Pew survey which covered fifteen mainly large developed and developing nations, the U.S. ranked last in the number of people who worried about

although it can be described as involving attitudes toward science, seems distinctly different from climate change denial.

Rejection of evolutionary theory, in contrast, appears to be strongly allied with climate change denial. It does, in fact, represent a direct rejection of scientific conclusions, it is linked to the political right and it is a peculiarly, albeit not uniquely American attitude.²⁷ The crucial difference between the two sets of views, however, involves the religious motivation for the rejection of evolutionary theory. This may appear quite obvious, being the explicit reason offered by most people who adopt this attitude,²⁸ but it in fact requires further explication.

The idea that species evolved from other species was fairly common in the eighteenth and early nineteenth centuries. Darwin's contribution was to provide a mechanism by which evolution could proceed—the struggle for survival among competing organisms and the survival of the fittest.²⁹ Had this theory been proposed to devout Christians in the Early Middle Ages, their reaction might well have been receptive. They already viewed the natural world as a hostile place, filled with dangers of demonic origin. To them, the forests, the swamps, the underground regions, and the air that lay between the treetops and the heavens were all inhabited by evil spirits, while their own realm was afflicted by crop failures, diseases, and natural

climate change "a great deal" and had more than twice as many people who were "not at all" worried as the next ranking nation (Russia). *Id.* at 9. Other surveys produce somewhat different results, but the high levels of denial in the U.S. seem to be a consistent result.

27. See, e.g., *Pew Research Center, Public's Views on Human Evolution*, PEW RESEARCH CENTER (2013), <http://www.pewforum.org/2013/12/30/publics-views-on-human-evolution/> (In 2013, 67% of Democrats and 65% of independent believed that living things have evolved over time, but only 43% of Republicans subscribed to this view).

28. For the religion-based challenge to Darwinian evolution, see generally EDWARD J. LARSON, *SUMMER FOR THE GODS: THE SCOPES TRIAL AND AMERICA'S CONTINUING DEBATE OVER SCIENCE AND RELIGION* (1997); C.P. SNOW, *THE TWO CULTURES AND THE SCIENTIFIC REVOLUTION* (1959), http://sciencepolicy.colorado.edu/students/envs_5110/snow_1959.pdf. A number of major American religious denominations continue to reject evolution on scriptural grounds, e.g., the Lutheran Church, Missouri Synod, which states "[w]e teach that God has created heaven and earth, and that in the manner and in the space of time recorded in Holy Scriptures, especially Gen. 1 and 2, namely, by His almighty creative word, and in six days," and the Southern Baptist Convention, which states "[w]hereas, the Theory of Evolution has never been proven to be a scientific fact, . . . the Southern Baptist Convention . . . express our support for the teaching of Scientific Creationism in our public schools." A BRIEF STATEMENT OF THE DOCTRINAL POSITION OF THE MISSOURI SYNOD, THE LUTHERAN CHURCH: MISSOURI SYNOD (1932), <http://www.lcms.org/doctrine/doctrinalposition#creation>; *Resolution on Scientific Creationism*, SOUTHERN BAPTIST CONVENTION (1982), <http://www.sbc.net/resolutions/967>. Other denomination, including the Catholic Church, have only modified their opposition recently, see DON O'LEARY, *ROMAN CATHOLICISM AND MODERN SCIENCE: A HISTORY* 53-54, 85-93, 94-108 (2006).

29. See generally PETER J. BOWLER, *EVOLUTION: THE HISTORY OF AN IDEA* (1983); LOREN EISELEY, *DARWIN'S CENTURY: EVOLUTION AND THE MEN WHO DISCOVERED IT* (1961); EDWARD J. LARSON, *THE REMARKABLE HISTORY OF A SCIENTIFIC THEORY* (2004).

disasters attributable to the same source.³⁰ Christianity worked hard to rid the world of supplementary gods, but was generally willing to subsume these evil spirits into its own theology as minions of the Devil, thereby accommodating traditional beliefs.³¹ The idea that the cross can be used as a device to combat evil creatures is a modern holdover from this Early Medieval sensibility.³²

A transformation in the Christian attitude toward nature probably began with St. Francis of Assisi. Legend depicts him as preaching to the birds and fishes, and as negotiating a truce with a man-eating wolf on behalf of the city of Gubbio. These can be taken as indications of a genuinely affectionate attitude toward animals. St. Francis embodied this attitude in Christian doctrine with the argument that since God is the creator of all things on Earth, an unchallengeable point for the devout, all its creatures must be our brothers and sisters.³³ As time went on, a variety of intellectual and social forces amplified the idea of a benign and orderly natural world that reflected God's divine plan. It gained appeal, and indeed a measure of urgency, for many people during the wars resulting from the Reformation. We all worship the same Almighty God, it was argued, and thus should be able to live in peace despite our confessional differences.³⁴ Since we all live in the same natural world as well, the idea that the natural order proclaimed God's doctrine possessed an intrinsic appeal to those who favored this approach. As Thomas Browne wrote in 1643: "there are two Bookes from whence I collect my Divinity; besides that written one of God, another of his servant Nature, that universall and publike

30. HEINRICH FICHTEAU, *LIVING IN THE TENTH CENTURY: MENTALITIES AND SOCIAL ORDERS* 319-24 (Patrick J. Geary, trans., Univ. of Chicago Press 1991); BERNADETTE FILOTAS, *PAGAN SURVIVALS, SUPERSTITIONS AND POPULAR CULTURES IN EARLY MEDIEVAL PASTORAL LITERATURE* 117-19, 266-69 (2005); see VALERIE I. J. FLINT, *THE RISE OF MAGIC IN EARLY MEDIEVAL EUROPE* (1991).

31. See FLINT, *supra* note 30; ROBIN LANE FOX, *PAGANS AND CHRISTIANS* 674-81 (1986); KEITH THOMAS, *RELIGION AND THE DECLINE OF MAGIC* 27-57 (1971).

32. GREGORY OF TOURS: *LIVES OF THE FATHERS* (Edward James, trans., Liverpool University Press, 2d ed. 1991). See *id.* at 74 (revealing and routing Satan); 78 (repelling a Satan-sent dragon); 108 (exorcising a demon).

33. See EDWARD A. ARMSTRONG, *SAINT FRANCIS: NATURE MYSTIC* (1973); ROGER SORRELL, *ST. FRANCIS OF ASSISI AND NATURE TRADITION AND INNOVATION IN WESTERN CHRISTIAN ATTITUDES TOWARD THE ENVIRONMENT* (1988); JOHN HOLLAND SMITH, *FRANCIS OF ASSISI* (1972). The Saint's most famous prayer is the Cantic of the Creatures, which thanks God for giving us "Brother Sun," "Sister Moon" and all the rest of nature's glories. *Id.* at 173-76. He is also responsible for nativity scenes, which he initiated by bringing an actual cow and donkey into church for his Christmas sermon. The point was to make the miracle concrete for agricultural people, but the willingness to make the point in this manner implies a certain degree of affection for farm animals.

34. See, e.g., PIERRE BAYLE, *HISTORICAL AND CRITICAL DICTIONARY* (Richard H. Popkin, trans. 1991); JOHN LOCKE, *A Letter Concerning Toleration*, in *TWO TREATISES OF GOVERNMENT AND A LETTER CONCERNING TOLERATION* 211 (2003). See DIARMAID MACCULLOCH, *THE REFORMATION: A HISTORY* 674-79 (2003).

Manuscript, that lies expans'd unto the eyes of all; those that never saw him in the one, have discovered him in the other. . . ."³⁵

Some earlier versions of evolution could conceivably have been reconciled with this providential view of nature, but Darwinian evolution could not be. It revealed a savage, merciless world where the strong preyed upon the weak, where those whom Jesus blessed in His Sermon on the Mount served as dinner for "the ravenous wolves" whose "sheep's clothing"³⁶ added deception to savagery. In other words, Western Christianity, over the course of six centuries, had maneuvered itself into a position that was immediately and essentially in conflict with Darwin's discovery. The rejection of Darwinian theory, therefore, is not correctly viewed as an expression of ignorance, nor as the sort of unnecessary religious traditionalism that characterized the Catholic Church's reaction to Copernican theory. It is, instead, the assertion of a theological position in opposition to a scientific theory that directly contradicts it.

Climate change denial has no such theological origins. The idea that human beings are altering the environment in deleterious or disastrous ways does not contradict any element of Christian doctrine. There is, to be sure, a theme in Judeo-Christian thought stating that the Earth has been given to human beings for their use. The famous passage in the Biblical account of creation has God say to human beings: "Be fruitful and multiply; fill the Earth and subdue it; have dominion over the fish of the sea, over the birds of the air, and over every living thing that moves on earth."³⁷ Similar words appear in God's instructions to Noah following the Deluge.³⁸ But no one questions the idea that humans are using the Earth; that is, in fact, the basis of current characterization of modern times as a new geological era, the Anthropocene.³⁹ The question is the way

35. THOMAS BROWNE, *RELIGIO MEDICI* 18 (James Winny, ed., Cambridge University Press 1963) (1643) (§ 16). This view of nature continued, and in fact grew stronger, through the Romantic period. Wordsworth famously expressed the same sentiment: "And I could wish my days to be Bound each to each by natural piety." WILLIAM WORDSWORTH 246 (Stephen Gill ed., Oxford U. Press 1984).

36. *Matthew* 7:15.

37. *Genesis* 1:28. The passage goes on to suggest that humans have been given these things for consumption. See *Genesis* 1:29-30.

38. *Genesis* 9:1-3. God's words make more sense here, when He is speaking about the re-occupation of a previously populated world, than they do when addressed to a single man whose wants are entirely provided by a miraculous garden. The reason, of course, is that *Genesis*, and the Pentateuch generally, is a pastiche of multiple sources. See ANTHONY F. CAMPBELL & MARK A. O'BRIEN, *SOURCES OF THE PENTATEUCH: TEXTS, INTRODUCTIONS, ANNOTATIONS* (Fortress Press 1993); VICTOR P. HAMILTON, *THE BOOK OF GENESIS: CHAPTERS 1-17* (1990). See generally JOHN VAN SETERS, *THE PENTATEUCH: A SOCIAL SCIENCE COMMENTARY* (1999).

39. See, e.g., JEREMY DAVIES, *THE BIRTH OF THE ANTHROPOCENE* (2016); J.R. MCNEILL & PETER ENGELKE *THE GREAT ACCELERATION: AN ENVIRONMENTAL HISTORY OF THE*

that humans use it. Christian legal thought, beginning in the High Middle Ages, distinguished ownership, or *dominium*, from usufruct or use.⁴⁰ Since *dominium* was defined as the superior right, that is, a right against all others, it was clear that only God had *dominium* over the Earth.⁴¹ Human rights over the Earth were limited to use, and the common understanding was that the user could not destroy the value of the owner's property. The idea that we are stewards of a divinely created world has been the standard Christian view ever since.⁴²

Several climate change deniers have proposed the idea that it is presumptuous for human beings to believe that they can change the natural order by their own actions.⁴³ James Inhofe suggests this in his book, *The Greatest Hoax*, citing God's promise to Noah,⁴⁴ but he is uncharacteristically tentative about the idea, and with good reason. According to Christian doctrine, the claim that humans

ANTHROPOCENE SINCE 1945 (2014); JEDEDIAH PURDY, *AFTER NATURE: A POLITICS FOR THE ANTHROPOCENE* (2015).

40. See, e.g., ST. THOMAS AQUINAS, *SUMMA THEOLOGICA* IIa, IIae Q. 66.1 (Fathers of the English Dominican Province trans., 1948) ("External things can be considered in two ways. First, as regards their nature, and this is not subject to the power of man, but only to the power of God, Whose mere will all things obey. Secondly, as regards their use, and in this way man has a natural dominion over external things. . . ."). See Janet Coleman, *Property and Poverty*, in *THE CAMBRIDGE HISTORY OF MEDIEVAL POLITICAL THOUGHT C. 350-C.1450*, 607, 638-39 (J.H. Burns, ed., 1988) (describing John of Paris' views on the difference between Church ownership of property and the Pope's use of that property); RICHARD TUCK, *NATURAL RIGHTS THEORIES: THEIR ORIGINS AND DEVELOPMENT* 13-31 (1979) (describing the fourteenth century debate about whether usufruct could be regarded as a type of *dominium*).

41. See, e.g., *Psalms* 24 ("The Earth is the Lord's, and all its fullness, the world and those who dwell within.").

42. See, e.g., Pope John Paul II, *Message of His Holiness Pope John Paul II For the Celebration of the Day of World Peace*, in *THIS SACRED EARTH: RELIGION, NATURE, ENVIRONMENT* 202-72 (Roger S. Gottlieb ed., 2d ed. 2004); ROGER D. SORRELL, *ST. FRANCIS OF ASSISI AND NATURE: TRADITION AND INNOVATION IN WESTERN CHRISTIAN ATTITUDES TOWARD THE ENVIRONMENT* (1988); Robin Attfield, *Christian Attitudes To Nature*, 44 *J. HIST. IDEAS* 369 (1983); Lynn White argues that Western Christianity, due to its essentially and uniquely "anthropocentric" emphasis, has permitted its followers to despoil the environment. Lynn White, *The Historical Roots of Our Ecological Crisis*, 155 *SCIENCE* 1203 (1967), reprinted in Gottlieb, *supra* note 42, at 192. That is not the same, however, as doctrinal support for despoliation.

43. See G. Elijah Dann, *Why Christians Can't Take Climate Change Seriously—Even When They Say They Do*, *HUFFINGTON POST* (Sept. 30, 2013), http://www.huffingtonpost.com/g-elijah-dann/christians-climate-change_b_3668179.html; Jack Jenkins, *Limbaugh: If You Believe in God, Then Intellectually You Cannot Believe in Global Warming*, *CLIMATE PROGRESS* (Aug. 14, 2013), <http://thinkprogress.org/climate/2013/08/14/2469341/limbaugh-christians-global-warming/>.

44. INHOFE, *supra* note 3, at 70. Inhofe qualifies his invocation with the caveat: "I do not pretend to be a biblical scholar. . . ." *Id.* God's promise to Noah is that the seasons will continue. See *Genesis* 8:22. This follows His statement that He will not "again destroy every living thing as I have done." *Genesis* 8:21. No one argues that climate change will actually eliminate the seasons (it is more likely to exaggerate them) nor that it will destroy all life on Earth. The more important scriptural point, however, is that God is speaking about what He will do, not what human beings will do.

cannot damage the environment borders on blasphemy because it would appear to deny the existence of evil. Whether one sides with Luther and Calvin in favor of predestination, or with Erasmus and Wesley in favor of free will, the ability of human to act in evil ways and produce evil effects is essential to Christian belief.⁴⁵ This is not to say, of course, that it is impossible to enlist religious discourse in support of climate change denial. The point, rather, is that climate change denial, unlike the rejection of Darwinian evolution, cannot be explained as being independently motivated by the religious beliefs of the deniers.

C. Apparent Exceptions: Conspiracy Theories

A cover story in the March, 2015 issue of National Geographic declared the surprising prevalence of science denial as a general social attitude.⁴⁶ The examples of this attitude, according to the story, included the rejection of anthropogenic climate change, GMO food, and Darwinian evolutionary theory, but also included doubts about reality of the moon landings, the reasons for fluoridating public drinking water, and the safety of vaccination.⁴⁷ It certainly seems plausible to attribute this latter set of views to skepticism about science and to associate it with climate change denial. Once again, however, careful scrutiny raises questions about the explanatory force of this categorization. Claims that the moon landings were faked and that fluoridated water and vaccination are designed to harm people generally fall within the category of conspiracy theories. Some conspiracy theories certainly appear to involve the denial of scientific truth, but such theories, considered as a whole, originate from different impulses. In addition, climate change denial does not fit comfortably within this category. To be sure, the declarations of climate change deniers, including Inhofe's book, often display the features of conspiracy theory. On reflection, however, it appears that climate change denial is enlisting the tropes of conspiracy theory in support of independently-established views, just as it has enlisted religious arguments.

45. See SAINT AUGUSTINE, THE CITY OF GOD 356-68 (Marcus Dods, trans., Modern Library ed. 1993) (XI-11-23); Aquinas, *supra* note 40, at 919-71 (1948) (I-II Q.74-85) For the controversy between Luther and Erasmus on free will, see ERASMUS & LUTHER: THE BATTLE OVER FREE WILL (Clarence H. Miller ed., Clarence H. Miller & Peter Macardle trans.) (2012) (containing Erasmus' A Discussion or Discourse Concerning Free Will and Luther's The Enslaved Will).

46. Joel Achenbach, *Why Do So Many Reasonable People Doubt Science?*, NAT'L GEOGRAPHIC, Mar. 2015, at 31.

47. *Id.*

Conspiracy theories are typically an account of an event or public course of action with the following characteristics:⁴⁸

- (1) the direct rejection of a widely accepted explanation or justification;
- (2) the attribution of the event or course of action to recondite, rather than merely alternative causes;⁴⁹
- (3) the assertion that these recondite causes are orchestrated by a powerful individual or small, organized group;
- (4) usually, the conclusion that the majority of people in the society are disadvantaged by the actions of this group, and always that the majority of people are being fooled.⁵⁰

The number of such theories in current or recent circulation, and the range of events that they concern, is vast. Active conspiracy theories attribute the World Trade Center attack to the U.S. government or a shadowy, world-wide organization,⁵¹ the Sandy Hook massacre to gun control advocates,⁵² the Oklahoma City bombing to the Clinton administration,⁵³ and the assassination of John F. Kennedy to the CIA, the Mafia, Fidel Castro, or Lyndon

48. Because the purpose here is to distinguish conspiratorial thinking from other approaches, rather than analyze this mode of thought as such, this definition is a bit more elaborate than ones that appear in leading monographs on the subject. See MICHAEL BARKUN, *A CULTURE OF CONSPIRACY: APOCALYPTIC VISIONS IN CONTEMPORARY AMERICA* 3 (2013) (“a *conspiracy belief* is the belief that an organization made up of individuals or groups was or is acting covertly to achieve some malevolent end”) (emphasis in original); MARK FENSTER, *CONSPIRACY THEORIES: SECRECY AND POWER IN AMERICAN CULTURE* 1 (2d ed. 2008) (“the conviction that a secret, omnipotent individual or group covertly controls the political and social order or some part thereof”); RICHARD HOFSTADTER, *The Paranoid Style in American Politics*, in *THE PARANOID STYLE IN AMERICAN POLITICS* 29 (2008) (“The central image is that of a vast and sinister conspiracy, a gigantic and yet subtle machinery of influence set in motion to undermine and destroy a way of life.”).

49. Michael Barkun usefully distinguishes between event conspiracies, which focus on an incident like the Kennedy assassination or the World Trade Center attack, and systemic conspiracies, which claim that the individuals or group in question is controlling the entire society. BARKUN, *supra* note 48, at 6.

50. As Jesse Walker points out, some conspiracy theories posit that the individuals or group in control are benevolent. See JESSE WALKER, *THE UNITED STATES OF PARANOIA: A CONSPIRACY THEORY* 133-53 (2013).

51. BARKUN, *supra* note 48, at 159-82.

52. *E.g.*, Jim Fetzer & Dennis Cimino, *Sandy Hook: Huge Hoax and Anti-Gun "Psy-Op"*, *VETERANS TODAY* (May 1, 2015), <http://www.veteranstoday.com/2015/05/01/sandy-hook-huge-hoax-and-anti-gun-psy-op/>; Makia Freeman, *33 Unanswered Questions on Sandy Hook's 3rd Anniversary*, *ACTIVIST POST* (Dec. 14, 2015), <http://www.activistpost.com/2015/12/33-unanswered-questions-on-sandy-hooks-3rd-anniversary.html>.

53. *E.g.*, Craig McKee, *Documentary A Nobel Lie Exposes Oklahoma City Bombing as a Government Black Op*, <https://truthandshadows.wordpress.com/2012/02/27/documentary-a-noble-lie-exposes-oklahoma-city-bombing-as-government-black-op/> (last visited Nov. 27, 2016); *The Truth About the Oklahoma City Bombing*, *THE ZONE OF TRUTH*, <http://nstarzone.com/OKC.html> (last visited Nov. 27, 2016).

Johnson.⁵⁴ They maintain that alien landings on Earth have been concealed by various governments, or that actual spaceships are secreted by the U.S. government in Roswell, New Mexico.⁵⁵ They warn about black helicopters with United Nations troops that are perched on our America's borders, ready to descend on us and subject us to foreign domination,⁵⁶ or that government-created concentration camps, scattered across the nation, stand ready to imprison all the advocates of freedom.⁵⁷

Various hypotheses have been advanced to explain the prevalence of conspiracy theories. In a famous essay, Richard Hofstadter identifies them as part of a "paranoid style" in American politics and attributes them to feelings of distress about the direction that society has taken.⁵⁸ Recent explanations focus more on civil society than politics. Mark Fenster argues that conspiracy theories emerge from popular culture and reflect the interpretive practices endemic to that culture.⁵⁹ Similarly, Jesse Walker sees these theories as connected to primal myths that have haunted the American worldview: the enemy outside, the enemy within, the enemy above, the enemy below, and clandestine benevolence.⁶⁰ Michael Barkun attributes conspiracy theories to a more specific cultural phenomenon that he describes as improvisational millennialism: urban legends or folklore that flourish when large quantities of information are available and authority structures have become attenuated.⁶¹

None of these explanations have very much to do with science denial, it will be observed, and indeed, most of the events and policies that have been the subject of conspiracy theories have almost nothing to do with science. Hofstadter's use of the term "paranoid" may appear pseudo-clinical or disparaging, but he certainly seems right in identifying conspiracy theories as a style, or a mode of thought. As such, they can attach to virtually any event, drawing their accusations from the prevailing culture. The most distinctive feature of conspiracy theories is that they involve a pervasive skepticism about official or conventional explanations and

54. *E.g.*, ROGER STONE, *THE MAN WHO KILLED KENNEDY: THE CASE AGAINST LBJ* (2014); LAMAR WALDRON, *THE HIDDEN HISTORY OF THE JFK ASSASSINATION* (2013).

55. BARKUN, *supra* note 48, at 82-88.

56. *Id.* at 70-72.

57. *Id.* at 72-76. BARKUN, *supra* note 48, provides a comprehensive catalogue of current conspiracy theories. *See also* WALKER, *supra* note 50.

58. HOFSTADTER, *supra* note 48.

59. *See* FENSTER, *supra* note 48, at 279-89.

60. WALKER, *supra* note 50.

61. BARKUN, *supra* note 48, at 18-29.

propose an alternative that has been hidden from view.⁶² In order to do so, the theory must accept the prevailing concept of truth and argue that the standard explanation is false by the criteria of that concept.

Until the twentieth century, not surprisingly, conspiracy theories in the Western world were framed in religious terms. The conspirators, whatever form they took, were assumed to be in league with Satan. This was of course the motivating belief that led to the Salem witch trials of 1692.⁶³ Britain's Gordon riot of 1780 was triggered by the fear that a group of Catholics in the military were engineering the establishment of an absolutist Catholic monarchy.⁶⁴ The Anti-Masonic movement, which was sufficiently widespread to become an important political party during the late 1820s and early 1830s, seems to have been primarily motivated by the perceived elitism of the Masons, but dressed up its attack with charges of Satanism and impiety.⁶⁵ In other words, the conspiracy theories of the pre-modern era did not deny the existence of God or even, in most cases, the divinity of Christ. Instead, they spoke in terms of these well-accepted truths and used them—or an idiosyncratic interpretation of them—to refute whatever more specific explanation the conspiracy theorist was challenging.

In the modern world, our concept of truth is derived from natural science. Consistent with that cultural reality, contemporary conspiracy theories generally do not question the validity of science, but rather attempt to use science to call some standard account of a particular phenomenon into question.⁶⁶ As Hofstadter noted,

62. See *supra* note 48.

63. See EMERSON W. BAKER, *A STORM OF WITCHCRAFT: THE SALEM TRIALS AND THE AMERICAN EXPERIENCE* (2014); PETER CHARLES HOFFER, *THE SALEM WITCHCRAFT TRIALS: A LEGAL HISTORY* (1997); MARION L. STARKEY, *THE DEVIL IN MASSACHUSETTS: A MODERN INQUIRY INTO THE SALEM WITCH TRIALS* (1949). The event was dramatized by ARTHUR MILLER, *THE CRUCIBLE* (1955).

64. See generally *THE GORDON RIOTS: POLITICS, CULTURE AND INSURRECTION IN LATE EIGHTEENTH CENTURY BRITAIN* (Ian Haywood & John Seed eds., 2012); Christopher Hibbert, *King Mob: The London Riots of 1780* (1989). The Gordon Riots are memorably depicted in CHARLES DICKENS, *BARNABY RUDGE* (1841). The eponymous leader of the riot, Lord George Gordon, was imprisoned for treason but acquitted. He then converted to Judaism, taking the name Yisrael bar Avraham Gordon. See YIRMEYAHU BIRMAN, *LORD GEORGE GORDON* (1992).

65. HOFSTADTER, *supra* note 48, at 17-18. On the Anti-Masonic Party, see DANIEL WALKER HOWE, *WHAT HATH GOD WROUGHT: THE TRANSFORMATION OF AMERICA, 1815-1848*, at 268-70 (2007); SEAN WILENTZ, *THE RISE OF AMERICAN DEMOCRACY: JEFFERSON TO LINCOLN 272-79* (2005). The Anti-Masons were the first party to hold a national convention, and are sometimes credited with initiating modern political party structure. See ROBERT P. FOMISANO, *FOR THE PEOPLE: AMERICAN POPULIST MOVEMENTS FROM THE REVOLUTION TO THE 1850S*, at 141-58 (2008).

66. Control of the entire society—Barkun's systemic conspiracies, see BARKUN, *supra* note 48, at 6—may not seem particular, but they are in comparison to the validity of science. Their exposure, and the defeat of the supposedly controlling force, would leave the scientific method intact.

"[o]ne should not be misled by the fantastic conclusions that are so characteristic of this political style into imagining that it is not, so to speak, argued out along factual lines."⁶⁷ To the contrary, conspiracy theories typically begin with "defensible assumptions and with a careful accumulation of facts, or at least what appear to be facts, and to marshal these facts toward an overwhelming 'proof' of the particular conspiracy that is to be established."⁶⁸ Often, in our modern world, these facts will be scientific ones. Even a cursory glance at the websites presenting conspiracy theories about the Kennedy assassination, the Oklahoma City bombing, or the World Trade Center attack will reveal a plethora of scientific-sounding data, some quite sophisticated, about ballistics, explosives, videography, and other technical matters, mixed in with political and social analysis that is often the more jejune aspect of the enterprise. In other words, conspiracy theories tend to use science—our prevailing standard of truth—rather than denying it.

Climate change denial is too broad-based to be classified as a conspiracy theory. First, the explanation it denies is not dominant in the society, although it is dominant among scientists, which is one reason why it is so often characterized as science denial.⁶⁹ Second, not all the deniers attribute the view that they reject to recondite causes orchestrated by a small, secretive group; in many cases, the enemy is identified as liberals, a group that is neither small nor secretive. There seems little question, however, that much of the climate change denial literature has at least a flavor of conspiracy theory. James Inhofe, for example, comes fairly close to a full-blown conspiracy theory; his book is actually subtitled "How the Global Warming Conspiracy Threatens Your Future."⁷⁰ In an appendix, he suggests that the United Nations, or more specifically "globalist elites [working] within the United Nations," have concocted the idea of human-induced climate change, together with the idea of sustainable development, because they want total control of the Earth's resources.⁷¹

67. HOPSTADTER, *supra* note 48, at 35.

68. *Id.* at 36.

69. *See supra*, nn. 8, 9.

70. INHOFE, *supra* note 3. The cover design, attributed to Mark Karis, shows the torso of a man in a suit and tie with his two hands hovering over a glowing image of the Earth, about the size of a bowling ball. *Id.* Presumably, some implication of fakery is intended, but the illustration is hard to interpret. The man seems like a magician, in which case the accidental implication is not that he is fabricating the account of climate change, but that he is actually causing it -- a position not too far from the one that most scientists endorse.

71. INHOFE, *supra* note 3, at 206, 214. This is a somewhat confusing claim, however, given that Inhofe devotes most of his book to attacks on Barack Obama, Barbara Boxer, Al Gore and American environmental groups, none of whom can plausibly be regarded as part of "the globalist elites. . . within the United Nations." *Id.* at 206.

Like conspiracy theories in general, climate change deniers do not condemn their opponents for using science, but rather endorse or even glorify science and condemn their opponents for using it incorrectly. Although Inhofe focuses on politics, he clearly asserts that scientific evidence does not support the claim that anthropogenic climate change is occurring.⁷² Other leading denial books rely heavily on scientific claims; in fact, it is fair to say that the main theme of these books is that scientific evidence refutes the conclusion that anthropomorphic climate change is a reality.⁷³ These books are produced by members of the cultural elite, however, and may be regarded as attempting to shape public opinion rather than reflecting it. A better reflection of general public attitudes may be the websites claiming that climate change or global warming is a hoax.

To take the websites generated by the prompt "global warming hoax,"⁷⁴ the first seven that endorse this view all rely heavily on scientific claims.⁷⁵ They assert that unbiased scientists have

72. *Id.* at 21-52. One of his sections headings in the cited chapter is: "Catastrophic Global Warming Based on Fear, Not Science." *Id.* at 21. While one of his sources is the novelist Michael Crichton, *id.* at 40-46, others are in fact scientific studies.

73. *See, e.g.*, TIM BALL, *THE DELIBERATE CORRUPTION OF CLIMATE SCIENCE* (2014); FRAY, *supra* note 2020; SOLOMON, *supra* note 2020; STEYN, *supra* note 2020; SUSSMAN, *supra* note 21. The authors are also anxious to establish their own scientific credential, or in the case of SOLOMON, *supra* note 20, the credentials of the deniers whom he praises. Sussman describes himself as a "meteorologist" in the subtitle of his book on Climategate ("A Veteran Meteorologist Exposes the Global Warming Scam"). SOLOMON, *supra* note 20. A "meteorologist" generally refers to a scientist, that is, someone with a university degree. *See Meteorologist*, RANDOM HOUSE DICTIONARY (Random House 2d ed. 1987) ("meteorology: the science dealing with the atmosphere and its phenomena including weather and climate"). In fact, Sussman, according to his own website, was a television weather reporter and is presently a talk show host. *About Brian*, BRIANSUSSMAN.com, <http://www.briansussman.com/biography/> (last visited Nov. 27, 2016).

74. Google does not reveal its algorithm for ordering the sites that are generated by a prompt, but it is known that the algorithm is generated by the number of times the site is accessed. *See Pagerank*, WIKIPEDIA, <https://en.wikipedia.org/wiki/PageRank> (last visited Nov. 27, 2016) ("The Google Toolbar long had a PageRank feature which displayed a visited page's PageRank as a whole number between 0 and 10 . . . Google has not disclosed the specific method for determining a Toolbar PageRank value . . ."). A rough estimate of the hit frequency can be derived from Zipf's Law of linguistic distribution, which is: where N is the number of elements, k is the rank of a given element and s is the exponent that characterizes their distribution. *See* CHRISTOPHER D. MANNING, PRABHAKAR RAGHAVAN & HINRICH SCHÜTZ, *INTRODUCTION TO INFORMATION RETRIEVAL* 82-96 (2008); CHRISTOPHER D. MANNING & HINRICH SCHÜTZ, *FOUNDATIONS OF STATISTICAL NATURAL LANGUAGE PROCESSING* 23-35 (1999); M.E.J. Newman, *Power Laws, Pareto Distributions and Zipf's Law*, 46 *CONTEMP. PHYSICS* 323 (2007). We do not know the number of elements, but Zipf's Law generates the approximation that the nth most common element will occur 1/n as often as the first. Thus, the twelfth cite (the one that is past the endpoint of this survey) will be accessed only 2.7% as often as the first eleven, and the proportion will decline from there.

75. As of Apr. 20, 2016, the first two sites generated by the prompt "global warming hoax" were refutations of the hoax claim by INSIDE CLIMATE NEWS, <http://insideclimate-news.org>, and CLIMATE PATH, <http://www.climatepath.org>. The fourth site was a Wikipedia article entitled "Global Warming Conspiracy Theory." The fifth site supported the hoax idea,

concluded that human-induced climate change is not occurring and that reports to the contrary are distorted, or that the scientists who support the idea of global warming are motivated by pecuniary or ideological considerations that impair their objective judgment. The most frequently accessed hoax site declares:

You've probably heard over and over that 99% of scientists believe in global warming well the opposite is true [*sic*]. That talking point came from a study where only 75 scientists say they believe in global warming on the other hand over 31,000 scientists have signed a petition saying they don't believe in Catastrophic Man-Made Global Warming [*sic*].⁷⁶

The next site, after an extended discussion of the reasons why scientists have rallied around a false idea, concludes: "Global Warming. It is a hoax. It is bad science."⁷⁷ The following one asserts: "The satellite data purported to show a warming 'trend' over the last hundred years has been fraudulently altered to show a warming trend where none exists."⁷⁸ Next comes a site titled "Friends of Science" which begins by reporting on the "HadCRUT3 surface

but it was only a compendium of other sites or documents found on the Internet. The third and sixth through eleventh sites, *i.e.*, the seven most frequently accessed hoax sites making specific claims of one sort or another, were as follows:

(3) Elmer Beauregard, *Top Ten Reasons Climate Change is a Hoax*, GLOBAL CLIMATE SCAM.COM (Jan. 23, 2015), <http://www.globalclimatescam.com/opinion/top-ten-reasons-climate-change-is-a-hoax/>.

(6) John Coleman, *The Amazing Story Behind the Global Warming Scam*, CLIMATE CHANGE DISPATCH (May 15, 2009), <http://www.climatechangedispatch.com/the-amazing-story-behind-the-global-warming-scam.html>.

(7) Mike Adams, *Global Warming Hoax Unravels . . . Globalist science fraud engineered to control humanity, not save it*, NATURAL NEWS (Dec. 2, 2015), http://www.naturalnews.com/052179_global_warming_science_fraud_globalist_control_agenda.html.

(8) *Common Misconceptions About Global Warming*, FRIENDS OF SCIENCE, <http://www.friendsofscience.org/index.php?id=3> (last visited Nov. 27, 2016).

9. Jason Taylor, 'Global warming the greatest scam in history' claims founder of Weather Channel, EXPRESS (June 9 2015), <http://www.express.co.uk/news/clarifications-corrections/526191/Climate-change-is-a-lie-global-warming-not-real-claims-weather-channel-founder>.

(10) James Delingpole, *Climate Change: The Hoax That Costs Us \$4 Billion a Day*, BREITBART (Aug. 8, 2015), <http://www.breitbart.com/big-government/2015/08/08/climate-change-the-hoax-that-costs-us-4-billion-a-day/>.

(11) Peter Ferrara, *The Period of No Global Warming Will Soon Be Longer than the Period of Actual Global Warming*, FORBES (Feb. 24, 2014, 10:55 AM), <http://www.forbes.com/sites/peterferrara/2014/02/24/the-period-of-no-global-warming-will-soon-be-longer-than-the-period-of-actual-global-warming/#5e99fe258bf0>.

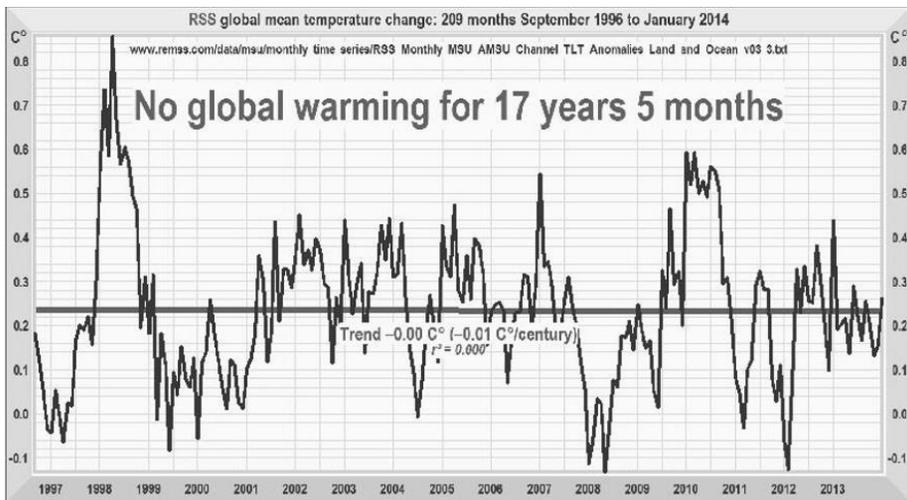
76. Beauregard, *supra* note 75 (emphasis in original).

77. Coleman, *supra* note 75.

78. Adams, *supra* note 75 (emphasis in original)

temperature index, produced by the Hadley Centre of the UK Met Office and the Climate Research Unit of the University of East Anglia," and concludes that "[s]atellite, weather balloons and ground stations all show cooling since 2001."⁷⁹

This is hardly discourse that can be described as science denial.⁸⁰ Of course, the scientific claims in these sites are all fabricated or distorted. To take just one example, an article published by Forbes, a reputable business news magazine, includes the following graph to demonstrate that, as the article's title asserts, "the period of no global warming will soon be longer than the period of actual global warming."⁸¹



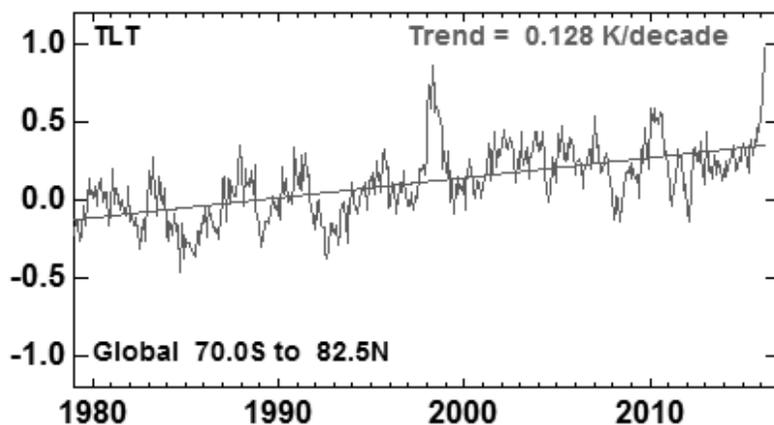
According to the satellites whose data are processed by Remote Sensing Systems, Inc., the longest continuous period without any global warming since the record began in January 1979 is 17 years 5 months, or 209 successive months, from September 1996 to January 2014 inclusive. Taking the mean of all five principle global temperature data sets (GISS, HadCRUT4, NCDC, RSS, and UAH), there has been zero global warming for 13 years. On the HadCRUT4 dataset there has been no global warming distinguishable from the published measurement, coverage, and bias uncertainties for 17 years 6 months. On the RSS dataset, there has been no statistically-significant warming at 95% confidence for 24 years 6 months. The Central England Temperature Record, the world's oldest, shows no warming at all for 25 years.

79. FRIENDS OF SCIENCE, *supra* note 75.

80. Rejection of a widely accepted scientific conclusion is not science denial; it is the way science progresses. The contemporary theory of scientific inquiry that supports this point is THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (University of Chicago Press 2d ed. 1970). But it is not necessary to invoke recent epistemology; the standard account of scientific inquiry is that all theories must be open to refutation in order to be considered science, and that such refutations regularly occur. See KARL POPPER, *THE LOGIC OF SCIENTIFIC INQUIRY* (Hutchinson & Co. First English ed. 1959).

81. Ferrara, *supra* note 75.

As can be seen, this graph, which appears in another hoax site as well,⁸² provides its source, Remote Sensing Systems, a scientific research institution that measures atmospheric temperatures through satellite data.⁸³ The graph does in fact appear on the RSS website, as follows:



It would appear that what the Forbes article has done is to take the last segment of this graph, giving data for the years after 1997, and rotate it so that the upward trend of the original average line is presented as a horizontal, that is, showing no increase in average temperature. Conceivably, the orientation of the average line in the original graph could change when the data is averaged over a shorter period, but the author of the article, Peter Ferrara, gives no indication that he has performed such a calculation. Instead, it seems that he has simply rotated the average temperature line, making use of the reader's tendency to commit the cognitive error of paying more attention to the high and low points of the data line, rather than to the areas that the line encloses and, in this case, that determine average temperature.⁸⁴

82. The ninth most accessed hoax site, Tom Luongo, *Scientist Confesses: "Global Warming a \$22 Billion Scam,"* NEWSMAX FINANCE, <http://www.newsmax.com/Finance/MKT-News/Global-Warming-climate-change/2014/11/17/id/607827/>.

83. *Upper Air Temperature*, REMOTE SENSING SYSTEMS, <http://www.remss.com/measurements/upper-air-temperature> (last visited Nov. 27, 2016).

84. At the time Ferrara accessed the RSS website, it contained the following statement, now on a separate website: "Over the past 35 years, the troposphere has warmed significantly. The global average temperature has risen at an average rate of about 0.13 degrees Kelvin per decade (0.23 degrees F per decade). Climate models cannot explain this warming if

To summarize, the climate change deniers' affinity with conspiracy theory does not indicate that they are motivated by hostility to science. Rather, it indicates an affinity for science and an inclination to use science as a means of combatting a prevailing explanation. The fact that their scientific assertions range from inaccurate to ignorant to consciously distorted does not show that they are rejecting science itself, but rather that they are trying to use science to establish arguments that are unrelated to any particular view about science itself. In other words, the sources of climate change denial cannot be found in the deniers' attitude toward science, but must be sought elsewhere.

III. CLIMATE CHANGE DENIAL AND REGULATION

A. *Climate Change Denial as Regulation Phobia*

A persistent theme in the climate change denial literature, among mainstream figures as well as conspiracy theorists, involves the impact on our society that would result if the problem were to be acknowledged. As Naomi Klein points out, the deniers seem to be in full agreement with their most fervent opponents that controlling climate change, if the phenomenon is in fact occurring, would require extensive regulatory intervention and demand extensive transformation of our economic and social structure.⁸⁵ But while those concerned about climate change are willing, and sometimes eager, to adopt such policies, the deniers regard them with revulsion and are particularly incensed about the equanimity or enthusiasm with which their opponents greet the possibility.⁸⁶ This motivation for climate change denial has been extensively noted, perhaps as extensively as science denial.⁸⁷ Like science denial, however, the

human-caused increases in greenhouse gases are not included as input to the model simulation. The spatial pattern of warming is consistent with human-induced warming. . . . But . . . The troposphere has **not** warmed quite as fast as most climate models predict." (emphasis in original, statements' formatting altered for inclusion in footnotes). *Climate Analysis*, REMOTE SENSING SYSTEMS, <http://www.remss.com/research/climate> (last visited Nov. 27, 2016).

85. NAOMI KLEIN, *THIS CHANGES EVERYTHING* 31-63 (2014).

86. INHOFE, *supra* note 3, at 147-63; see STEVE MILLOY, *GREEN HELL: HOW ENVIRONMENTALISTS PLAN TO CONTROL YOUR LIFE AND WHAT YOU CAN DO TO STOP THEM* (2009); Charles Krauthammer, *Carbon Chastity*, WASH. POST (May 30, 2008), http://articles.washingtonpost.com/2008-05-30/opinions/36813249_1_socialism-carbon-chastity-co2into; George F. Will, *Global Warming Advocates Ignore the Boulders*, WASH. POST (Feb. 21, 2010), <http://www.washingtonpost.com/wp-dyn/content/article/2010/02/19/AR2010021903046.html>. This theme is also voiced in a novel, MICHAEL CRICHTON, *STATE OF FEAR* (2004).

87. See, e.g., HOFFMAN, *supra* note 10, at 41; KLEIN, *supra* note 85; CHRIS MOONEY, *THE REPUBLICAN WAR ON SCIENCE* (2006); ORESKES & CONWAY, *supra* note 2, at 169-215; Jean-Daniel Collomb, *The Ideology of Climate Change Denial in the United States*, 9 EUR. J. AM. STUDIES Doc. 5 (2014); Michael Gerson, *Climate Change and the Culture War*, WASH.

hostility to government regulation is a complex social attitude that requires further analysis in order to be properly understood.

It is commonplace of contemporary American politics that progressives are in favor of the sorts of regulation that controlling climate change would demand, while conservatives are opposed to it.⁸⁸ As George Lakoff has pointed out, however, these positions cannot be explained in terms of support and opposition to governmental power or authority in general.⁸⁹ Progressives are generally opposed to regulatory laws that prohibit abortion or that punish consensual sexual behavior, while conservatives generally favor such laws. Nor can the prevailing positions be explained as resistance to public expenditures; conservatives rail against the cost of social and environmental programs, but they are generally willing to support expenditures for the military, prisons, and the war on drugs, while progressives bridle at the scale and scope of such expenditures.⁹⁰ The reason why philosophically-consistent libertarianism, which opposes all these forms of regulation, has never achieved any political traction in the U.S. is that it is simply orthogonal to our prevailing spectrum of belief.⁹¹

Lakoff attributes the apparent contradictions in the progressive and conservative belief systems to people's conceptual or metaphorical frameworks.⁹² Society in general is simply too large and too complex to be grasped, he notes, so people resort to the heuristic of envisioning it in terms of a much more familiar and manageable system of governance, namely the family.⁹³ Their attitude toward public policy is then shaped by the kind of parenting to which they

POST (Jan. 16, 2012), http://www.washingtonpost.com/opinions/climate-and-the-culture-war/2012/01/16/gIQA6qH63P_story.html; Yuko Heath & Robert Gifford, *Free-Market Ideology and Environmental Degradation: The Case of Belief in Global Climate Change*, 38 ENVIRONMENT & BEHAVIOR 48 (2006).

88. See, e.g., Riley E. Dunlap & Aaron M. McCright, *A Widening Gap: Republican and Democratic Views on Climate Change*, 50 ENVIRONMENT 26 (2008); P. Sol Hart & Erik C. Nisbet, *Boomerang Effects in Science Communication: How Motivated Reasoning and Identity Cues Amplify Opinion Polarization About Climate Mitigation Policies*, 39 COMMUNICATION RESEARCH 701 (2012). Note that the term "liberal" is often used for political progressives, but since it is also used in political philosophy for libertarianism, and since the following discussion turns on the distinction between progressive and libertarian attitudes, "liberal" will be avoided in this context.

89. GEORGE LAKOFF, *MORAL POLITICS: HOW LIBERALS AND CONSERVATIVES THINK* (2d ed. 2002).

90. See *id.* at 143-52.

91. For an extreme libertarian position, see, e.g., ROBERT NOZICK, *ANARCHY, STATE, AND UTOPIA* (1974) (arguing that the only legitimate use of state authority is to maintain order).

92. LAKOFF, *supra* note 89, at 3-64. See also GEORGE LAKOFF, *WOMEN, FIRE AND DANGEROUS THINGS: WHAT CATEGORIES REVEAL ABOUT THE MIND* (1987).

93. *Id.* at 153-61.

are emotionally inclined.⁹⁴ Conservatives are people who favor the Strict Father model, which strives to inculcate moral behavior, emphasizes obedience, administers punishment for wrongdoing, and views the world as a threatening place that the child must learn to manage. Progressives are those who favor the Nurturant Parent model, which centers on the child's personal development, emphasizes mutual affection, relies on insight and internalized norms for control, and sees the world as an arena of opportunity.⁹⁵

The advantage of Lakoff's theory is that it is able to explain varying attitudes toward regulation, to go beyond global characterizations of political positions and explain why progressives favor certain kinds of regulation and conservatives favor other kinds. In order to understand climate change denial, however, a further distinction is required. It is reasonably accurate to say that conservatives are opposed to, or at least skeptical about, regulations that impose worker safety, environmental, and consumer protection restrictions on private enterprise. But conservative attitudes toward regulations designed to combat global warming seem to be a separate division of this general category. The difference is that conservatives, and specifically the climate change deniers, reject the idea of this regulation in its entirety.

Few conservatives would deny that workers sometimes get injured, that industrial activity can damage the environment, and that consumers are sometimes defrauded or misled, nor would they deny the general proposition that poverty creates human misery.⁹⁶ They often differ with progressives about the extent to which the market will correct these problems, but they do not deny that market failures due to monopolization, information asymmetries and externalities exist.⁹⁷ Their most extreme conservative claim is

94. See *id.* at 143-61. This is based on Lakoff's more general theory about the metaphorical character of human thought. See LAKOFF, WOMEN, FIRE, AND DANGEROUS THINGS, *supra* note 92.

95. See LAKOFF, *supra* note 89, at 65-140. See also MARK JOHNSON, MORAL IMAGINATION: IMPLICATIONS OF COGNITIVE SCIENCE FOR ETHICS (1994) (arguing that moral decision making is not a process of following rules but a series of cognitive and metaphorical constructs).

96. For accounts of these problems by writers who can generally be identified as progressives or moderates, see, e.g., STEPHEN BREYER, REGULATION AND ITS REFORM (1982); Joseph Stiglitz, *Regulation and Failure*, in NEW PERSPECTIVES ON REGULATION 11 (David A. Moss & John A. Cisternino eds., 2009).

97. See, e.g., GARY BECKER, THE ECONOMIC APPROACH TO HUMAN BEHAVIOR 17-29 (1976) (although the market will usually counteract discrimination against a large minority group, discrimination against small groups can be externalized); ROBERT H. BORK, THE ANTI-TRUST PARADOX (2d ed. 1993) (antitrust law should continue to prohibit monopolistic behavior that harms consumers, such as horizontal mergers or deliberate predation); R.H. COASE, THE FIRM, THE MARKET, AND THE LAW 95-156 (1990) (discussing prevalence of externalities).

that governmental efforts to correct these problems are a form of tyranny, a mode of politically illegitimate action.⁹⁸ More often, conservatives are willing to acknowledge that government may legally or morally respond to economic and social problems, but argue that, as an empirical matter it is unlikely to succeed in resolving them, first because it is inefficient, which is to say that its actions are not disciplined by market forces,⁹⁹ and second because it is readily dominated by organized special interest groups.¹⁰⁰ This cure-is-worse-than-the-disease approach thus focuses conservatives' disagreement with progressives on the range of possible solutions, rather than the existence of the problem.

Mainstream conservative positions are quite distinct from conspiracy theories; in fact, they seem further removed from such theories than mainstream progressive positions. The problem with regulation, according to conservatives, is not nefarious plots but basic human nature. People are primarily motivated by their own material self-interest; their divergences from that behavior are usually the result of laziness, ignorance, or cognitive limitations, or are induced by counter-productive government policy.¹⁰¹ As Adam Smith first observed, the market produces social benefit because it harnesses this basic motivation.¹⁰² Regulatory interference with the

98. See, e.g., MILTON FRIEDMAN, *CAPITALISM AND FREEDOM* (1962) (treating social security, occupational licensing, and restrictions on trade as denials of basic human liberty); F.A. HAYEK, *THE ROAD TO SERFDOM* (1944) (arguing that all government planning and centralized regulation is a form of tyranny); NOZICK, *supra* note 91 (arguing that the only legitimate function of government is to maintain public order).

99. See ANTHONY DOWNS, *INSIDE BUREAUCRACY* 24-25 (1967); see also WILLIAM A. NISKANEN, JR., *BUREAUCRACY AND REPRESENTATIVE GOVERNMENT* (1971); JAMES Q. WILSON, *BUREAUCRACY: WHAT GOVERNMENT AGENCIES DO AND WHY THEY DO IT* (1989).

100. See, e.g., MORRIS FIORINA, *CONGRESS: KEYSTONE OF THE WASHINGTON ESTABLISHMENT* (Yale University Press 2d ed., 1989); DAVID MAYHEW, *CONGRESS: THE ELECTORAL CONNECTION*, (Yale University Press 2d ed., 2004); MANCUR OLSON, *THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS* (Harvard University Press 2d ed., 1971).

101. See, e.g., GARY S. BECKER, *THE ECONOMIC APPROACH TO HUMAN BEHAVIOR* (1976) (explicating the way that self-interested and strategic motivations produce behavior in non-market settings); GARY S. BECKER & KEVIN M. MURPHY, *SOCIAL ECONOMICS: MARKET BEHAVIOR IN A SOCIAL ENVIRONMENT* (2000) (same); ARTHUR C. BROOKS, *THE CONSERVATIVE HEART: HOW TO BUILD A FAIRER, HAPPIER, AND MORE PROSPEROUS AMERICA* 53-106 (2015) (discussing the disadvantages of welfare and the dignitary benefits of work); See generally MICHEL C. JENSEN, *FOUNDATIONS OF ORGANIZATIONAL STRATEGY* 11-50 (1998) (developing theory of organizational behavior on the based on model of human behavior as rational and self-interested); JOHN VON NEUMANN & OSKAR MORGENSTERN, *THE THEORY OF GAMES AND ECONOMIC BEHAVIOR* 15-44 (1st ed. 1944) (explicating basic concept of rational, self-interested behavior). For a description of the evolution of these beliefs in response to the New Deal, see KIM PHILLIPS-FEIN, *INVISIBLE HANDS: THE BUSINESSMEN'S CRUSADE AGAINST THE NEW DEAL* (W.W. Norton & Co. reprint ed., 2010).

102. See ADAM SMITH, *THE WEALTH OF NATIONS* 119 (Andrew Skinner ed., Penguin Classics 1986) (1776) ("It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love . . .").

market is a risky enterprise because it relies on our ability to detach people from their individual self-interest and expects them to act for the benefit of the general public.¹⁰³ They may do so when the danger is serious and the underlying morality is clear; we can expect individuals to protect the nation from attack, to combat criminal behavior, and to condemn dishonest business practices. In less serious and apparent circumstances, however, people are likely to revert to the protection or expansion of their own self-interest. Elected politicians will attempt to maximize their chance of reelection, and endorse regulatory programs that appeal to their constituents, whether or not they are effective.¹⁰⁴ Bureaucrats will want to obtain promotions, generate opportunities for future employment in the industry they are supposed to regulate, or simply obtain their salaries with minimal effort so that they can find satisfaction elsewhere.¹⁰⁵

In other words, the conservative belief regarding the counterproductive effects of regulation can be explained by basic features of human nature. The same set of attitudes that makes the market work in many circumstances makes governmental intervention in the market an uncertain proposition. There is no need to posit any sort of evil conspiracy, or indeed, any evil behavior at all, to account for these concerns.¹⁰⁶ It is progressives who are more likely to make claims that move in the direction of conspiracy theories.¹⁰⁷ First, they often question the efficiency of the market; they assert that small groups of powerful executives are manipulating it for their own advantage, and to the detriment of workers, consumers and the economy in general.¹⁰⁸ Second, they tend to attribute the failure of

103. See Ronald S. Warren, Jr., *Bureaucratic Performance and Budgetary Reward*, 24 PUBLIC CHOICE 51 (1975).

104. See, e.g., FIORINA, *supra* note 100; MAYHEW, *supra* note 100; OLSON, *supra* note 100100.

105. See NISKANEN, *supra* note 99 (self-interested bureaucrats generally try to maximize the budget of their agency); Jonathan Bendor, Serge Taylor & Roland Van Gaalen, *Bureaucratic Expertise versus Legislative Authority: A Model of Deception and Monitoring in Budgeting*, 79 AM. POL. SCI. REV. 1041 (1985) (bureaucratic behavior is determined by the interplay of budget maximizing and risk aversion).

106. See William J. Novack, *A Revisionist History of Regulatory Capture*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 25 (Daniel Carpenter & David A. Moss eds., 2014); Richard A. Posner, *The Concept of Regulatory Capture: A Short, Inglorious History*, in PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 49 (Daniel Carpenter & David A. Moss eds., 2014).

107. Progressives being defined here simply as those who favor government regulation of business.

108. This was a dominant theme of journalists and historians allied with the Progressive Movement. See, e.g., LOUIS D. BRANDEIS, OTHER PEOPLE'S MONEY AND HOW THE BANKERS USE IT (1914); IDA M. TARBELL, THE HISTORY OF THE STANDARD OIL COMPANY (1904); see AILEEN GALLAGHER, THE MUCKRAKERS: AMERICAN JOURNALISM DURING THE AGE OF REFORM (2006); STEVE WEINBERG, TAKING ON THE TRUST: THE EPIC BATTLE OF IDA TARBELL

regulation, when such failures occur, to alliances between business leaders and government officials that undermine otherwise effective regulatory programs.¹⁰⁹ This is not to say that progressives are willing to endorse outright conspiracy theories. The main point is that their positions are often more suggestive of such theories than the positions of mainline conservatives.

From this perspective, climate change denial, although clearly anti-regulatory, is not typical of mainstream conservatism. Rather than acknowledging the existence of a problem, while arguing that regulatory responses should be used with caution, the current conservative position is the complete refusal to acknowledge that a problem exists in the first place.¹¹⁰ Given the scientific consensus,

AND JOHN D. ROCKEFELLER (2008). One area where this continues to resonate is antitrust policy. Few conservatives would deny that a true monopoly is a serious market failure that needs to be corrected; their argument is that antitrust policy should be directed to combatting these market failures, that is, those that impair consumer welfare, rather than protecting small or weaker businesses from the rigors of market competition. See ROBERT H. BORK, *THE ANTITRUST PARADOX* (1978). Progressives now concede this point, but tend to regard truly anticompetitive plotting as more common than conservatives do, and less readily corrected by market forces. See HERBERT HOVENKAMP, *THE ANTITRUST ENTERPRISE: PRINCIPLES AND EXECUTION* (2008).

109. MCGARRITY & WAGNER, *supra* note 19; Rachel E. Barkow, *Insulating Agencies: Avoiding Capture Through Institutional Design*, 89 TEX. L. REV. 15 (2010); Nicholas Bagley & Richard L. Revesz, *Centralized Oversight of the Regulatory State*, 106 COLUM. L. REV. 1260 (2006).

110. The statements of the leading candidates for the Republican Party's presidential nomination in 2016 can be reasonably regarded as a reflection of conservative views. Most significant, of course, are the views of the winner. In a speech billed as his major statement on energy policy (May 26, 2016, in Bismarck, N.D.), Trump announced the goal of American energy independence, a fixture of Republican policy since Reagan. To achieve this, he said, we need to extract and burn as much fossil fuel as possible. His comment about global warming was that "We're going to cancel the Paris climate agreement." Valerie Valcovici & Emily Stephenson, *Trump vows to undo Obama's Climate agenda in appeal to oil sector*, REUTERS (May 27, 2016), <http://www.reuters.com/article/us-usa-election-trump-energy-idUSKCN0YH2D9>. Trump had previously tweeted at least three statements about climate change, as follows:

(1) "This very expensive GLOBAL WARMING bullshit has got to stop. Our planet is freezing, record low temps, and our GW scientists are stuck in ice." Donald Trump (@realDonaldTrump), TWITTER (Jan. 1, 2014, 4:39 PM), <https://twitter.com/realDonaldTrump/status/418542137899491328>.

(2) "Ice storm rolls from Texas to Tennessee - I'm in Los Angeles and it's freezing. Global warming is a total, and very expensive, hoax!" Donald Trump (@realDonaldTrump), TWITTER (Dec. 6, 2013, 7:13 AM), https://twitter.com/realDonaldTrump/status/408977616926830592?ref_src=twsrc%5Etfw.

(3) "The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive." Donald Trump (@realDonaldTrump), TWITTER (Nov. 6, 2012, 11:15 AM), https://twitter.com/realDonaldTrump/status/265895292191248385?ref_src=twsrc%5Etfw.

He expressed a similar view in what can be charitably described as a discursive statement in a radio interview with Hugh Hewitt:

which conservatives are generally willing to accept in other areas, the stance that they maintain is simply irrational. No rational person refuses to adopt precaution in the face of serious threat, even if the scope of the threat is open to some question. Moreover, in order to reject the scientific consensus, conservatives must construct accounts that at least resemble, and perhaps endorse, outright conspiracy theories.¹¹¹ Their usual reliance on individual self-interest would tend to suggest that scientific unanimity in the face of countervailing evidence could not be maintained; it is only by

And I think [global warming is] very low on the list. So I am not a believer, and I will, unless somebody can prove something to me, I believe there's weather. I believe there's change, and I believe it goes up and it goes down, and it goes up again. And it changes depending on years and centuries, but I am not a believer, and we have much bigger problems.

Devin Henry, *Climate change: Where the GOP field stands*, THE HILL (Jan. 23, 2016), <http://thehill.com/policy/energy-environment/266716-climate-change-where-the-gop-field-stands>. Trump's chosen running mate, Mike Pence, wrote, in a statement posted on his campaign site in 2001: "Global warming is a myth. The [Kyoto] global warming treaty is a disaster. There, I said it." *Global Warming Disaster*, https://www.motherjones.com/files/screen_shot_2016-07-15_at_10.29.47_am.png (photographic reproduction of campaign document). In the same statement, he said that environmentalists were wrong to treat carbon dioxide as a danger because it is "a naturally occurring phenomenon in nature," and were wrong to oppose combustion of coal because it is a "natural mineral." *Global Warming Disaster*, https://www.motherjones.com/files/screen_shot_2016-07-15_at_10.29.47_am.png (photographic reproduction of campaign document). See Sy Mukherjee, *Donald Trump's Running Mate Has Some Truly Strange Views On Modern Science*, FORTUNE (July 15, 2016), <http://fortune.com/2016/07/15/mike-pence-donald-trump-science/>. Statements by leading candidates who were in contention with Trump were as follows:

Jeb Bush: "The climate is changing [but] I don't think the science is clear on what percentage is man-made and...what percentage is natural. It's convoluted. And for the people to say the science is decided on this is just really arrogant."

Ben Carson: "I'll tell you what I think about climate change. The temperature's either going up or down at any point in time, so it really is not a big deal."

Ted Cruz: "If you look to the satellite data in the last 18 years there has been zero recorded warming. Now the global warming alarmists, that's a problem for their theories. Their computer models show massive warming the satellite says it ain't happening. We've discovered that NOAA, the federal government agencies are cooking the books."

Marco Rubio: "Our climate is always changing. And what they have chosen to do is take a handful of decades of research and say that this is now evidence of a longer-term trend that's directly and almost solely attributable to manmade activity. I do not agree with that."

Rebecca Kaplan & Ellen Uchimiya, *Where the 2016 Republican candidates stand on climate change*, CBS NEWS (Sep. 1, 2015), <http://www.cbsnews.com/news/where-the-2016-republican-candidates-stand-on-climate-change/>. The views of two other candidates who never ranked among the leaders, Chris Christie and John Kasich, are discussed in note 119 *infra*.

111. This is the case with Inhofe, Trump, and Cruz. According to Inhofe, the organized group behind the conspiracy is the "globalist elites ... within the United Nations," INHOFE, *supra* note 3, at 206. According to Trump, it is the Chinese. Kaplan and Uchimiya, *supra* note 110. According to Cruz, it is "the federal government agencies." *Id.* The latter two are not classic conspiracy claims because the group being accused of recondite behavior in each case is hardly small ones, but they certainly resemble such theories.

virtue of nefarious collusion that the overwhelming majority of scientists could be induced to endorse a complete falsehood.

According to survey researchers, reactions of this sort occur with some frequency, and have been described as a boomerang effect. In response to factual information linked explicitly or implicitly to normative recommendations, recipients of the information adopt action orientations in direct opposition to the recommendation.¹¹² In some cases, the response is general; several studies have found that health warnings in cigarette advertisements can increase the smoking rate rather than decreasing it.¹¹³ In other cases, however, the boomerang effect occurs among a segment of the recipient population with particular normative or political predispositions. For example, another study concluded that Republicans reacted to recommendations for diabetes prevention programs based on factual data about the social determinants of diabetes by becoming increasingly opposed to such programs.¹¹⁴

P. Sol Hart and Eric C. Nisbet found that this same pattern applies to information about climate change.¹¹⁵ Their experiment provided information to a group of non-student adults about the

112. For general and more theoretical discussions of the effect, see Sahara Byrne & Philip Solomon Hart, *The Boomerang Effect: A Synthesis of Findings and a Preliminary Theoretical Framework*, 33 ANNALS OF THE INT'L COMMUNICATION ASSOC. 3 (2009); Melvin L. Snyder & Robert A. Wicklund, *Prior Exercise of Freedom and Reactance*, 12 J. EXPERIMENTAL SOC. PSYCH. 120 (1976).

113. See, e.g., L. Henrickson, A.L. Dauphinee, Y. Wang & S.P. Fortman, *Industry sponsored anti-smoking ads and adolescent reactance: test of a boomerang effect*, 15 TOBACCO CONTROL 13 (2006); Michael Hyland & James Birrell, *Government Health Warnings and the "Boomerang" Effect*, 44 PSYCH. REP. 643 (1979); see also Sahara Byrne, Daniel Linz & W. James Potter, *A Test of Competing Cognitive Explanations for the Boomerang Effect in Response to the Deliberate Disruption of Media-Induced Aggression*, 12 MEDIA PSYCH. 227 (2009) (violence intervention programs using violent media clips as examples); Brendan Nyhan & Jason Reifer, *When Corrections Fail: The Persistence of Political Misrepresentations*, 32 POL. BEHAVIOR 303 (2010) (news articles including corrections to politicians statements; opposite reaction described as "backfire effect").

114. Sarah E. Gollust, Paula M. Lantz & Peter A. Ubel, *The Polarizing Effect of News Media Messages About the Social Determinants of Health*, 99 AM. J. PUB. HEALTH 2160 (2009); see also James D. King & Jason B. McConnell, *The Effect of Negative Campaign Advertising on Vote Choice: The Mediating Influence of Gender*, 84 SOC. SCI. Q. 843 (2003) (negative political ads produce adverse reactions among women, but only after they are repeatedly exposed to such ads); David L. Paletz, Judith Koon, Elizabeth Whitehead & Richard B. Hagens, *Selective Exposure: The Potential Boomerang Effect*, 22 J. OF COMMUNICATION 48 (1972) (antiwar film produced adverse reaction from audience who members who were against the war before seeing the film); P. Wesley Schultz et al., *The Constructive, Destructive, and Reconstructive Power of Social Norms*, 5 PSYCHOLOGICAL SCI. 429 (2007) (normative messages about home energy conservation produced adverse reactions from those who were already taking such measures).

115. P. Sol Hart & Erik C. Nisbet, *Boomerang Effects in Science Communication: How Motivated Reasoning and Identity Cues Amplify Opinion Polarization About Climate Mitigation Policies*, 39 COMMUNICATION RES. 701 (2012).

negative health effects of continued global warming.¹¹⁶ While the information increased support for climate change mitigation among those subjects who identified themselves as Democrats, it produced a boomerang effect for those who identified themselves as Republicans: their support for mitigation policies decreased.¹¹⁷ The results of this experiment are consistent with more general observations for society as a whole. As Dan Kahan and his colleagues found, to state their conclusions inversely, political conservatives consistently ignore scientific evidence that demonstrates the reality of anthropogenic climate change.¹¹⁸

Outright denial of factual data may be a widespread phenomenon, as the boomerang effect studies indicate, but it requires explanation. Climate change deniers certainly subscribe to the general conservative view that regulatory responses to problems often produce negative consequences. However, this concern, although undoubtedly sincere on other issues, appears to be a post hoc rationalization with respect to climate change. The reason is that it would lead only to a debate about alternative solutions, not to a denial of the problem. This is in fact the position that some conservative elites have adopted;¹¹⁹ whether it is sincere or just

116. *Id.* at 708-11. The experiment was performed in a rural community in upstate New York. The information was written for the experiment, but it was based on factual data.

117. *Id.* at 714. The experiment also tested for the variable of social distance between the subjects and the purported victims, and found that this factor made a difference to Democrats, whose attitudes changed more when the victims were distant from themselves.

118. Dan Kahan et al., *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732 (2012). The study conclusions disconfirmed the hypothesis that higher levels of education would render people more receptive to scientific data regarding climate change and found that political conservatives at all education levels were willing to ignore the data. *Id.* See also Brulle, Carmichael & Jenkins, *supra* note 10 (scientific information, like weather extremes, have little to no effect on public opinion).

119. It is notable that the two candidates for the Republican presidential nomination who specifically tried to portray themselves as moderates adopted this position, as opposed to the outright denial that the self-declared conservatives espoused, See *supra* note 110.

Chris Christie: "I think global warming is real. I don't think that's deniable. And I do think human activity contributes to it," Christie said at Republican dinner in Keene, New Hampshire in May. "The degree to which it contributes to it is what we need to have a discussion about."

John Kasich: "I happen to believe there is a problem with climate change. I don't want to overreact to it, I can't measure it all, but I respect the creation that the Lord has given us and I want to make sure we protect it."

Id. The Cato Institute, a conservative think tank, but one of the more sophisticated conservative voices in the nation, has also advanced the more moderate position. See Indur M. Goklany, *What to Do About Climate Change*, 609 CATO INSTITUTE POLICY ANALYSIS (Feb. 2008), <http://www.cato.org/sites/cato.org/files/pubs/pdf/pa-609.pdf>; Sallie James, *A Harsh Climate for Trade: How Climate Change Proposals Threaten Global Commerce*, 41 CENTER FOR TRADE POLICY STUDIES (Sep. 2009), <http://www.cato.org/>

a ploy designed to support the more general position of outright denial is difficult to know.¹²⁰ However, a significant number of Americans do not endorse this more moderate position; instead, they are outright deniers.¹²¹ The stance they have adopted is equivalent to saying that there was no financial crisis in 2008 rather than saying that regulatory intervention is an inadvisable or questionable solution. It is a direct and explicit refusal to deal with reality.

Of course, climate change is not the only issue to have produced extreme and emotional reactions in the political arena.¹²² For present purposes, however, the crucial point is that such emotional responses are often generated by intensely held normative positions. In fact, for people at all points on the political spectrum, progressive as well as conservative, emotions and norms are probably impossible to distinguish. While some philosophers and political theorists argue that normative issues in the political realm can be rationally debated,¹²³ recent work on emotions suggests that the distinction may be illusory.¹²⁴ In any event, it is unlikely to be found in ordinary political discourse.

sites/cato.org/files/pubs/pdf/tpa-041.pdf; Patrick J. Michaels, *Global Warming and Climate Change*, in CATO HANDBOOK FOR POLICYMAKERS 475 (David Boaz ed., 7th ed. 2009).

120. Some of the arguments couched in terms of preferable alternatives, even by the most reputable and thoughtful observers, are startling, and they raise serious questions about the sincerity of the argument. See, e.g., Steven Groves, *The 'Kyoto II' Climate Change Treaty: Implications for American Sovereignty*, THE HERITAGE FOUNDATION (2009), <http://www.heritage.org/research/reports/2009/11/the-kyoto-ii-climate-change-treaty-implications-for-american-sovereignty>; Groves takes the position that a multilateral treaty, voluntarily agreed to by the US, and dealing with a situation where our own environment can be destroyed by actions of other nations in the absence of such a treaty, is a violation of American sovereignty. *Id.*

121. See *supra* nn. 3, 4, 9.

122. To focus specifically on conservative thought, two other recent issues that seem to have elicited equivalent responses are abortion and universal health insurance. In both these cases, however, the emotionality seems to derive from normative concerns that can be derived, in their turn, from historical trends in Western society. EDWARD L. RUBIN, SOUL, SELF, AND SOCIETY 205-12 (2015); Edward Rubin, *The Affordable Care Act, The Constitutional Meaning of Statutes, and the Emerging Doctrine of Positive Constitutional Rights*, 53 WM. & MARY L. REV. 1639 (2012).

123. A leading example is Jürgen Habermas. See Jürgen Habermas, BETWEEN FACTS AND NORMS: CONTRIBUTIONS TO A DISCOURSE THEORY OF LAW AND DEMOCRACY (William Rehg trans., 1998) (1996); Jürgen Habermas, THE THEORY OF COMMUNICATIVE ACTION, VOL. 1: REASON AND THE RATIONALIZATION OF SOCIETY (Thomas McCarthy trans., 1984). In general, discourse theories of democracy adopt the position that rational debate about political issues is possible, and in fact provides the basis for the legitimacy of democratic government. See, e.g., JAMES FISHKIN, DEMOCRACY AND DELIBERATION: NEW DIRECTIONS FOR DEMOCRATIC REFORM (1993); AMY GUTMANN & DENNIS THOMPSON, WHY DELIBERATIVE DEMOCRACY (2004).

124. See, e.g., ANTHONY R. DAMASIO, DESCARTES' ERROR: EMOTION, REASON, AND THE HUMAN BRAIN (1994); DANIEL GOLEMAN, EMOTIONAL INTELLIGENCE: WHY IT CAN MATTER MORE THAN IQ (1995).

What is the normative position that would lead to climate change denial? Conservatives are absolutely clear about the norms that motivate their opposition to abortion for example,¹²⁵ and these norms have been in the forefront of political debate about the issue. They have been unable to articulate any similarly deontological positions about climate change. If climate change is in fact occurring, it means that, even by what can only be called the most "conservative" estimates, there is a real chance that the United States will lose tens of thousands of square miles of coastal territory, that six of its top ten metropolitan areas will experience disastrous storm surges,¹²⁶ and that serious draughts will afflict urban populations in the Southwest and agriculture in large portions of the nation.¹²⁷ It is hard to formulate any normative position that would regard these occurrences as a good thing. The only basis for opposing remedial measures of some sort is to assert that the problem itself is illusory.

B. The Origin of Regulation Phobia

To describe this rejection of overwhelming evidence as a boomerang effect may be a vivid image, but it does not possess any explanatory power. A boomerang, after all, is an inanimate object; whatever physical forces govern its paradoxical pattern of flight cannot tell us anything about the motivation of human beings. In preference to this somewhat empty description, therefore, it seems better to describe the conservative attitude toward combating climate change through regulation as a kind of collective phobia. It is "an irrational, excessive and persistent fear of some thing or situation."¹²⁸ A characterization of this sort hearkens

125. See JOHN DOMBRINK & DANIEL HILLYARD, SIN NO MORE: FROM ABORTION TO STEM CELLS, UNDERSTANDING CRIME, LAW, AND MORALITY IN AMERICA 53-92 (2007); SEX, MORALITY, AND THE LAW 235-341 (Lori Gruen & George E. Panichas eds., 1996) (essays expressing diverging views); RUBIN, *supra* note 122 at 205-12.

126. See Ben Strauss, Claudia Tebaldi & Remik Zlemlinski, *Surging Seas: Sea Level Rise, Storms & Global Warming's Threat to the U.S. Coast*, CLIMATE CENTRAL (Mar. 14, 2012), <http://slr.s3.amazonaws.com/SurgingSeas.pdf>. The ten largest metropolitan areas in the U.S. are New York, Los Angeles, Chicago, Dallas-Fort Worth, Houston, Washington, Philadelphia, Miami, Atlanta, and Boston. Of these, five are essentially at sea level and one more, Los Angeles, is partially at sea level and partially on higher ground.

127. GREGG GARFIN ET AL., ASSESSMENT OF CLIMATE CHANGE IN THE SOUTHWESTERN UNITED STATES 137-38, 227-31 (2013); Glen MacDonald, Water, *Climate Change and Sustainability in the Southwest*, 107 PNAS 21256 (2010); Richard Seager, et al., *Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America*, 316 SCIENCE 1181 (2007); Connie A. Woodhouse, *A 1,200-year Perspective of 21st Century Drought in Southwestern North America*, 107 PNAS 21,283 (2010).

128. *Phobia*, WEBSTER'S NEW WORLD DICTIONARY (2002). Similarly, The Random House Dictionary of the English Language defines phobia as "a fear or anxiety that exceeds normal

back to Hofstadter's seminal essay, where he describes conspiracy theories as reflecting a "paranoid style."¹²⁹ He is circumspect about using a term derived from individual psychology: "When I speak of the paranoid style, I use the term much as a historian of art might speak of the baroque or the mannerist style."¹³⁰ But it is not necessary to be quite so defensive about this terminology. Most of the words we use to describe collective behavior are derived from individual psychology; we say that Britain was resolute, or the automobile industry was fearful, or that the middle class was optimistic. Terms derived from abnormal psychology are typically pejorative, as Hofstadter concedes,¹³¹ but here again, these terms provide a valuable resource for descriptive purposes. The ideas developed by Freud and other psychologists define our conception of people's internal processes, just as religious terminology defined those processes in prior times. Thus, the conservative reaction to regulations designed to combat climate change can be usefully described as phobic—the crucial question is where this phobia comes from and how it should be treated.

One possible explanation involves the scope and content of the suggested regulations. Combatting climate change seems to demand a major alteration of our society, not a delimited set of government rules governing the activities of a specified group of firms. As the title of Naomi Klein's recent book declares, "this changes everything."¹³² It means that we need to rethink our basic definition of prosperity, the fixed objective that justifies reliance on the private market. Instead of an economic system that can be regarded, no matter how extensive particular regulations are, as a free market with specified exceptions where the market fails, we will have a comprehensively regulated system with specified exceptions where market forces can be safely allowed to persist.

But the response to climate change goes even further; it not only expands the scope of regulation, but demands that these regulations effect a major transformation of our basic economic system and our personal lifestyles. Leading advocates for climate change policy have declared that it requires abandonment of the capitalist system,¹³³ or, and essentially equivalent, the termination of

proportions or that has no basis in reality." *Phobia*, RANDOM HOUSE DICTIONARY (Random House 2d ed. 1987).

129. HOFSTADTER, *supra* note 48.

130. HOFSTADTER, *supra* note 48, at 4.

131. *Id.* at 5.

132. KLEIN, *supra* note 85.

133. See e.g., PAUL GILDING, *THE GREAT DISRUPTION: WHY THE CLIMATE CRISIS WILL BRING ON THE END OF SHOPPING AND THE BIRTH OF A NEW WORLD* (2011); KLEIN, *supra* note 85; ANTHROPOCENE OR CAPITALOCENE? NATURE, HISTORY, AND THE CRISIS OF CAPITALISM

economic growth.¹³⁴ Reducing fossil fuel emissions by significant amounts will require us to live in different kinds of homes, drive different cars, eat different food, work in different settings and perhaps at different jobs. Even more basically, it requires us to change our personal patterns of consumption. Just as it demands that we redefine our social goals from growth to well-being and conservation, it demands that we redefine our personal goals from increasing our material resources to increasing our personal satisfaction or self-fulfillment. It favors the Nurturant Parent urging her children to develop their inner feelings, rather than the Strict Father demanding that his children prove their worth through material advancement.¹³⁵ It spells the end of Weber's Protestant Ethic.¹³⁶

To many people, the argument that global warming requires these changes in the scope and content of government regulation and individual behavior feels like a sort of *deus ex machina* in the culture wars. "You prefer pickup trucks to foreign compact cars, big private homes to multiple dwellings, sprawling Sun Belt metropolises over concentrated coastal cities, beef and pork over tofu and sprouts, fur coats and leather jackets over crunchy knitted wear? Well, you lose! We progressives have come up with a new argument, since 1980, that definitively resolves these sensibility conflicts in our favor. Your preferences will lead to disaster, so they are objectively invalid. Welcome to the global warming era of human history." It is not surprising that this news produces an adverse reaction. Instead of saying "okay, we see that we need to make extensive changes, but let's compromise," many people are tempted to say "you've made up a convenient falsehood to win an argument that otherwise could not be resolved, and we're not buying it." In other words, they experience a phobic response to the scientifically based conclusions that they are ready to accept on other matters.

There is a further reason for this phobic response. The fact that regulations combatting climate change have such an extensive scope and such a transformative content may appear to be two independent results; that is, the relationship between them may seem adventitious. The previous phase of environmentalism, after all, did not display this dual effect. For the most part, individuals do not generate either water pollution or air pollution. Combatting

(Jason W. Moore ed., 2016); NORMA ORESKES & ERIK M. CONWAY, *THE COLLAPSE OF WESTERN CIVILIZATION: A VIEW FROM THE FUTURE* 35-49 (2014).

134. HERMAN E. DALY, *BEYOND GROWTH* (1996); TIM JACKSON, *PROSPERITY WITHOUT GROWTH: ECONOMICS FOR A FINITE PLANET* (2009); BILL MCKIBBEN, *DEEP ECONOMY: THE WEALTH OF COMMUNITIES AND THE DURABLE FUTURE* (2008).

135. See LAKOFF, *supra* note 89, at 65.

136. See MAX WEBER, *THE PROTESTANT ETHIC AND THE SPIRIT OF CAPITALISM* (Talcott Parsons trans., Routledge 2005) (1930).

these problems, therefore, did not demand that people change their lifestyles but only demanded changes in the economic system. The exception, of course, is the private automobile, but emission controls require only modest alterations in comparison, for example, with a shift to small cars or mass transit. This leaves only fuel efficiency as a direct link between controlling air pollution and changing people's lifestyles.

The connection between the scope and content of regulations combatting climate change, however, is not adventitious but organic. It involves truly basic features of our culture and our sensibility, and reaches deep into our thought processes. This profound effect accounts for the intensity of regulation phobia, the sense of desperation with which the deniers insist that well-established truths are just not true. To perceive the connection, it is necessary to place the entire set of beliefs and sensibilities that are implicated by the climate change debate in their historical context. That context, of course, is the modern world, or what can be described as High Modernity.¹³⁷ For purposes of this discussion, it can be regarded as having begun with Adam Smith.

Smith is generally viewed by conservatives as an iconic figure¹³⁸ because he in effect discovered and strongly endorsed the way a free, unregulated market would contribute to the "Wealth of Nations," or general prosperity.¹³⁹ The criticisms in his book, however, are not targeted at the sorts of regulations that modern society employs, but rather at then existing mercantilist policies, which were essentially a holdover from the Middle Ages. Mercantilism was a public policy—a royal policy at the time—that involved continued cooperation with the old craft guilds, associations of artisans, and tradespeople in a particular line of business that controlled entry into field, set prices at levels regarded as just, monitored product quality, and resolved consumer disputes.¹⁴⁰ In addition and most distinctively, mercantilism

137. See ANTHONY GIDDENS, MODERNITY AND SELF-IDENTITY 10-34 (1991).

138. The Adam Smith Institute, located in London, is a non-profit research institution ("think tank") that describes itself as working "to promote neoliberal and free market ideas." THE ADAM SMITH INSTITUTE, <http://www.adamsmith.org/> (last visited Nov. 27, 2016). The Adam Smith Society is an American association of MBA students and business people that describes its mission as providing a venue for discussing the ways in which free markets are central to both prosperity and liberty. *Our History*, THE ADAM SMITH SOCIETY, <http://www.adamsmithsociety.com/html/our-history.html> (last visited Nov. 27, 2016). On Smith's influence generally, see ROBERT HEILBRONER, THE WORDLY PHILOSOPHERS; THE LIVES, TIMES, AND IDEAS OF THE GREAT ECONOMIC THINKERS 55-74 (7th ed. 1999) (1961).

139. See SMITH, *supra* note 102.

140. On mercantilism generally, see ELI F. HECKSCHER, MERCANTILISM (Mendel Shapiro trans., 1994) (1931); IMMANUEL WALLERSTEIN, THE MODERN WORLD-SYSTEM, VOL. II: MERCANTILISM AND THE CONSOLIDATION OF THE EUROPEAN WORLD-ECONOMY, 1600-1750 (1980).

expanded the equally medieval practice of royal charters into the increasingly commercial and international economy of the seventeenth and eighteenth centuries.¹⁴¹ It was the dominant policy by which European nations managed the economic affairs of their expanding colonial empires and treaty relationships, but it also involved an intensification of conscious public policy for internal economic matters.¹⁴²

The alternative approach that Smith proposed was built on satirical observations by Bernard de Mandeville about half a century earlier.¹⁴³ Mandeville's *Fable of the Bees*, subtitled *Private Vices, Public Benefits*, observed that the Christian virtues such as modesty, honesty, frugality, and self-sacrifice would produce an impoverished society. In contrast, the selfishness, vanity, pride, and desire for fame of his metaphorical bees produced a prosperous and thriving hive: "Thus every Part was full of Vice, Yet the whole Mass a Paradise."¹⁴⁴ The book was taken as an attack on morality and created a scandal.¹⁴⁵ It is easy to see it as one of the early salvos in the Enlightenment's assault on organized religion,¹⁴⁶ but what was truly path-breaking about the book was that it severed private behavior from public behavior. The standard view, well-established since the Middle Ages,¹⁴⁷ was that the behavior of individuals and

141. See HECKSCHER, *supra* note 140, at 326-455; DAVID ORMROD, *THE RISE OF COMMERCIAL EMPIRES: ENGLAND AND THE NETHERLANDS IN THE AGE OF MERCANTILISM, 1650-1770* (2003); Thomas Nachbar, *Monopoly, Mercantilism, and the Politics of Regulation*, 91 VA. L. REV. 1313 (2005). See also Robert A. Friedlander, *Autonomy and the Thirteen Colonies: Was the American Revolution Really Necessary?*, 18 DUQ. L. REV. 507 (1979) (British mercantilist system of royal charters was in decline by the 1770s). For an argument that this approach to economic development did not disappear because of Adam Smith or the growth of the market economy, see THOMAS H. STANTON, *GOVERNMENT-SPONSORED ENTERPRISES: MERCANTILIST COMPANIES IN THE MODERN WORLD* (2002).

142. LARS MAGNUSSON, *MERCANTILISM: THE SHAPING OF AN ECONOMIC LANGUAGE* 116-46 (1994) (mercantilism was a consciously designed approach to economic development); WALLERSTEIN, *supra* note 140.

143. BERNARD DE MANDEVILLE, *THE FABLE OF THE BEES, OR PRIVATE VICIES, PUBLIC BENEFITS* (Liberty Classics 1988) (1705).

144. *Id.* at 24.

145. See W. A. Speck, *Bernard Mandeville and the Middlesex Grand Jury*, 11 EIGHTEENTH CENTURY STUD. 362 (1978).

146. See PETER GAY, *THE ENLIGHTENMENT: AN INTERPRETATION; THE RISE OF MODERN PAGANISM* (1st ed. 1966); ANTHONY PAGDEN, *THE ENLIGHTENMENT AND WHY IT STILL MATTERS* 149-99 (2013) ("science of man" provided naturalistic alternative to theistic explanations). Mandeville's book did so, moreover, by a kind of intellectual trick, that is, substituting the mercantilist goal of national prosperity for the more traditional goals and national glory, internal peace, and the advancement of the Christian religion.

147. See ANTONY BLACK, *POLITICAL THOUGHT IN EUROPE 1250-1450* 14-28, 152-56 (1992); JOSEPH CANNING, *A HISTORY OF MEDIEVAL POLITICAL THOUGHT 300-1450* 162-73 (1996); FICHTENAU, *supra* note 30, at 4-10, 50-58; Jeannine Quillet, *Government, Community, Counsel and Representation*, in *THE CAMBRIDGE HISTORY OF MEDIEVAL POLITICAL THOUGHT* C. 350-C.1450, 538-44 (J.H. Burns, ed., 1988). In fact, this view reaches back to the beginnings of political thought in the Western world. It is the reason that both Plato and Aristotle, in their political writings, place so much emphasis on education, a topic that rarely appears in

of society as a whole should mirror or reiterate each other, a view so intuitively appealing and so deeply embedded in our thought processes that it still controls our unconscious attitudes, as Lakoff describes.¹⁴⁸ Mandeville's insight was that the relationship between individual behavior and collective behavior was not reiterative but causal; that is, individual actions caused or produced collective results by complex processes that made these results look different from the actions that produced them. It was this insight that Smith employed when he advanced the theory that when people were allowed to behave selfishly, considering only their individual interests, their action would result, as if guided by "an invisible hand," in the prosperity of the nation as a whole.¹⁴⁹

This mode of thought serves as the basis of modern social science, and shapes the way we think about public policy formation. Unlike Medieval people, we do not try to achieve collective goals by inculcating these goals in individuals. Rather, we begin with the collective result we want to achieve, and then explore the incentives and sanctions that we believe that we will need to impose in order to alter individual behavior to achieve the goal. In other words, we see individual behavior and collective action—the famous macro-micro problem of sociology and political science¹⁵⁰—as different in character, and connected by complex causal relationships that determine how the actions of individuals combine to produce the general result. Conservatives tend to be more insistent on maintaining this distinction than progressives. They generally view market forces as more powerful, and argue that human nature, including people's motivation to maximize their material self-interest, is difficult to alter. Their tendency, then, is to subscribe, in Isaiah Berlin's terminology, to policies that advance only negative rights and to avoid more aspirational efforts that rely on changes in the attitudes of individuals.¹⁵¹ But modern people, of all political persuasions, tend to think of public policy in terms of changing people's incentives through external inducements or pressures, not by transforming their internal attitudes.

modern theories of the state. See ARISTOTLE, *THE POLITICS BOOK VIII* (T.A. Sinclair trans., 1962); PLATO, *THE REPUBLIC* 376c*-540b* (Allan Bloom trans. 1968).

148. See LAKOFF, *supra* note 89, at 65-140 (views about organization of society are modeled on experience of organizing family life).

149. For a discussion of Mandeville's influence on Smith, see generally M. M. Goldsmith, *Regulating Anew the Moral and Political Sentiments of Mankind: Bernard Mandeville and the Scottish Enlightenment*, 49 J. HIST. OF IDEAS 587 (1988); Harry Landreth, *The economic thought of Bernard Mandeville*, 7 HIST. POL. ECON. 193 (1975).

150. See THE MICRO-MACRO LINK (Jeffrey C. Alexander et al. eds., 1987); Coleman, *supra* note 40, at 769-84.

151. Isaiah Berlin, *Two Concepts of Liberty*, in *FOUR ESSAYS ON LIBERTY* 118 (1969).

From this perspective, climate change presents an almost unique problem in modern public policy terms. Individuals, in the course of their private, quotidian lives, contribute enormously to the problem and, by changing their individual behavior, can contribute enormously to the solution. In other words, the scope of the required regulatory response is so great that it necessarily implicates everyday behavior. We cannot effectively combat climate change unless individuals change their lifestyles. Capturing carbon from power plants, switching from coal to natural gas, and increasing fuel efficiency standards for automobiles will not be enough. It will also be necessary to individuals to change their carbon footprint, a pedestrian image that implies a different mode of being in the world.

Thus, the demand is for a partial revival of the pre-modern idea that individual behavior should reiterate public policy, that people should live their lives to achieve the same result, on a personal basis, that society must achieve on a collective basis—a major reduction in fossil fuel consumption. There is an undeniable appeal to this idea. It recaptures some of the conceptual and symbolic unity of earlier times, a direct bond between individuals and their society that Smith and modern social science sundered. It means that individuals, in structuring and pursuing their personal lives, can contribute to the public good in a direct and visceral way. Some people may find reassurance in the idea that the effort to maximize one's individual self-interest is contributing, through a complex causal chain, to the general prosperity of society, but this has the intuitive feel of a post hoc rationalization. It is quite different to behave in a way that incrementally contributes to the social good, to believe that each decision to reduce one's fossil fuel consumption contributes incrementally to the general policy on which our society depends for its survival. Once more, as in earlier times, we can feel ennobled by the thought that public benefit is achieved by private virtue.

In order to derive psychological benefit from this renewed reiteration of private and public action, however, one must be comfortable with, and perhaps enthusiastic about, the public action. In other words, one must endorse a comprehensive regulatory approach to combatting climate change, and economic regulation in general. For conservatives, who are uncomfortable, and often hostile, to such policies, the demand that they reiterate public policy in their private lives, that they structure their everyday existence around an extensive regulatory strategy, is offensive and oppressive. It represents the invasion of their personal lives by a government that they dislike, both in general and in particular when it acts in the economic and environmental

arena. The one other public policy that has this same character is toleration for members of racial, religious, and sexually based minorities, and demands in those areas, often characterized as "political correctness" generate similarly emotional reactions.

Moreover, like toleration, the internalization of the regulatory approach to climate change is defined as a matter of personal morality. That is, in essence, the nature of morality; as opposed to law, which is externally imposed, morality is a set of behaviors that individuals are expected to internalize, or follow on their own. What is generally called the "culture war,"¹⁵² that is, the debate about political and social values, can be understood as a conflict between two systems of morality. The traditional system defined morality in terms of higher purposes—personal salvation and service to the nation. The new morality that has been steadily replacing it for the past two centuries is centered on individual self-fulfillment, an ethos that demands that each person have the opportunity to define his or her own life-path.¹⁵³ This new morality is organically linked to the modern administrative state, which does not seek its own aggrandizement but is structured to provide services to its citizens.

Environmental policy does not fit readily within either model of morality. This is hardly surprising, since the entire issue is a relatively recent one. But it becomes a matter of morality when it demands that individuals adopt behaviors that reiterate the environmental policies of the administrative state. In essence, this demand means that those policies are not only being defined as beneficial but as moral—a standard that individuals are expected to follow in their personal behavior. Indirectly but insistently, the expectation that people internalize regulatory policy implies that they accept modern morality, that they recognize the model of individual self-fulfillment, which is embodied in the concept of a regulatory state that serves its citizens, as the correct approach. It thus implies that an individual's refusal to alter one's personal behavior in a direction traced out by progressive politics is wrongful action, or in other words immoral. This is, of course, a charge that conservatives have regularly leveled against their progressive opponents, and they are unlikely to welcome the idea that it applies to themselves instead.

To summarize, the phobic reaction that many conservatives display toward regulations addressing climate change—an outright refusal to accept the reality that the problem exists at all—is the result of both the scope and content of the necessary regulations,

152. See JAMES DAVIDSON HUNTER, *CULTURE WARS: THE STRUGGLE TO DEFINE AMERICA* (1991).

153. See RUBIN, *supra* note 122.

and more specifically, of the way that these two factors interact. The regulatory response essentially demands that individuals internalize the policies of the modern administrative state. It demands that they reiterate the effort to reduce fossil fuel consumption, just as society in general must reduce that consumption. For progressives, who view the economic and environmental policies that characterize modern administrative government with approval, the demand, along with the sacrifices it entails, offers the compensating virtue of a sense of solidarity with the society. Within the causal framework established by Smith's insight and the social science analysis of society that followed, it partially revives the pre-modern sense that individual life is a moral arena, a place where individuals can demonstrate their virtuous commitment to a general goal. For conservatives, this possibility is an assault upon their basic sensibility. It asks them to embrace, at the most immediate and personal level, policies that they reject in the more distant realm of politics, and it brands their refusal to do as personal immorality.¹⁵⁴

IV. SOME POSSIBILITIES FOR CIRCUMVENTING REGULATION PHOBIA

Phobias are difficult to cure. The only cure for the social phobia of climate change denial might be to wait for the next generation. Attitudes on this issue are gradually changing, and it seems likely that the moral commitment to reducing fossil fuel consumption will become increasingly internalized as time goes on. The problem, of course, is that every year that passes without addressing the problem in a serious way makes that problem itself more severe, more difficult to resolve. The contrast with discrimination, another matter of attitude internalization that reiterates social policy in general, is worth noting. Delaying action on this problem hurts people who are alive at the time, but probably does not make the problem any more difficult to resolve in the future. In contrast, delaying action on global warming has only a limited impact on those alive today, but will render the problem more severe, and perhaps intractable, once it is finally addressed.

Analysis of the motivations behind climate change denial suggests some possible strategies for dealing with the problem at the present time, and without waiting for generational replacement of the population. Of course, some strategies involve matters such as the way we generate electric power or regulate industrial enterprises that do not depend on changing individual behavior. But

154. For further explication, see RUBIN, *supra* note 122, at 283-93.

as Michael Vandenberg and others point out, we cannot afford to ignore the extent to which individual consumption patterns contribute to the problem.¹⁵⁵

One way to affect individual behavior is by indirect means, more specifically, regulatory approaches that would raise the price of goods in proportion to the amount of greenhouse gas that is generated by their production. The economic argument for this approach is that it compels the producers, and ultimately consumers, to internalize the true cost of the relevant products.¹⁵⁶ A carbon tax, if computed correctly, achieves this result by imposing the otherwise externalized cost on the producer.¹⁵⁷ Cap-and-trade proposals are a variation on this approach, requiring producers to buy rights to consume fossil fuel, and thus internalize these costs.¹⁵⁸ Because they operate so broadly, both approaches engender widespread opposition from industry, and secondarily from political leaders aligned with industry, such as the Republican Party.¹⁵⁹ Despite their indirect effect on individuals, moreover, elite opponents do not seem to have experienced much difficulty in communicating the idea that these approaches would constitute the sort of comprehensive assault of people's existing lifestyle

155. See Michael P. Vandenberg, Jack Barkenbus & Jonathan Gilligan, *Individual Carbon Emissions: The Low-Hanging Fruit*, 55 UCLA L. REV. 1701 (2008); Michael P. Vandenberg & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673 (2007); see generally Hope M. Babcock, *Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm*, 33 HARV. ENVTL. L. REV. 117 (2009); Katrina Fischer Kuh, *Using Local Knowledge to Shrink the Individual Carbon Footprint*, 37 HOFSTRA L. REV. 923 (2009); Albert C. Lin, *Evangelizing Climate Change*, 17 N.Y.U. ENVTL. L. J. 1135 (2009).

156. See generally EBAN S. GOODSTEIN, *ECONOMICS AND THE ENVIRONMENT* 34-52 (Wiley 6th ed. 2011).

157. See IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES (Ian Parry et al., eds., 2015); SHI-LING HSU, *THE CASE FOR A CARBON TAX: GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY* (2011); Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax is a Better Response to Global Warming than Cap and Trade*, 28 STAN. ENVTL. L.J. 3 (2009); Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499 (2009); Gilbert E. Metcalf, *Designing a Carbon Tax to Reduce U.S. Greenhouse Gas Emissions*, 3 REV. ENVTL. ECON. AND POL'Y 63 (2009); David Pearce, *The Role of Carbon Taxes in Adjusting to Global Warming*, 101 ECON. J. 938 (1991).

158. See, e.g., A. DENNY ELLERMAN ET AL., *PRICING CARBON: THE EUROPEAN UNION EMISSIONS TRADING SCHEME* (2010); KLEIN, *supra* note 85, at 199-229; Michelle Betsill & Matthew J. Hoffmann, *The Contours of "Cap and Trade": The Evolution of Emissions Trading Systems for Greenhouse Gasses*, 28 REV. POLICY RESEARCH 83 (2011); Nathaniel O. Keohane, *Cap and Trade, Rehabilitated: Using Tradable Permits to Control U.S. Greenhouse Gases*, 3 REV. ENVTL. ECON. AND POLICY 42 (2009); Robert N. Stavins, *Addressing climate change with a comprehensive US cap-and-trade system*, 24 OXFORD REV. ECON. POLICY 298 (2008).

159. See *supra* note 110 (citing sources for Republican Party opposition).

that generates a phobic reaction.¹⁶⁰ Inhofe, for example, spends a large part of his book attacking cap and trade proposals.¹⁶¹

Many specific proposals to alter individual behavior may also produce a phobic response, as described above.¹⁶² Regulations that would induce or compel people to live in smaller houses, drive smaller cars, or consume less meat, tend to be perceived as similar assaults on their lifestyle, and assertions that their current behavior is morally reprehensible. The question, then, is whether there are specific approaches that could be adopted in the near future, would not be perceived in this manner, and could thus be adopted in a political setting where large numbers of people remain determined to deny the reality of climate change. Three approaches that may meet these criteria will be considered here: mass transit, intelligent homes, and local food production. These are offered as examples; there are certainly others that could serve the same purpose.

The average American consumes about 9,540 watts, or about 313 million BTU per year.¹⁶³ In contrast, the average in France is 5,370 watts or 166 million BTU, in the United Kingdom, 4,330 watts or 134 million BTU, and in Japan, 5,190 watts or 164 million BTU.¹⁶⁴ These other nations are roughly equal to the United States in wealth, and they have relatively similar climates. One explanation for the dramatic difference in their energy consumption is their greater reliance on mass transit.¹⁶⁵ Further evidence for this explanation is provided by differences within the U.S. population. Studies conducted at various times during the past several decades reveal that residents of Manhattan use about 90 gallons of gasoline per capita per year, as compared to nearly 400 gallons for Americans in general.¹⁶⁶ Again, the difference does not appear to be either

160. In his assessment of the reasons why carbon taxes are difficult to enact, Shi-Ling Hsu writes: "All the behavioral effects that work against carbon taxes and in favor of other instruments stem from the transparency of carbon taxes." Hsu, *supra* note 157, at 180.

161. See INHOFE, *supra* note 3, at 105-18, 147-73.

162. See *supra* Section III.B.

163. *International Energy Statistics*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=44&pid=45&aid=2&cid=regions&syid=2007&eyid=2011&unit=QBTU> (last visited Nov. 27, 2016); *Energy Use (kg of oil equivalent per capita)*, THE WORLD BANK, <http://data.worldbank.org/indicator/EG.USE.PCAP.KG.OE> (last visited Nov. 27, 2016).

164. *Id.*

165. See, e.g., PETER DERRICK, *TUNNELING TO THE FUTURE: THE STORY OF THE GREAT SUBWAY EXPANSION THAT SAVED NEW YORK* (N.Y. Univ. Press paperback ed., 2002) (describing the formation of the New York City subway system).

166. MICHAEL HOUGH, *CITIES AND NATURAL PROCESS: A BASIS FOR SUSTAINABILITY* 205-06 (Routledge 2d ed. 2004) (1995); RONALD VOGEL, *HANDBOOK OF RESEARCH ON URBAN POLITICS AND POLICY IN THE UNITED STATES* 400 (1997); Peter W. G. Newman & Jeffrey R. Kenworthy, *Gasoline Consumption and Cities: A Comparison of U.S. Cities with a Global Survey*, 55 J. AM. PLANNING ASSOC. 24 (1989); David Owen, *Green Manhattan*, THE NEW

wealth or climate, but rather the fact nearly everyone in Manhattan travels to work by public transit.

To be sure, many of our nation's suburbs and some of our cities in their entirety may not be sufficiently dense to make mass transit systems self-supporting.¹⁶⁷ But this economic calculation ignores the externality of global warming that automobile commuting creates. In other words, there is an economic justification for subsidizing mass transit systems, that is, building them without expecting that they will be able to generate the necessary revenue to recoup their construction costs or even operate at the break-even point. To be sure, the difference must be provided by taxation, which no one likes, and the justification for the tax depends in part on recognizing the reality of global warming. But other justifications can be offered as well, such as decreasing commuting times and reducing air pollution.¹⁶⁸ Moreover, once a mass transit system is built, business and residences are likely to be located in proximity to the stations, thereby making the system useful to increasing numbers of people.¹⁶⁹ The present configuration of our cities, after all, is not a naturally occurring phenomenon; it is, at least in part, the product of our ill-advised enthusiasm for building superhighways and urban ring roads. These do not pay for themselves either; they are financed by taxes and offered to the public for free. To some extent, therefore, an investment in mass transit represents no more than a shift in the beneficiary of an existing public subsidy.

The advantage of building mass transit, as opposed to more direct ways of regulating climate change, is that it may circumvent the climate deniers' phobic response to regulatory measures. Driving to work in one's private car or, quite often, pickup truck or sport utility vehicle may be regarded by some people as part of their lifestyle, but it is more likely to be seen instrumental terms. It can be enjoyable to travel in one's own space, of course, but as our

YORKER, Oct. 18, 2004, at 111. Residents of Houston, a sprawling city with minimal mass transit, use an average of 567 gallons of gasoline. See HOUGH, *supra* note 166, at 206.

167. See JARRETT WALKER, HUMAN TRANSIT: HOW CLEARER THINKING ABOUT PUBLIC TRANSIT CAN ENRICH OUR COMMUNITIES AND OUR LIVES 109-15 (2012) (discussing extent to which relatively low urban densities affect mass transit decision making).

168. See, e.g., DERRICK, *supra* note 165 (describing the decision making process the created the New York subway system as a response to problems of inner city residential congestion); ETHAN N. ELKIND, RAILTOWN: THE FIGHT FOR THE LOS ANGELES METRO RAILROAD AND THE FUTURE OF THE CITY (2014) (describing the decision making process that created Los Angeles Metro Rail as a response to problems of commute time and pollution). Los Angeles' issues are more relevant to contemporary America, of course; many cities, particularly in the Sun Belt, face the same issues. The older issue that motivated decision makers in New York is less common in the U.S., although highly relevant to the developing world. The basic point, however, is that a strong case can be made for mass transit independent of the global warming issue.

169. See WALKER, *supra* note 167, at 59-71.

highways become increasingly congested, and people find themselves caught in long lines of stop-and-go traffic rather than whisking down the road, these pleasures tend to pale. The important point, however, is that no one is forced to take mass transit. It is simply an available option and people can reach their own decisions about whether it is a preferable way to commute. In other words, mass transit is a service rather than a regulation. The goal would be to induce people to change their behavior by building transit systems that are sufficiently effective and attractive. Politically, these systems can be endorsed on their own terms, with their effect on climate change being treated as a supplementary benefit.

Intelligent homes are currently being developed by the market,¹⁷⁰ and rapid advances in the relevant technologies are almost a certainty. The possibilities for energy conservation are well-recognized,¹⁷¹ but in this case, regulation is necessary if significant reductions in fossil fuel consumption are to be achieved.¹⁷² No new home should be built in this nation without electronic mechanisms to regulate its energy consumption.¹⁷³ In addition, inducements should be offered to install solar panels; this would be akin to mass transit, in the sense that it would be an option that people would be free to reject, but that might become increasingly attractive over time. The self-regulating features of the house should be required, however. Private residence construction is, at present, highly regulated; there are numerous rules, imposed by all levels of government, addressing the materials used, the method of construction and, in most places, the size and appearance

170. See Frances K. Aldrich, *Smart Homes: Past, Present and Future*, in *INSIDE THE SMART HOME* 17 (Richard Harper ed., 2003) ("The full-blown concept of the smart home is the acme of domestic technology we can envisage at present. The concept, at one time only encountered in science fiction, has moved closer to realisation over the last ten years."); Peter Tolmie et al., *Towards the Unremarkable Computer: Making Technology at Home in Domestic Routines*, in *INSIDE THE SMART HOME* 183 (Richard Harper ed., 2003).

171. See, e.g., Tuan Anh Nguyen & Marco Aiello, *Energy Intelligent Buildings Based on User Activity: A Survey*, 56 *ENERGY & BUILDINGS* 244 (2013); G. Wood & M. Newborough, *Energy-Use Transfer Information for Intelligent Homes: Enabling Energy Conservation with General and Local Displays*, 39 *ENERGY & BUILDINGS* 495 (2007).

172. Much of the impetus for intelligent homes has come from the needs of elderly homeowners, for whom the technology is of immediate benefit, perhaps a matter of survival. See Marie Chan et al., *A review of smart homes—present state and future challenges*, 91 *COMPUTER METHODS & PROGRAMS IN BIOMEDICINE* 55 (2008); Jessica Lapointe et al., *Smart Homes for People with Alzheimer's Disease: Adapting Promoting Strategies to the Patient's Cognitive Profile*, *PETRA* (2012); Elena Torta, et al., *Evaluation of a Small Socially-Assistive Humanoid Robot in Intelligent Homes for the Care of the Elderly*, 76 *J. OF INTELLIGENT & ROBOTIC SYSTEMS* 57 (2014). The technology is fully applicable to energy conservation, but the sense of urgency for this issue—that is, the survival of humanity in general—has been lacking thus far.

173. See James Barlow & Tim Venables, *Smart Homes, Dumb Suppliers? The Future of Smart Homes Markets*, in *INSIDE THE SMART HOME* 247 (Richard Harper ed., 2003) (technology of smart homes has outpaced the market's ability to provide them for consumers).

of the completed structure. Intelligent home requirements would simply take their place among these other regulations.

These requirements, of course, would add to the price of each new house, and thus represent a subsidy from the purchaser for the purpose of combatting climate change. But given the current state of electronics, and its continued development, the cost will generally be minor. Moreover, unlike some mass transit systems, the self-regulating features will rapidly recoup their cost as a result of decreased energy costs. To be sure, people could achieve similar savings on their own, but the electronics will be somewhat more efficient and reliable. Once it becomes a norm, people will also have an incentive to retro-fit existing homes with intelligent controls, and once that becomes common and sufficiently inexpensive, it may be politically possible to require retro-fitting.

The reason that the intelligent home, even when required by regulation, might circumvent the anti-regulatory phobia of the deniers is that it does not represent a significant change in people's lifestyles. The whole point of the controls is to save energy without intruding on the behavior patterns of the residents. Lights go off only when people leave the room, and they go on as soon as they reenter, as quickly or more quickly than they can be turned on by a manual light switch. Heating is adjusted to the residents' presence or absence, and to their preferences. If the residents object to such benign controls, they will be able to turn off the various components of the system. They would be free to keep the lights to be burning when they are absent from the room, or the heat or air conditioning running at full blast all day, instead of having it drop or rise toward the ambient temperature and readjust to the desired temperature half an hour before the residents return (having learned their schedule). Over time, most people will cease to value such trivial and self-defeating liberties. That is what happened with seat belts, after all. When they were first introduced, many people objected vociferously to any mechanism, such as the ignition interlock,¹⁷⁴ that interfered with their freedom to get their heads smashed

174. See Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. No. 93-492, 88 Stat. 1470, 1482, 15 U.S.C. § 1410B (agency may not require the interlock, which prevents the car from starting unless the occupants are wearing seat belts). The legislation was designed to overturn a regulation adopted by the National Highway Traffic Safety Administration; Congress received an enormous amount of mail opposing this regulation than it had ever received on any issue. See JERRY L. MASHAW & DAVID L. HARFST, *THE STRUGGLE FOR AUTO SAFETY* 131-40 (1990). Forty years later, seatbelt safety denial is virtually non-existent. *Seat Belt Use in 2015—Overall Results*, U.S. DEP'T OF TRANSP. (Feb. 2016), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812243> (seat belt use has increased to 88.5% of observed drivers).

against the dashboard. Now, nearly all people put their seatbelts on without further thought when they get into a car.

A third way to change individual behavior without triggering a phobic reaction to regulation might be to place a tariff on certain food products that can be produced locally but are now imported from outside the nation. In many cases, food is grown in one overseas location, shipped to a second overseas location and only then shipped to the U.S. for consumption.¹⁷⁵ The reason for this seemingly circuitous trajectory is to take advantage of lower production costs. Ordinarily, this would be efficient, and most economists favor free generally on efficiency grounds.¹⁷⁶ The problem, once again, is that food producers are paying for, and thus internalizing, the cost of the fuel required to ship their products back and forth and to store in the various stops along the way, but they are externalizing the cost that the consumption of this food imposes on the planet's climate.¹⁷⁷ These costs are not a major element in the carbon usage of all foods, but they contribute significantly to many, particularly ones that require less energy to produce, like vegetables, fruits and legumes.¹⁷⁸ Placing a tariff on the importation of these items would be a way of forcing overseas producers to internalize this environmental cost, and would thus make locally grown food competitive.

A tariff is a tax, of course, and thus the same sort of indirect device as a more general carbon tax. For products that can only be grown outside the U.S., like mangos or bananas, it is mainly a revenue raising measure; for those that can be grown within the U.S., but only in limited locations, such as oranges and grapefruits, the tariff, in addition to raising revenue, protects American producers from foreign competition, a result that most economists regard as inefficient.¹⁷⁹ But for crops that can be grown close to nearly all our nation's major population centers, a tariff, by protecting domestic producers, would also favor local production, thus reducing

175. See Wayne Wakeland et al., *Food transportation issues and reducing carbon footprint*, in GREEN TECHNOLOGIES IN FOOD PRODUCTION AND PROCESSING 211 (Joyce I. Boye & Yves Arcand eds., 2012); Christopher L. Weber & H. Scott Mathews, *Food-Miles and the Relative Climate Impacts of Food Choices in the United States*, 42 ENV. SCI. TECH. 3508 (2008).

176. See Paul S. Krugman, *Is Free Trade Passé?*, 1 ECON. PERSPECTIVES 133, 133 (1987) ("If there were an Economist's Creed, it would surely contain the affirmations 'I understand the Principle of Comparative Advantage' and 'I advocate Free Trade.'").

177. See Rich S. Pirog et al., *Food, Fuel, and Freeways: An Iowa perspective on how far food travels, fuel usage, and greenhouse gas emissions*, LEOPOLD CENTER PUBS AND PAPERS, Paper 3 (2001), http://lib.dr.iastate.edu/leopold_pubspaper/3.

178. See Wakeland et al., *supra* note 175.

179. See Krugman, *supra* note 176.

transportation costs.¹⁸⁰ The compensating advantage for consumers, apart from the long-term benefit to the climate, is that they would be receiving fresher food products.

Here again, this means reducing fuel consumption might well avoid the deniers' phobia. Encouraging local production could be justified on many grounds apart from environmental protection, such as aiding local farmers and building communities, as well as providing fresher, more lightly processed products. Politically, it might build an alliance between small farmers and environmentalists, two groups that tend to be linked to opposite political parties. In addition, local production is the traditional way that food was produced in our nation; it is as American as apple pie, and thus likely to carry emotive connotations that appeal to conservatives. As with mass transit, encouraging local food production does not represent a compelled change in people's lifestyle. No one would be compelled to be a locavore. People could continue to go to supermarkets and buy food that has been transported halfway across the world and stored at various stages of the process.

V. CONCLUSION

Climate change denial among the American populace poses a serious problem for the entire world, immediately in some cases and universally for future generations. It is therefore crucial to understand its sources. The most striking feature of this attitude, and one that distinguishes it from positions taken in most other policy debates, is that it represents a direct rejection of a scientific consensus. There is thus a tendency to treat it as a rejection of scientific explanation itself. But there is little evidence of a general hostility toward science in the United States, aside from the religiously-based resistance to Darwinian evolution. Climate change rejection has certain resemblances to conspiracy theories, but these theories are not anti-science; rather they use science in support of positions that they adopt for independent reasons.

The real source of climate change denial is a phobic reaction to the sorts of regulatory initiatives that will be necessary to address the problem. Many people see these initiatives, in some cases

180. Christopher L. Weber & H. Scott Mathews, *Food-Miles and the Relative Climate Impacts of Food Choices in the United States*, 42 ENV. SCI. TECH. 3508 (2008) (conclude that shifting people's food choices from red meat and dairy to poultry and vegetables would have more beneficial results for the climate than encouraging local production). But that sort of shift in basic lifestyle, however desirable to committed environmentalists, is the sort of recommendation that engenders resistance, particularly if it were to be implemented by government regulation.

quite correctly, as an assault on their lifestyle. Even more basically, these initiatives represent an attack on many people's basic ideas of morality and relationship to government. They demand that individuals reiterate, in their own lives, public policies characteristic of the modern administrative state. For those who favor this mode of governance, the demand may be welcome, despite its inconveniences, as a revival of the pre-modern connection between the individual and the community. For those who dislike modern regulatory government, the demand is perceived as an intrusion of their lives and an attack on their beliefs.

In the long run, negative attitudes toward modern government, and the willingness to reject an increasingly established scientific truth, is likely to fade. There is an urgency to the global warming problem, however, that counsels against waiting for the somewhat leisurely process of attitude change to take its course. Identifying climate change denial as a phobic reaction to regulation suggests a variety of immediate measures that might be politically acceptable at the present time, and at least provides some progress toward the essential goal of reducing greenhouse gas emissions before our planet chokes on them.

**THE MICROBEAD-FREE WATERS ACT OF 2015:
MODEL FOR FUTURE ENVIRONMENTAL
LEGISLATION, OR BLACK SWAN?**

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I. INTRODUCTION

Environmental law scholars have long lamented that it has become unthinkable—or at least exceedingly unlikely—for Congress to pass significant new environmental legislation. This is not uniformly the case, as shown by the recent enactment of Public Law 114-114, the Microbead-Free Waters Act of 2015 (“the Act”). Yet, more nuanced questions must be answered before the Act can be hailed as an important break in the legislative logjam. Was the Act insignificant, simply not worth the time and political currency necessary for opponents of environmental regulation to stop? Was it the fortuitous product of a unique confluence of circumstances, a “black swan”?¹ Or could the circumstances surrounding its passage be instructive for future proponents of environmental legislation? This article asserts that the Act addressed a significant environmental issue, and that the strategic building blocks underlying the Act—including an emphasis on public health issues and broad stakeholder support driven by industry concerns about unfair competition and opposition to local legislation—may provide innovative and useful foundations for future efforts to pass environmental legislation.

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1. “Black swans” are “outlier events that do not fit neatly within the bell-shaped curves of probabilities, but which do occur and reoccur in history.” Timothy A. Canova, *Black Swans and Black Elephants in Plain Sight: An Empirical Review of Central Bank Independence*, 14 CHAP. L. REV. 237, 239 (2011).

Section II provides background information about the public health and environmental problems posed by microbeads and microplastics, as eventually addressed by the Act. Although plastics have long been recognized as a threat to our waters and aquatic life, only recently have scientists focused on micro-sized plastic particles. A particular class of these particles, known as “microbeads,” have become widely used in cosmetic products and are intended to be rinsed down the drain as part of the normal product life cycle. However, microbeads typically cannot be removed in wastewater treatment facilities due to their lightness and exceedingly small size. Once in open waters, microplastics (like all plastics) tend to concentrate toxins, and they are attractive to aquatic life as a food source because they appear to be fish eggs based on their size and shape. After initial ingestion, the accumulated toxins bioconcentrate up the food chain and thereby pose a threat to human health. New research shows that this threat is particularly immediate in the Great Lakes, where microbead concentrations equal or exceed those found in oceans. Rising public awareness of the issue has led to increasing calls for a ban on the use of microbeads. Section III details the history of microbead regulation at the federal and state levels, culminating in the passage of the Act. Finally, Section IV examines the reasons for the remarkably frictionless passage of the Act, and concludes by drawing several suggestions for future proponents of environmental legislation.

II. A LOOMING THREAT TO THE GREAT LAKES

Plastics are an increasing threat to our oceans, freshwater lakes, and streams. A recent World Economic Forum report estimated that each year, at least eight million tons of plastics leak into the oceans—the equivalent of one garbage truck per minute.² Assuming a continuing “business-as-usual” scenario, the oceans are expected to contain more plastics than fish by 2050.³ By most estimates, in fact, plastic is the most common form of anthropogenic debris in our surface waters.⁴ It enters these waters in a variety of ways, including through direct release and dumping, storm drainage

2. *The New Plastics Economy: Rethinking the Future of Plastics*, WORLD ECON. FORUM, 7 (Len Neufeld et al. eds., 2016), http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf.

3. *Id.*

4. Marcus Eriksen et al., *Microplastic Pollution in the Surface Waters of the Laurentian Great Lakes*, 77 MARINE POLLUTION BULL. 177, 177 (2013).

systems, raw sewage overflows from wastewater treatment systems, and atmospheric deposition.⁵

Review of available scientific literature shows that although it has been studied less than plastic contamination in oceans, “plastic debris represents a major environmental challenge for the Great Lakes” as well.⁶ Plastic pollution is an increasing concern in the Great Lakes in open water, along shorelines, and in bottom sediments.⁷ Recent open-water surveys have revealed surface plastic densities as high as those reported for areas of litter accumulation in oceans.⁸ Significant open research questions remain as to the annual inputs of plastic debris to each of the Great Lakes, the rates and mechanisms of plastic degradation, the accumulation of plastic debris in the Lakes and along their shores, and the extent of bioaccumulation of plastics in Great Lakes food webs.⁹ Resolving these questions will sharpen our understanding of the extent of the plastic crisis in the Great Lakes. As discussed in more detail below, however, one early indication shows that concentrations of plastic microbeads—the particular problem the Act addresses—are actually higher in some parts of the Great Lakes than corresponding concentrations in oceans.

The ecosystem-level impacts of plastics have been well studied. At the macro-scale, plastics pose a health risk to aquatic animals, including fish, turtles, and birds, due to the possibility of entanglement and ingestion.¹⁰ Plastics serve as a vector for non-native and invasive species,¹¹ and can be colonized by pathogens.¹² Accumulation along shorelines deters recreational usage by boaters, swimmers, and divers.¹³ It may even reduce tourism revenue as a result of beach closures.¹⁴ Although the possible transfer of plastic-absorbed toxins to humans via consumption of aquatic species is “of concern, it has yet to be demonstrated.”¹⁵ Historically, attention to

5. See, e.g., *id.*

6. Alexander G.J. Driedger et al., *Plastic Debris in the Laurentian Great Lakes: A Review*, 41 J. OF GREAT LAKES RES. 9, 16 (2015).

7. *Id.* at 9.

8. *Id.* at 14.

9. *Id.* at 16.

10. Christiana M. Boerger et al., *Plastic Ingestion by Planktivorous Fishes in the North Pacific Central Gyre*, 60 MARINE POLLUTION BULL. 2275, 2277 (2010).

11. David K.A. Barnes et al., *Accumulation and Fragmentation of Plastic Debris in Global Environments*, 364 PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOC'Y 1985, 1985 (2009).

12. Driedger et al., *supra* note 6, at 10.

13. S.B. Sheavly & K.M. Register, *Marine Debris & Plastics: Environmental Concerns, Sources, Impacts and Solutions*, 15 J. OF POLYMERS & THE ENV'T 301, 302-03 (2007).

14. L. Jeftic et al., *Marine Litter: A Global Challenge*, U.N. ENV'T PROGRAMME, 13-14 (2009), http://www.unep.org/pdf/unep_marine_litter-a_global_challenge.pdf.

15. Driedger et al., *supra* note 6, at 10.

this issue of plastic contamination in open waters was limited to macro-scale plastics or accumulated debris fields.¹⁶

More recently, however, some scientists have focused on the impacts associated with plastic “microbeads,” one category of plastic microparticles in our waters.¹⁷ Microbeads are small polyethylene (plastic) microspheres commonly used as exfoliates in consumer toiletry products such as facial and body cleansers and toothpastes.¹⁸ Manufacturers and consumers in the cosmetics sector benefited from the inexpensive, widely available microbeads as a substitute for natural exfoliating substances beginning in the mid-1990s.¹⁹ Some disagreement exists over which particle size classes fall under the “microbead” or “microplastic” umbrella; definitions range from particles with diameter less than 5 millimeters (“mm”)²⁰; to particles less than 1 mm in diameter²¹; to particles between 1 and 5 mm in diameter.²² Regardless of their size, most such particles typically used in cosmetics are non-biodegradable.²³ Microbeads formed a high concentration of some products; one study indicated that a typical exfoliating shower gel can contain “roughly as much microplastic in the cosmetic formulation as is used to make the plastic packaging it comes in.”²⁴

By 2012, the global personal care and cosmetic products industry was worth a mammoth 433 billion in U.S. dollars.²⁵ As a United Nations report explained, “even if a fraction of those products contain small percentages of plastic ingredients, the total emission from this source is still quite significant.”²⁶ Another differentiator between micro- and macroplastic pollution is that no illicit or illegal activity is necessary for plastic microbeads to enter surface waters. On the contrary, washing the microbeads “down the drain” is a fully expected result of their inclusion in products such as rinse-off cosmetics²⁷ and toothpaste. Absent some unexpected overflow or

16. See generally Driedger et al., *supra* note 6.

17. See generally Eriksen et al., *supra* note 4.

18. See generally Guy Graney, *Slipping Through the Cracks: How Tiny Plastic Microbeads are Currently Escaping Water Treatment Plants and International Pollution Regulation*, 39 FORDHAM INT’L L.J. 1023 (2016); Rachel Doughty & Marcus Eriksen, *The Case for a Ban on Microplastics in Personal Care Products*, 27 TUL. ENVTL. L.J. 277, 278 (2014).

19. Graney, *supra* note 18, at 1025-26.

20. WIS. STAT. § 299.50(1)(e).

21. Doughty & Eriksen, *supra* note 18, at 278.

22. Graney, *supra* note 18, at 1025.

23. H.A. Leslie, *Plastic in Cosmetics*, U.N. ENV’T PROGRAMME 6 (2015), http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Plastic_in_cosmetics_Are_we_polluting_the_environment_through_our_personal_care_-2015Plas.pdf [hereinafter UNEP Plastics Report].

24. *Id.*

25. *Id.* at 7.

26. *Id.*

27. The Federal Food, Drug, and Cosmetic Act defines “cosmetic” to mean “articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied

system failure, sanitary sewers then transport the microbeads to municipal wastewater treatment facilities.

Conveyance to wastewater treatment facilities does not resolve the issue, however. Most facilities effectively remove large-scale plastic debris prior to discharge. However, municipal treatment systems are not designed to capture particles as small as the microbeads. Most treatment facilities employ front-end “trash racks” that are far too large to capture microbeads. Advanced filtration systems are often prohibitively expensive, or unable to filter,²⁸ the microparticles.²⁹ Even when they are present, screen openings can be coarse (greater than 6 mm) or fine (1.5-6 mm). Many microbeads will not be captured even at facilities with fine screens.³⁰ In lieu of screens, many facilities employ gravity filtration as the method of primary treatment. Microbeads are not heavy enough to settle out in clarifiers,³¹ and therefore tend to pass through these systems.

Passage through treatment facilities has led to significant environmental repercussions. Microbeads share many of the chemical and environmental hazards discussed above in the broader context of plastics generally. Microbeads are not inherently dangerous themselves, but like all plastics, they tend to absorb and bioconcentrate toxic substances, including PCBs, pesticides, and oils.³² In extreme cases, plastic debris has been found to accumulate pollutants such as PCBs at levels 100,000 to 1,000,000 times the levels found in background samples.³³ In turn, this limits biodegradation of organic contaminants, thereby increasing their persistence in the environment.³⁴ In size and shape, microbeads appear similar to fish eggs and are attractive to aquatic life as a food source for certain organisms. After ingestion the absorbed toxins are

to the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance, and . . . articles intended for use as a component of any such articles,” not including soap. 21 U.S.C. § 321(i).

28. Graney, *supra* note 18, at 1026.

29. See generally Emily DeMarco, *Study Finds Wastewater Treatment Plants an Important Source of Plastic Pollution in Rivers*, INSIDE SCI. (Feb. 29, 2016), <https://www.insidescience.org/blog/2016/02/29/study-finds-wastewater-treatment-plants-important-source-plastic-pollution-rivers>.

30. See Jennifer Nalbone, *Unseen Threat: How Microbeads Harm New York Waters, Wildlife, Health and Environment*, OFFICE OF THE N.Y. ATTY. GEN. 7 (May 14, 2014), https://ag.ny.gov/pdfs/Microbeads_Report_5_14_14.pdf.

31. See Sara Verrillo, *Microbeads: Tiny Particles Causing Big Problems*, ATL. CTY. UTIL. AUTH. (May 19, 2015), <http://www.acua.com/community/blog/microbeads/>.

32. See generally Chelsea M. Rochman et al., *Ingested Plastic Transfers Hazardous Chemicals to Fish and Induces Hepatic Stress*, 3 SCI. REPORTS 1, Art. 3263 (2013), <http://www.nature.com/articles/srep03263>.

33. *What We Know About Plastic Marine Debris*, NOAA MARINE DEBRIS PROGRAM, https://marinedebris.noaa.gov/sites/default/files/Gen_Plastic-hi_9-20-11_0.pdf.

34. Driedger, *supra* note 6, at 10.

then concentrated up the food chain,³⁵ posing a potential threat to human health.

Microbeads pose an immediate and particular threat to the Great Lakes. Until recently, available data related to the abundance of microplastics in the Great Lakes was limited to beach surveys.³⁶ However, recently-available data show that the concentration of microbeads is even higher in the Great Lakes than in the oceans, with as many as 1.1 million particles of microplastics per square mile in some areas of the Lakes.³⁷ Scientists found that “[m]icroplastic pellets and fragments were far more abundant than other particle types.”³⁸ Even worse, the beads cannot be effectively removed, because any attempt to do so would necessarily also capture plankton and other essential parts of the food chain.³⁹ As a result, microbeads will continue to accumulate in the Great Lakes and other aquatic ecosystems until the Act’s ban takes effect.

III. MICROBEAD REGULATION

Public awareness of these negative effects resulting from microbeads led to numerous calls for a ban on their use.⁴⁰ As with many environmental and public health issues, “[t]he power of information to help drive mitigation activities is considerable.”⁴¹ One of the most high-profile efforts is “Beat the Microbead,” an informational public relations campaign that included the design of an “app” allowing consumers to check whether personal care products contain microbeads by scanning a bar code.⁴² The United Nations Environment Programme threw its support behind the campaign, and ultimately claimed that it “convinc[ed] a number of large multinationals such as Unilever, Johnson & Johnson and the Body Shop to announce their intent to stop using microbeads.”⁴³ The U.N. body also issued a report calling the widespread use of microbeads “[a]n emerging global environmental issue.”⁴⁴ It recommended taking “a precautionary approach” toward microbead

35. Rochman, *supra* note 32, at 4.

36. Eriksen et al., *supra* note 4, at 178.

37. *Id.* (as converted from density per square kilometer).

38. *Id.* at 179.

39. John Schwartz, *Scientists Turn Their Gaze Toward Tiny Threats to Great Lakes*, N.Y. TIMES (Dec. 14, 2013), <http://www.nytimes.com/2013/12/15/us/scientists-turn-their-gaze-toward-tiny-threats-to-great-lakes.html>.

40. See generally Doughty & Eriksen, *supra* note 18; see also Graney, *supra* note 18, at 1027–28.

41. UNEP Plastics Report, *supra* note 23, at 7.

42. *Id.* at 28.

43. *Id.*

44. *Id.* at 9.

management, leading to an eventual phase-out and ban.⁴⁵ Smaller-scale grassroots campaigns launched in a variety of states.⁴⁶

A. State and Local Action

It is difficult to deny that the numerous informational and public action campaigns had some effect on the political machinations that followed. By the date of the Act's passage in December 2015, dozens of states had either enacted or were considering microbead bans.⁴⁷ In New York, several individual counties had passed bans.⁴⁸ Most of the enacted state bans included an exemption for biodegradable plastics, but did not define that term.⁴⁹ For example, Wisconsin's law banned "synthetic plastic microbeads," defined to mean "any intentionally added *non-biodegradable*, solid plastic particle measuring less than 5 millimeters at its largest dimension that is used to exfoliate or cleanse in a product that is intended to be rinsed off."⁵⁰ This language appears to have been based on the Illinois statute, which contains an essentially identical definition.⁵¹

California passed a different, more stringent ban that did not exempt biodegradable microbeads.⁵² Instead, it defined "plastic microbead" to mean "an intentionally added solid plastic particle measuring five millimeters or less in every dimension,"⁵³ and banned the inclusion of such microbeads in personal care products (not including prescription drugs).⁵⁴ Some groups argued that the "weaker" form of the state bans improperly incentivized

45. *Id.* at 7.

46. *See, e.g., Take Action: Microbeads*, 5GYRES INSTITUTE, www.5gyres.org/microbeads (last visited Nov. 27, 2016); *Plastic Microbeads: Ban the Bead!*, THE STORY OF STUFF PROJECT, <http://storyofstuff.org/plastic-microbeads-ban-the-bead> (last visited Nov. 27, 2016).

47. The states of California, Colorado, Connecticut, Illinois, Indiana, Maine, Maryland, New Jersey, and Wisconsin had enacted bans as of late 2015. *See* Cal. Assemb. B. No. 888 (Oct. 8, 2015); Colo. H.B. 15-1144 (Mar. 26, 2015); Conn. S.B. No. 1502 (June 30, 2015) (budget bill containing microbead ban); Ill. Pub. Act 098-0638 (June 8, 2014); Ind. H.B. 1185, Pub. L. 21 (Apr. 15, 2015); Me. S. Paper 33—Legis. Doc. 85 (Mar. 24, 2015); Md. H.B. 216 (May 12, 2015); N.J. S.B. 2178 (Mar. 23, 2015); 2015 Wis. Act 43 (July 1, 2015).

48. Robert Harding, *Another New York County Passes Microbead Ban*, AUBURNPUB.COM: EYE ON NY (Nov. 11, 2015), http://auburnpub.com/blogs/eye_on_ny/another-new-york-county-passes-microbead-ban/article_24d255b4-87db-11e5-bfe9-8b243f452c33.html (noting five counties had passed bans).

49. *See, e.g.,* WIS. STAT. § 299.50(1)(e) (2015); 2015 Wis. Act 43.

50. 2015 Wis. Act 43 (emphasis added).

51. *See* 414 ILL. COMP. STAT. 5/52.5(a) (2015).

52. *See* CAL. PUB. RES. CODE § 42361(c) (2015). Some commentators speculated that the passage of the California ban made the Act more palatable to Congress, and even served as a model for its text. *See 'Strong' California Microbead Bill Paved Way for National Ban*, CHEM. WATCH (Jan. 6, 2016), <https://chemicalwatch.com/44354/strong-california-microbead-bill-paved-way-for-national-ban>.

53. CAL. PUB. RES. CODE § 42361(c).

54. *Id.* §§ 42362, 42361(2) (excluding prescription drugs from the definition of "personal care product").

an undesirable solution: the substitution of theoretically “biodegradable” plastics that would not degrade under ordinary circumstances.⁵⁵ Industry officials—and some policy makers—also objected to the state and local bans because they created a “patchwork” regulatory regime, under which the treatment of microbeads varied from state to state and, in extreme cases, even from county to county.⁵⁶

B. The Microbead-Free Waters Act of 2015

In March 2015, Rep. Frank Pallone Jr. of New Jersey introduced the Act in the House of Representatives.⁵⁷ The House passed the bill by voice vote in early December.⁵⁸ Only a week later, the Senate passed the Act by unanimous consent, without any edits.⁵⁹ President Barack Obama signed the bill into law on December 28, 2015.⁶⁰

The Act is striking for its brevity and simplicity, running only a few hundred words. It prohibits “[t]he manufacture or the introduction or delivery for introduction into interstate commerce of a rinse-off cosmetic that contains intentionally-added plastic microbeads.”⁶¹ The ban on manufacturing is effective July 1, 2017, and the ban on introduction into interstate commerce takes effect a year later, on July 1, 2018.⁶² “Plastic microbead” is further defined to mean “any solid plastic particle that is less than five millimeters in size and is intended to be used to exfoliate or cleanse the human body or any part thereof.”⁶³ Like the California law, the Act makes no exception for biodegradable plastics. The Act also preempts state and local bans on plastic microbeads, to the extent those bans are not identical to the Act.⁶⁴

55. See, e.g., *California Microbead Ban Closes Biodegradable Loophole*, WATER ENV'T FED'N (Oct. 30, 2015), <http://stormwater.wef.org/2015/10/california-microbead-ban-closes-biodegradable-loophole/>.

56. See *infra* Part IV (explaining industry and policymaker support for the Act based on the elimination of the perceived “patchwork” regime).

57. *Actions H.R. 1321 114th Congress*, LIBR. OF CONG., <https://www.congress.gov/bill/114th-congress/house-bill/1321/actions> (last visited Nov. 27, 2016).

58. 114 CONG. REC. H9022 (Dec. 7, 2015).

59. 114 CONG. REC. S8861 (Dec. 18, 2015).

60. LIBR. OF CONG., *supra* note 57.

61. 21 U.S.C. § 331(ddd)(1) (2015). Note that the Federal Food Drug and Cosmetic Act, which the Act amends, defines only “cosmetic” and not “rinse-off cosmetic.” 21 U.S.C. § 321(i) (2009). This has the potential to create ambiguity in the case of microbead-containing products that are arguably not “rinsed off.”

62. Microbead-Free Waters Act of 2015, Pub. L. No. 114-114, 129 Stat. 3129, § (2)(b).

63. 21 U.S.C. § 331(ddd)(2)(A).

64. Microbead-Free Waters Act, § (2)(c).

In some circles the Act's simplicity was cause for criticism.⁶⁵ For example, the Act's definition of a "microbead" as a particle of certain size "intended to be used to exfoliate or cleanse the human body," might perhaps be read to exclude microbeads used for some other reason, such as lubrication. Yet had the Act included broader provisions to, for example, limit the usage of plastic bags, one can surmise that it would never have seen the floor, let alone passed both houses of Congress.

VI. IMPLICATIONS FOR FUTURE ENVIRONMENTAL REGULATION

Legal scholars expressed surprise at the Act's easy passage, with one even calling it a "Christmas miracle."⁶⁶ Representative Pallone provided a more mundane explanation for the Act's surprisingly easy route to becoming law: "There was a lot of support, and there wasn't much opposition."⁶⁷ The reasons for this deserve closer examination, given the dismal fate of proposed environmental legislation over the past three decades.

Much ink has been spilled lamenting the difficulty of passing new environmental legislation in the modern era. This has not always been the case, of course. During the "environmental law revolution" of the 1970s, Congress enacted more than a dozen major federal environmental laws, including the National Environmental Policy Act (1970),⁶⁸ the Clean Air Amendments (1970),⁶⁹ the Federal Water Pollution Control Act Amendments (1972),⁷⁰ the Federal Environmental Pesticide Control Act (1972),⁷¹ the Endangered Species Act (1973),⁷² the Safe Drinking Water

65. *E.g.*, Graney, *supra* note 18, at 1032 (The Act "is limited to [addressing] adulterated cosmetics, leaving non-cosmetic sources of microbeads, most notably many pharmaceuticals, outside the scope of federal regulation."). Of course, the Act is also necessarily limited to addressing microbeads in the U.S. To the extent they remain in use in other countries, their release to international waters will continue.

66. Dan Farber, *A Minor Christmas Miracle from Congress*, LEGAL PLANET (Dec. 25, 2015), <http://legal-planet.org/2015/12/25/a-minor-christmas-miracle-from-congress/>.

67. John Schwartz, *Ban on Microbeads Proves Easy to Pass Through Pipeline*, N.Y. TIMES (Dec. 22, 2015), http://www.nytimes.com/2015/12/23/science/ban-on-microbeads-proves-easy-to-pass-through-pipeline.html?_r=0.

68. National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321-4347 (2012)).

69. Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (1970) (codified as amended at 42 U.S.C. §§ 7401-7671q (2012)).

70. Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified as amended at 33 U.S.C. §§ 1251-1387 (2012)).

71. Federal Insecticide, Fungicide, and Rodenticide Act, Pub. L. No. 92-516, 86 Stat. 973 (1972) (codified as amended at 7 U.S.C. §§ 136(a)-(y) (2012)).

72. Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (1973) (codified as amended at 16 U.S.C. §§ 1531-44 (2012)).

Act (1974),⁷³ the Resource Conservation and Recovery Act (1976),⁷⁴ the Toxic Substances Control Act (1976),⁷⁵ and the Comprehensive Environmental Response, Compensation, and Liability Act (1980).⁷⁶ Few subject matter areas have ever seen such a burst of legislative activity.

In the decades that followed, Congress amended some of these laws but passed few new ones.⁷⁷ Most commentators regard the Clean Air Act Amendments of 1990 as the last significant environmental legislation to get through Congress.⁷⁸ The “legislative stalemate” that has persisted since then has largely been chalked up to partisan divisions:

Commentators characterize the current climate in Congress on environmental issues as “gridlocked,” “deadlock[ed],” “dysfunction[al],” “broken,” the subject of “considerable, self-imposed inertia,” and “highly inhospitable to the enactment of major environmental legislation.” There are no signs from Congress that indicate the current gridlock over environmental policy will end within the foreseeable future. In fact, the odds of enactment of any significant federal environmental legislation only seem to diminish with the installation of each new Congress.⁷⁹

Complaints about gridlock are by no means limited to the twenty-first century, nor to advocates of increased environmental protection: as early as 1986, at a judicial conference of the District of Columbia Circuit, a commentator favoring deregulation lamented that “there is virtually no chance of serious reform of the health, safety, and environmental statutes in the Congress. . . . I think that’s deplorable. . . . [and] there is plenty of fault . . . to go around.”⁸⁰

In response to this perceived Congressional dereliction of duty, commentators and other policy makers examined various

73. Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974) (codified as amended at 42 U.S.C. § 300f (2012)).

74. Resource Conservation and Recovery Act of 1976, Pub. L. No. 94-580, 90 Stat. 2795 (1976) (codified as amended at 42 U.S.C. §§ 6901-6992k (2012)).

75. Toxic Substances Control Act, Pub. L. No. 94-469, 90 Stat. 2003 (1976) (codified as amended at 15 U.S.C. §§ 2601-92 (2012)).

76. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Pub. L. No. 96-510, 94 Stat. 2767 (1980) codified as amended at 42 U.S.C. §§ 9601-75 (2012)).

77. See, e.g., Safe Drinking Water Act Amendments of 1986, Pub. L. No. 98-616, 98 Stat. 3221 (codified at 42 U.S.C. § 201 (2012)).

78. See, e.g., David W. Case, *The Lost Generation: Environmental Regulatory Reform in the Era of Congressional Abdication*, 25 DUKE ENVTL. L. & POL’Y F. 49, 60 (2014).

79. *Id.* at 60-61 (internal citations omitted).

80. Proceedings of the Forty-Seventh Annual Judicial Conference of the District of Columbia Circuit, Williamsburg Lodge, Williamsburg, Va., May 18-20, 1986, 114 F.R.D. 419, 517 (1987).

alternative regulatory strategies that can broadly be categorized as market-based regulatory instruments, voluntary or self-regulatory policies, contractual or collaborative decision-making, and direct regulatory efforts undertaken by the Environmental Protection Agency (EPA).⁸¹ Most of these efforts have obtained limited success at best, and have been highly controversial. This made the Act's smooth sailing all the more surprising.

The confluence of growing scientific understanding, broad stakeholder support from the grassroots and from industry, and the growing number of state bans all likely contributed to the genesis of the Act. It was introduced in the House on March 4, 2015.⁸² After a period of no activity, the Act sailed through both houses of Congress with no real opposition, passing in the House by voice vote and in the Senate by unanimous consent.⁸³ "This is a great bill, and it shows that we can pass smart environmental legislation here in Washington," said one senator during floor discussion of the bill.⁸⁴ Although the easy passage can partly be explained by the absence of any real opposition, a closer examination reveals several positive traits, the emphasis of which may provide a useful foundation for future efforts to pass environmental legislation. The Act was tightly focused and of modest scope, it attracted a broad coalition of stakeholder support, and it included a focus on public health risks in addition to environmental concerns. Crafting future environmental legislation to fit these constraints will significantly increase the chances of success.

A. Focus and Scope

As described in some detail above, plastics are the leading cause of anthropogenic pollution in our rivers and lakes. The Act makes no effort to address that situation in its entirety; instead, it contains simple and direct language closely focused on one clearly delineated aspect of the problem. It simply prohibits "the manufacture or the introduction or delivery for introduction into interstate commerce of a rinse-off cosmetic that contains intentionally-added plastic microbeads."

Admittedly, this specific focus perhaps opens the Act up to criticism that it should have addressed a broader spectrum of plastics issues, that its lack of specific definitions will undermine its effectiveness, or even that it contains ambiguities that will open the

81. See Case, *supra* note 78, at 72-89 for an examination of these reform efforts.

82. LIBR. OF CONG., *supra* note 57.

83. 161 Cong. Rec. S8861 (daily ed. Dec. 18, 2015); 114 Cong. Rec. H9022 (daily ed. Dec. 7, 2015).

84. 161 Cong. Rec. S8861 (daily ed. Dec. 18, 2015) (statement of Sen. Gillibrand).

door to state or local regulation in the interstitial spaces.⁸⁵ These criticisms are emblematic of a fundamental tradeoff: had the Act encompassed the broader plastics problem more fully, the likelihood of its easy passage would correspondingly decrease.

B. Broad Stakeholder Support

As discussed above, campaigns such as “Beat the Microbead” assisted in raising public awareness in support of a microbead ban. This, in itself, is not a surprise. “Although latent, public support for environmentalism has undeniably become embedded in American politics. . . . [H]owever . . . public concern for the environment affects the political process mainly when the public is activated by an environmental crisis or when the public believes that existing institutions designed to protect the environment are under threat.”⁸⁶ In this instance, spurred by the scientific community and the grassroots efforts to oppose the ban, Congress perceived a sufficient crisis to act.

Perhaps surprisingly (at least at a surface level), industry organizations also supported the ban. The American Chemistry Council called it a “sensible, national standard to phase out solid-plastic microbeads from rinse-off personal care products across America,” and “commend[ed]” Congress for its passage.⁸⁷ During a hearing before the House Subcommittee on Health and the House Committee on Energy and Commerce, three different witnesses—Rep. Joseph R. Pitts of Pennsylvania;⁸⁸ Mr. Dan Wyant, Director of the Michigan Department of Environmental Quality;⁸⁹ and State Sen. Linda Greenstein of the New Jersey Legislature⁹⁰—testified to concern over a “patchwork” of state and local regulations. State Sen. Greenstein testified:

85. See, e.g., Michael A. Siragusa, *Local Law 3-2015: County Attorney Opinion – Preemption* (Feb. 3, 2016) (formal opinion of Erie County, New York County Attorney, arguing that the Act does not preempt the County’s microbead ban until at least 2018), <http://www2.erie.gov/law/sites/www2.erie.gov.law/files/uploads/letter%20to%20j%20mills%20re%20preemption.pdf>.

86. Cary Coglianese, *Social Movements, Law, and Society: The Institutionalization of the Environmental Movement*, 150 U. PENN. L. REV. 85, 112 (2001).

87. Allyson Wilson, *Bipartisan Legislation to Remove Microbeads from Personal Care Products Signed into Law*, AM. CHEMISTRY COUNCIL (DEC. 28, 2015), <https://www.americanchemistry.com/Media/PressReleasesTranscripts/ACC-news-releases/Bipartisan-Legislation-to-Remove-Microbeads-from-Personal-Care-Products-Signed-into-Law.html>.

88. *Examining Microbeads in Cosmetic Products: Hearing Before the Subcomm. on Health of the H. Comm. on Energy and Commerce*, 114th Cong. 35 (2015) (statement of Sen. Greenstein).

89. *Id.* at 34.

90. *Id.* at 35.

So what we are going to have is that, as the industry moves forward, they will be saying, “Well, make an exception for the biodegradables,” even though they don’t really exist now, as I understand it, “Make other exceptions.” And I think we are going to see a real patchwork, as you heard. I do agree with that. So I think it is very important, especially on something like this where we do have a lot of buy-in from the industry, to see if we can get a Federal law. I think that would work best.⁹¹

A spokesman for Sen. Kirsten Gillibrand similarly indicated that industry supported the Act due to “concerns about a patchwork of state regulations.”⁹² Another industry representative hailed the emplacement of “one uniform policy across the country.”⁹³

Although some industry organizations identified the passage of state-level bans as a problem, some companies supported even those measures. For example, industry titan Johnson & Johnson approached a Colorado legislator and asked her to bring forward a microbead ban.⁹⁴ In part, this may have been due to concerns that some companies would obtain a competitive advantage from continuing to use the inexpensive microbeads while other, more socially responsible, companies phased them out. This too, is not unprecedented, in fact, some public choice theorists⁹⁵ believe that almost all public regulation is really “private-interest rent-seeking in disguise.”⁹⁶ By that way of thinking, environmental regulations can be reduced to tools of “subgroups of the regulated industry attempting to burden their rivals,”⁹⁷ or perhaps in the case of the Act, to ensure that no rival enjoys a perceived competitive advantage (the continued use of microbeads).

C. Classification as a “Health” Bill

In a variety of ways, the Act was positioned as a public health bill rather than as an environmental protection bill. Since 1973, Congress has assigned and attached one “Policy Area term” that

91. *Id.*

92. Schwartz, *supra* note 67.

93. *Id.*

94. Amy Crowfoot, *Colorado Legislature Discusses Battle Against Microbeads*, 9NEWS.COM (Feb. 10, 2015, 6:15 PM), <http://www.9news.com/news/politics/colo-legislature-discusses-battle-against-microbeads/134360151>.

95. Public choice theory “sees politics as a market” that underproduces public goods such as clean water, and is biased toward the provision of private goods to concentrated interest groups. See generally Jonathan Wiener, *On the Political Economy of Global Environmental Regulation*, 87 GEO. L.J. 749, 752 (1999).

96. Wiener, *supra* note 95, at 754.

97. *Id.* at 755.

best describes the entire measure to every introduced bill or resolution. “Health” and “Environmental Protection” are among the thirty-two available policy terms.⁹⁸ Per the Congressional website, every bill or resolution is assigned a single “Policy Area term,” which best describes the entire measure.⁹⁹ The Policy Area term assigned to the Act was “Health,” not “Environmental Protection,” which is another option.¹⁰⁰

This classification was appropriate. As described above, microbeads pose perhaps an even greater concern for human health than do ordinary plastics.¹⁰¹ Like other plastics, microbeads bioconcentrate pathogens and other chemicals hazardous to public health.¹⁰² However, unlike many macro-scale plastics, microbeads are easily ingestible by aquatic organisms and therefore have a greater potential to be concentrated up the food chain to humans.¹⁰³ The identification of these public health aspects of the issue may well have eliminated—or at least rendered surmountable—the ordinary partisan blockade to new environmental legislation.

D. Strategies in Action: The TSCA Reform Bill

Examination of another successful environmental legislation effort gives credence to the effectiveness of the above strategies. In 2016, Congress passed a bill reforming the Toxic Substances Control Act (“TSCA”), the cornerstone of chemical regulation in the U.S.¹⁰⁴ The TSCA reform bill has been described as “the culmination of a multiyear, multi-Congress effort” and “the first consequential update of [TSCA] in 40 years.”¹⁰⁵ On May 24, the House approved the compromise package by an overwhelming 403-12 vote.¹⁰⁶ The Senate quickly followed suit via a voice vote.¹⁰⁷

98. *Policy Areas — Field Values*, LIBR. OF CONG., <https://www.congress.gov/help/field-values/policy-area> (last visited Nov. 27, 2016).

99. *Id.*

100. *H.R.1321 - Microbead-Free Waters Act of 2015*, LIBR. OF CONG., <https://www.congress.gov/bill/114th-congress/house-bill/1321> (last visited Nov. 27, 2016).

101. See Rochman et al., *supra* note 32; see generally *infra*, Section II.

102. See *infra*, Section II.

103. *Id.*

104. See, e.g., Darren Goode & Alex Guillen, *Chemical Safety Reform Passes After ‘Perfect Storm,’* POLITICO (June 7, 2016, 7:19 PM), <http://www.politico.com/story/2016/06/chemical-reform-took-advantage-of-perfect-storm-224031>; Juliet Eilperin & Darryl Fears, *Congress Is Overhauling an Outdated Law That Affects Nearly Every Product You Own*, WASH. POST (May 19, 2016), https://www.washingtonpost.com/politics/congress-poised-to-pass-sweeping-reform-of-chemical-law/2016/05/18/0da5cd22-1d30-11e6-9c81-4be1c14fb8c8_story.html.

105. *Shimkus Leads Landmark Update of Chemical Safety Law*, OFFICE OF REP. JOHN SHIMKUS, (May 24, 2016), <https://shimkus.house.gov/media-center/press-releases/shimkus-leads-landmark-update-of-chemical-safety-law>.

106. *Actions H.R.2576 114th Congress*, LIBR. OF CONG., <https://www.congress.gov/bill/114th-congress/house-bill/2576/actions> (last visited Nov. 27, 2016).

107. *Id.*

President Obama quickly signed the bill, having already called it “a historic advancement for both chemical safety and environmental law.”¹⁰⁸ Generally, the newly reformed law gives EPA more authority to obtain information about chemicals, eliminates certain requirements that made it difficult for EPA to regulate chemicals in commerce, and requires EPA to assess certain high-risk chemicals in commerce.¹⁰⁹ In several respects, the effort to pass the TSCA reform bill mirrored the strategies that led to the Act.

First, as did the Microbead-Free Waters Act, the TSCA compromise package emphasized the public health benefits of the legislation in addition to the environmental benefits. The House Committee on Energy and Commerce prepared a lengthy committee report on the draft bill,¹¹⁰ and then issued a short fact sheet on the compromise text.¹¹¹ The emphasis on public health reflected in the committee documents directly reflects the original version of TSCA enacted in 1976, which renders EPA responsible to take certain regulatory actions with respect to chemicals in commerce that “present an unreasonable risk of injury to health or the environment.”¹¹²

Second, the compromise package attempted to build broad stakeholder consensus to eliminate a patchwork approach:

Preemption under the compromise text begins with a general rule (subject to later provisions saving certain state laws) that states and local governments may not (1) duplicate federal information developments requirements, (2) restrict a chemical that EPA’s scientific risk evaluation found does not present an unreasonable risk, EPA has published risk management regulation; or required notification for a significant new use or a new chemical.¹¹³

108. OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, STATEMENT OF ADMINISTRATION POLICY: SENATE AMENDMENT TO H.R. 2576 – TSCA MODERNIZATION ACT OF 2015 (2016) (announcing that “[t]he Administration strongly supports the bipartisan, bicameral efforts to reform the Toxic Substances Control Act”).

109. See The Frank R. Lautenberg Chemical Safety for the 21st Century Act, amending 53 U.S.C. §§ 2601-2697; see also *Highlights of Key Provisions in the Frank R. Lautenberg Chemical Safety for the 21st Century Act*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/highlights-key-provisions-frank-r-lautenberg-chemical> (last visited Nov. 27, 2016).

110. H.R. REP. NO. 114-176 (2015).

111. COMM. ON ENERGY AND COMMERCE, *TSCA Reform – Compromise Text*, <https://rules.house.gov/sites/republicans.rules.house.gov/files/114/PDF/HR2576SA-OJCR-Summ.pdf> [hereinafter TSCA Compromise Text].

112. See, e.g., Toxic Substances Control Act, 15 U.S.C. § 2601 (2012).

113. TSCA Compromise Text, *supra* note 111.

Public choice theorists may formulate darker motives for this consensus, but that does not reduce its effectiveness. Thus, the recent breakthrough in TSCA reform shares some of the same characteristics that gave rise to the success of the Act.

V. CONCLUSION

The passage of the Act reveals that Congress can indeed pass smart environmental legislation. But it doesn't come easily, as decades of failure have shown. The Act need not be a "black swan," a blip in an otherwise unbroken stretch of legislative failure; the success of the TSCA reform bill has already shown that much. Proponents of future environmental legislation can benefit from the Act's example by setting a reasonable scope and focus; by building a broad stakeholder coalition that includes, rather than demonizes, industry; by eliminating "patchwork" regulation to the extent possible; and by emphasizing the public health aspects of proposed legislation.

**HYDRAULIC FRACTURING AND OUR FOOD SYSTEM:
EMERGING ISSUES RELATED TO RECYCLING
WASTEWATER FOR AGRICULTURAL PURPOSES**

SARAH LOGAN BEASLEY*

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I. INTRODUCTION

Development of mineral resources, energy production, and the need for water for human consumption are all intimately connected in a relationship called the “water-energy nexus.”¹ The United States has recently experienced enormous growth in oil

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1. U.S. DEP’T OF ENERGY, DOE/EPISA-0002, THE WATER-ENERGY NEXUS: CHALLENGES AND OPPORTUNITIES 1 (June 2014), <http://www.energy.gov/sites/prod/files/2014/07/f17/Water%20Energy%20Nexus%20Full%20Report%20July%202014.pdf> (“Water plays a critical role in the generation of electricity and the production of fuels; energy is required to treat and distribute water.”).

and gas production over the past decade,² tracking the increase in “unconventional” well development through the process of hydraulic fracturing or “fracking.”³ At the same time, many regions of the United States, including oil- and gas-producing regions, have experienced severe to record-breaking drought.⁴ The dread of water scarcity is intensified when oil- and gas-producing regions are home to a water-dependent agricultural industry.⁵ Wasteful management of water, fuel, and energy will likely strain the interconnected systems dependent upon these resources if we fail to adopt sustainable practices.

Concerns about the diversion of water resources for oil and gas development are well-founded. Legal scholars⁶ have already addressed in depth the energy-water nexus, including the enormous need for water to facilitate the hydraulic fracturing process⁷ and

2. See Edward McAllister, *Shale Drilling Boosted U.S. Oil and Gas Reserves in 2014*: EIA, REUTERS (Nov. 23, 2014, 3:41 PM), <http://www.reuters.com/article/us-usa-energy-reserves-idUSKBN0TC2BJ20151123>; see also U.S. ENERGY INFO. ADMIN., ANN. ENERGY REV. 179 (2011), http://www.eia.gov/totalenergy/data/annual/pdf/sec6_5.pdf (table showing U.S. natural gas usage for selected years between 1949 and 2011), and U.S. ENERGY INFO. ADMIN., MONTHLY ENERGY REV. 49 (Oct. 2016), http://www.eia.gov/totalenergy/data/monthly/pdf/sec3_3.pdf (table showing monthly U.S. petroleum usage between Jan. 2014 and Sept. 2016, as well as yearly usage from selected years prior).

3. Sorell E. Negro, *The Thirst of Fracking: Regulating to Protect the Linchpin of the Natural Gas Boom*, 77 ALB. L. REV. 725, 725 (2014) (“The natural gas boom was ignited by the development of high-volume hydraulic fracturing (fracking) with horizontal drilling, which has enabled oil and gas companies to extract oil and gas from a significantly larger underground area through a single well.”).

4. MONIKA FREYMAN, CERES, HYDRAULIC FRACTURING & WATER STRESS: WATER DEMAND BY THE NUMBERS 6 (Feb. 2014), <https://www.ceres.org/resources/reports/hydraulic-fracturing-water-stress-water-demand-by-the-numbers> (“Nearly half of the wells hydraulically fractured since 2011 were in regions with high or extremely high water stress, and over 55 percent were in areas experiencing drought.”). In Texas, for example, drilling in Eagle Ford Shale requires 125,000 gallons of water per well and hydraulic fracturing requires between 2 million and 13.7 million gallons per well. GUANYU MA, MENGISTU GEZA, & PEI XU, REVIEW OF FLOWBACK AND PRODUCED WATER MANAGEMENT, TREATMENT AND BENEFICIAL USE FOR MAJOR SHALE GAS DEVELOPMENT BASINS 9 (2014), http://www.rpsea.org/media/files/project/8377f7ac/11122-53-PA-Review_Flowback_PWM_Treatment_Beneficial_Use_Major_Shale_Gas_Development_Basins-Ma-01-10-14.pdf. However, “[d]uring the 2011 drought, many operators in Eagle Ford Shale were forced to buy water from farmers, irrigation districts, and municipalities . . . [a]nd with the startup of Eagle Ford Shale, water shortage in Texas is very likely to occur.” *Id.* at 9 (internal citations and quotation marks omitted).

5. FREYMAN, *supra* note 4, at 59-60 (“[B]etween groundwater concerns and [California’s] recently declared ‘drought emergency,’ any expansion of water use for hydraulic fracturing in this region will likely spark strong public concern that could jeopardize the industry’s social license to operate.”).

6. See generally Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 U. COLO. L. REV. 729 (2013); see also Negro, *supra* note 3, at 725.

7. Negro, *supra* note 3, at 725 (“The fracking process . . . requires huge amounts of water, in essence trading one resource for another.”); Kate Galbraith, *As Fracking Increases, So Do Fears About Water Supply*, N.Y. TIMES (Mar. 7, 2013), <http://www.nytimes.com/2013/03/08/us/as-fracking-in-texas-increases-so-do-water-supply-fears.html> (“In 2011, Texas used a greater number of barrels of water for oil and natural gas fracking (about 632 million) than the number of barrels of oil it produced (about 441 million), according to figures from . . . the

the risks associated with contamination resulting from drilling, hydraulic fracturing, and the disposal of wastes.⁸ Nevertheless, analysis is lacking with respect to available legal strategies to regulate the practice of recycling treated wastewater for irrigation purposes, and any need for tighter regulations on this alternative. The option to recycle wastewater presents an attractive solution in mitigating the impacts of drought and increased pressure on the allocation of limited water resources. However, determining the appropriate level of proposed regulation will likely proceed as a balancing act between industry and consumer interests, because the degree of risk associated with recycling wastewater for agricultural irrigation has not been well studied.

Equally germane to this analysis of recycling wastewater from hydraulic fracturing operations is whether, and to what extent, consumers should be informed of the use of that wastewater as a production method in their food system. One method of informing consumers is through mandated disclosures on food labels; however, different legal implications arise from the government's interests in requiring labeling when that decision is challenged in court. Under a First Amendment challenge, a government interest in satisfying consumer curiosity or the "right to know" what food is or how it is made might not withstand review compared to a government interest in *adopting* the public's concerns about a certain product or production method.⁹ Additionally, government food labeling requirements operate under a set of assumptions that may not always be correct.¹⁰ Aside from the question of whether a warning or disclosure label could withstand judicial review is the broader issue concerning the efficacy of food labels in general.

state's oil and gas regulator."). See also FREYMAN, *supra* note 4, at 6 ("In Colorado and California, 97 and 96 percent of [hydraulically fractured wells], respectively, were in regions with high or extremely high water stress.").

8. See generally OHIO ENVTL. PROT. AGENCY, DRILLING FOR NATURAL GAS IN THE MARCELLUS AND UTICA SHALES: ENVIRONMENTAL REGULATORY BASICS 1, 3 (Jan. 2014), <http://www.epa.ohio.gov/portals/0/general%20pdfs/generalshale711.pdf> ("Flowback water picks up minerals from the shale formation . . . [and] may contain low levels of naturally occurring radioactive elements such as radium. It also contains high concentrations of total dissolved solids (TDS) . . . [which] can impair water quality and kill aquatic life" if TDS levels are elevated in streams, rivers or lakes.).

9. See *Int'l Dairy Foods Ass'n v. Amestoy*, 92 F.3d 67, 73 n.1 (2d Cir. 1996).

10. Mandated food labeling assumes that (1) the required disclosure contains "good" information, (2) the consumer will benefit from this information in some way, and (3) the consumer will adjust his or her behavior accordingly in a way that benefits the consumer. For a summary of recent studies critical of information disclosure as a regulatory strategy, see Diana R. H. Winters, *The Magical Thinking of Food Labeling: The NLEA as a Failed Statute*, 89 TUL. L. REV. 815, 843-846 (2015). For a comparative analysis of federal policies combatting obesity and tobacco use through disclosure and labeling, see Josef Weimholt, "Bringing a Butter Knife to a Gun Fight"? *Salience, Disclosure, and FDA's Differing Approaches to the Tobacco Use and Obesity Epidemics*, 70 FOOD & DRUG L.J. 501 (2015).

Building on a California state assemblyman's recent proposal to label food products irrigated with treated wastewater from hydraulically fractured wells,¹¹ this Note urges that the time is ripe to address potential risks arising from putting this wastewater back into our food system and the need to inform consumers of those risks. This Note will analyze the current regulatory framework for disposal and recycling of flowback¹² and produced water,¹³ first by outlining the process of hydraulic fracturing in Section II. This section also summarizes current options for handling wastewaters produced from hydraulically fractured wells. Next, Section III will review federal laws that apply to the disposal and recycling of wastewater, as well as relevant federal laws regulating production methods and food labeling. This section will highlight certain gaps in the federal regulatory system with respect to the practice of recycling wastewater for agricultural irrigation. Part IV follows with a comparative analysis of state regulatory law and proposals addressing recycling wastewater for agricultural irrigation, looking primarily to recent developments in Texas, Oklahoma, and California.

The focus of Section IV will center on California's proposed bill to label food irrigated with recycled wastewater in order to inform consumers of potential risks associated with contamination. While the proposed food labeling bill subsequently died in the California legislature in March 2016,¹⁴ the policy provides a useful example of government action aimed at preventing harm to consumers. However, the efficacy of such proposed labeling requirements, as well as potential challenges to these requirements, necessitates analysis.

Section V will investigate the value of food labeling laws in general. Additionally, Section V will determine the strength of food labeling laws, like California's proposed measure, to withstand legal challenges under the First Amendment. This section will apply relevant case law addressing challenges to food labeling laws primarily concerned with genetically modified food products to potential laws addressing disclosure of agricultural irrigation with recycled wastewater. Ultimately, Section V concludes that this type

11. *Mike Gatto Proposes Bill to Label Food Irrigated with Contaminated Fracking Water*, CAL. ST. ASSEMB. DEMOCRATIC CAUCUS (Aug. 17, 2015, 3:07 PM), <http://asmdc.org/members/a43/news-room/press-releases/mike-gatto-proposes-bill-to-label-food-irrigated-with-contaminated-fracking-water> [hereinafter Gatto].

12. *The Hydraulic Fracturing Water Cycle*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/hfstudy/hydraulic-fracturing-water-cycle> (last visited Nov. 27, 2016).

13. *Id.*

14. *Bill History AB-14 Food Labeling: Wastewater from Oil and Gas Field Activities*, CAL. LEGIS. INFO., http://leginfo.legislature.ca.gov/faces/billHistoryClient.xhtml?bill_id=201520162AB14 (last visited Nov. 27, 2016) [hereinafter *AB-14 Bill History*].

of mandatory labeling law would likely violate the First Amendment; however, a voluntary labeling system likely would not run afoul of the First Amendment the same way mandatory requirements would.

Finally, this Note concludes that food-labeling measures, like California's proposed bill, offer valuable starting points to begin addressing heightened protection of public health and the environment in light of the practice of recycling wastewater for irrigation and its associated and unknown risks. A hypothetical mandatory state food labeling law probably will not withstand First Amendment scrutiny and is potentially preempted by federal food labeling regulations; however, voluntary labeling that discloses the use or non-use of recycled wastewater presents a creative alternative for food manufacturers. Food labeling should not be the primary method of attempting to minimize any risks caused from recycling hydraulic fracturing wastewater. Nonetheless, I am optimistic that further study of water treatment technologies, potential contamination risks, and increased consumer access to information will allow for recycled wastewater to become a resourceful solution that helps to mitigate the impacts of drought in water-stressed agricultural regions.

II. WASTES PRODUCED BY HYDRAULICALLY FRACTURED WELLS

The process of hydraulic fracturing involves a number of steps ultimately resulting in the production of minerals and large volumes of wastewater.¹⁵ Oil and natural gas wells are drilled vertically thousands of feet below the surface and sometimes horizontally, extending thousands of feet through the source rock formation.¹⁶ Once the well is drilled, the source rock is fractured when large quantities of water are pumped at high pressure into the wellbore and out of perforations at the bottom of the well casing.¹⁷ The water pumped into the well usually contains a unique mixture of chemicals, which serves various specific purposes,¹⁸ along with additives like sand or ceramic pellets, called "proppants," which help prop up the fractures in the rock.¹⁹

15. *The Process of Hydraulic Fracturing*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/hydraulicfracturing/process-hydraulic-fracturing> (last visited Nov. 2, 2016).

16. *Id.*

17. *Id.*

18. See U.S. ENVTL. PROT. AGENCY, EPA/601/R-14/003, ANALYSIS OF HYDRAULIC FRACTURING FLUID: DATA FROM THE FRACFOCUS CHEMICAL DISCLOSURE REGISTRY 1.0 39-42 (Mar. 2015), https://www.epa.gov/sites/production/files/2015-03/documents/fracfocus_analysis_report_and_appendices_final_032015_508_0.pdf.

19. See *The Hydraulic Fracturing Water Cycle*, *supra* note 12.

Once the source rock is fractured and the process is completed, oil and gas escape up through the wellbore; additionally, the pressure of the rock forces fracking fluid to return to the surface through the wellbore.²⁰ This fluid often contains both “flowback” water and “produced water.”²¹ “Flowback” refers to water used to fracture the rock, which flows back up the wellbore and contains the chemicals and proppant used in the process of hydraulic fracturing.²² “Produced water” is naturally found within the rock, which is produced along with the minerals.²³ This water moves up through the surface and through the wellhead with the oil or gas.²⁴ Produced water is sometimes very salty; however, it can “exhibit significant variations in salinity, sodicity, trace element composition, and organic geochemistry resulting from differences in environmental and geologic conditions.”²⁵

Oil and gas developers have multiple options available for disposing or reusing wastewater generated after fracturing.²⁶ These options include disposal or treating and recycling water for reuse to fracture other oil and gas wells.²⁷ Another choice, which has been utilized by fossil fuel producers and almond, pistachio, and citrus farmers in California,²⁸ involves treating the water and recycling it for use in irrigation for agricultural purposes. Recycling and reusing wastewater, either in other wells or for purposes like irrigation, present preferred creative alternatives over disposal in light of the water-energy challenge and the scarcity of water resources in the arid West.²⁹ Each of these methods, described in

20. *Id.*

21. *Id.*

22. *Id.*

23. *Id.*

24. *Id.*

25. *Produced Waters — Overview*, U.S. GEOLOGICAL SURV., <http://energy.usgs.gov/EnvironmentalAspects/EnvironmentalAspectsofEnergyProductionandUse/ProducedWaters.aspx#3822110-overview> (last visited Nov. 27, 2016) [hereinafter *Produced Waters Overview*].

26. See Wiseman, *supra* note 6, at 790-91.

27. AM. PETROLEUM INST., WATER MANAGEMENT ASSOCIATED WITH HYDRAULIC FRACTURING 17-18 (June 2010), http://www.shalegas.energy.gov/resources/HF2_e1.pdf (“Produced reservoir water and recycled flow back water can be reused for fracturing, depending on the quality of the water.”).

28. Ellen Knickmeyer, *Experts to Study Use of Oilfield Wastewater on Food Crops*, MERCED SUN-STAR (Jan. 13, 2016, 6:43 PM), <http://www.mercedsunstar.com/news/article54601950.html>.

29. The history of recycling treated municipal wastewater provides a useful analogy to the issue of recycling treated oil and gas wastewater for irrigation and fracturing wells. Municipal wastewater contains a variety of chemical and microbial contaminants, for which it is treated and later reused for irrigation and other purposes. See Ginette Chapman, *From Toilet to Tap: The Growing Use of Reclaimed Water and the Legal System’s Response*, 47 ARIZ. L. REV. 773, 773 (2005). Sewage was once considered a nuisance, but now treated municipal wastewater presents many benefits associated with meeting water demands. *Id.* at 776-81. However, costs associated with recycling municipal wastewater include environmental and

more detail below, has its costs and benefits and is subject to differing levels of regulation by both federal government and states.

A. Disposal

Wastewater is usually initially stored on-site in pits or tanks.³⁰ Sometimes wastewater is sent off-site to a disposal company.³¹ In western states, wastewater is permitted to be treated and discharged into navigable waters.³² One of the most common and controversial methods of wastewater disposal is the process of injecting wastewater into underground control wells.³³ Additionally, some states permit “landfarming” and “landtreatment,” disposal methods that involve spreading or mixing low-toxicity wastes and produced water into soils on permitted parcels of land.³⁴

Each of these steps in the process of disposal (storage, off-site disposal, discharge, and underground injection) poses its own special environmental risks to varying degrees.³⁵ Storage in open pits creates an attractive-looking (but often chemically contaminated and lethal) pond that birds might wish to wade in.³⁶ Lining of open pits might tear and allow for contaminated wastewater to leak onto the ground and leach down into groundwater.³⁷ Disposal off-site through the process of underground injection has been linked to increased seismic activity in states

health risks, negative public opinion, and financial demands for implementation and treatment. *Id.* at 781-85.

30. *The Hydraulic Fracturing Water Cycle*, *supra* note 12.

31. See Wiseman, *supra* note 6, at 790-91 (wastewater may be sent to a wastewater treatment plant, spread on roads for dust or ice control, or disposed of in an underground injection control well).

32. 40 C.F.R. §§ 435.30, 435.50, 435.52 (2016).

33. Wiseman, *supra* note 6, at 791 (noting risks of underground injection control wells, including causing small, localized earthquakes and contaminating nearby aquifers used for drinking water).

34. See *Landfarms and Landtreatment Facilities*, R.R. COMM'N OF TEX., <http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/landfarms-and-landtreatment-facilities/> (last visited Nov. 27, 2016).

35. For an excellent discussion of the broad category of environmental risks posed by hydraulically fractured wells and disposal sites, see Wiseman, *supra* note 6.

36. PEDRO RAMIREZ, JR., U.S. FISH & WILDLIFE SERV., RESERVE PIT MANAGEMENT: RISKS TO MIGRATORY BIRDS 9 (2009), <https://www.fws.gov/migratorybirds/pdf/management/reservepitmanagementriskstomigbirds.pdf> (“Birds, including hawks, owls, waterfowl, and songbirds, are attracted to reserve pits by mistaking them for bodies of water. Reserve pits also attract other wildlife such as insects, bats, small mammals, amphibians, and big game. Wildlife can fall into oil-covered reserve pits while attempting to drink along the pits’ steep sideslopes. The steep, synthetically-lined pit walls make it almost impossible for entrapped wildlife to escape. Insects entrapped in the oil can also attract songbirds . . . [t]he struggling birds . . . in turn attract hawks and owls to the oil-covered pit. The sticky nature of oil entraps birds in the reserve pits and they die from exposure and exhaustion.”).

37. Wiseman, *supra* note 6, at 789.

like Oklahoma and Ohio.³⁸ Compromised well casing might also lead to leaks in disposal wells that result in contaminating drinking water aquifers. Finally, disposing of wastewater in sealed tanks or through underground injection takes the contaminated water entirely out of the water system, preventing the treatment and reuse of that water for another beneficial use (which could have otherwise resulted in a decrease in the demand for more fresh water withdrawals).

B. Recycling to Fracture More Wells

Oil and gas companies are increasingly treating and reusing flowback water from wells to fracture other wells with good results.³⁹ A push for this type of recycling is due in part to exploration and production in dry areas.⁴⁰ Additionally, producers prefer to cut down on costs associated with hauling millions of barrels of water to oil and gas wells and later to underground disposal wells.⁴¹ A study prepared for the Ground Water Protection Council indicates that Pennsylvania recycles wastewater for reuse as hydraulic fracturing fluid in new wells more than any other state.⁴² In addition to Pennsylvania, other states, like Texas, have allowed for reuse to fracture wells.⁴³

C. Recycling for Agricultural Irrigation

Produced water has been characterized as a valuable resource due to mounting concerns about diminishing water resources and

38. See generally Justin L. Rubinstein & Alireza Babaie Mahani, *Myths and Facts on Wastewater Injection, Hydraulic Fracturing, Enhanced Oil Recovery, and Induced Seismicity*, 86 SEISMOLOGICAL RES. LETTERS 1 (2015), https://profile.usgs.gov/myscience/upload_folder/ci2015Jun1012005755600Induced_EQs_Review.pdf.

39. Nichola Groom, *Analysis: Fracking Water's Dirty Little Secret Recycling*, REUTERS (July 15, 2013, 12:53 PM), <http://www.reuters.com/article/us-fracking-water-analysis-idUSBRE96E0ML20130715>.

40. *Id.*

41. *Id.*

42. JOHN VEIL, PRODUCED WATER VOLUMES AND MANAGEMENT PRACTICES IN 2012, 93 (Apr. 2015), http://www.gwpc.org/sites/default/files/Produced%20Water%20Report%202014-GWPC_0.pdf.

43. Wiseman, *supra* note 6, at 770. See also Al Pickett, *New Solutions Emerging to Treat and Recycle Water Used in Hydraulic Fracs*, AM. OIL & GAS REPORTER (Mar. 2009), <http://www.aogr.com/magazine/cover-story/new-solutions-emerging-to-treat-and-recycle-water-used-in-hydraulic-fracs>; *Is it Possible for Oil and Gas Operators to Use Recycled Water? – Water Use in Association with Oil and Gas Activities*, R.R. COMM'N OF TEX. <http://www.rrc.state.tx.us/about-us/resource-center/faqs/oil-gas-faqs/faq-water-use-in-association-with-oil-and-gas-activities/> (last visited Nov. 27, 2016) (listing state-authorized water recycling projects that have been permitted by the Railroad Commission).

the need for next generation energy sources.⁴⁴ Recycling wastewater for further fracturing is not the only way this fluid may be put to beneficial reuse. As previously mentioned, produced waters may be discharged into navigable waters for agricultural or wildlife propagation purposes.⁴⁵ In California, flowback may be treated and blended with fresh water to reduce the number of total dissolved solids (contaminants) and used for irrigation.⁴⁶ Additionally, produced water in Montana and Wyoming may need little to no treatment before it is used for irrigation or watering livestock and wildlife, depending on the character of the rock formation from which it is produced.⁴⁷

However, over the past few years, public concern about the potential impacts of hydraulic fracturing on fresh water resources has prompted government action.⁴⁸ Specifically, much concern has focused on the chemicals used in the process of hydraulic fracturing and environmental impacts associated with spills, leaks, and inadequate treatment of water once it resurfaces as a byproduct of mineral production.⁴⁹ Concern about the risks to human health has also driven government action like the proposed bill in California requiring food labeling for food products containing ingredients that were irrigated with “oil-field wastewater.”⁵⁰ Section III will discuss current and proposed federal regulation associated with these disposal and recycling practices, serving as a backdrop to additional proposals that states, like California, might undertake to regulate the ultimate reuse and recycling of flowback and produced waters.

III. FEDERAL REGULATIONS

While Congress and the U.S. Environmental Protection Agency (EPA) have exempted oil and gas activities from federal legislation

44. See *Produced Waters Overview*, *supra* note 25.

45. See *supra* note 32.

46. See Pam Boschee, *Operators Explore Agricultural Options for Reuse of Flowback and Produced Water*, OIL AND GAS FACILITIES 10 (Feb. 2015).

47. See NAT'L RES. COUNCIL, MANAGEMENT AND EFFECTS OF COALBED METHANE PRODUCED WATER IN THE WESTERN UNITED STATES 101-04 (2010), <http://www.nap.edu/read/12915> [hereinafter EFFECTS OF CBM WATER].

48. See OFFICE OF RES. & DEV., U.S. ENVTL. PROT. AGENCY, EPA 601/R-12/011, STUDY OF THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER RESOURCES: PROGRESS REPORT 1 (2012) (“In response to public concern, the US House of Representatives requested that [EPA] conduct scientific research to examine the relationship between hydraulic fracturing and drinking water resources . . .”).

49. *Id.* Additionally, a number of states have adopted regulations requiring disclosure of the chemicals used in the process of fracking. Matthew McFeeley, *Falling Through the Cracks: Public Information and the Patchwork of Hydraulic Fracturing Disclosure Laws*, 89 VT. L. REV. 849, 859 (2014).

50. Gatto, *supra* note 11.

and regulation under a number of environmental programs,⁵¹ a few important aspects of wastewater disposal and reuse are subject (or potentially subject)⁵² to federal oversight. Regulations include prohibitions on certain unpermitted discharges under the Clean Water Act (CWA)⁵³ and regulation of disposal by underground injection wells through the Safe Drinking Water Act (SDWA).⁵⁴

Relatedly, the Food and Drug Administration (FDA) is tasked with regulating the quality of water used for irrigation⁵⁵ and “developing policy, regulations, guidance documents, and enforcement strategies governing all aspects of food labeling.”⁵⁶ The United States Department of Agriculture (USDA) is authorized to promulgate national standards governing the voluntary marketing of organic produce under the Organic Foods Production Act of 1990.⁵⁷ The organic standards prohibit the use of synthetic substances not listed on USDA’s National List of permitted synthetic substances for use as crop nutrients or soil amendments.⁵⁸ Satisfying USDA’s organic standards allows for producers to use the “organic” label to market their products.⁵⁹

51. For example, EPA issued a federal regulation in 1988 that exempted most wastes generated during the process of exploring for and producing oil and gas resources from regulation under the hazardous waste portion of the Resource Conservation and Recovery Act. See Regulatory Determination for Oil and Gas and Geothermal Exploration, Development and Production Wastes, 53 Fed. Reg. 25,446, 25,456 (July 6, 1988). Additionally, Congress explicitly exempted hydraulic fracturing from the definition of “injection” under the Safe Drinking Water Act (SDWA), which seeks to protect underground sources of drinking water from degradation caused by surface and underground activities. 42 U.S.C. § 300h(d)(1). Hydraulic fracturing with diesel fuel, however, is an exception to this exemption, and thus subject to regulation under the SDWA. *Id.*; for a description of the states’ and oil and gas industry’s lobbying effort for this exemption, see Hannah J. Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 144 n.153 (2009).

52. The Department of Interior’s Bureau of Land Management recently issued a final rule regulating hydraulic fracturing on federal and Indian lands. Oil and Gas: Hydraulic Fracturing on Indian and Federal Lands, 80 Fed. Reg. 16,128-16,222 (Mar. 26, 2015) (to be codified at 43 C.F.R. pt. 3160); see also Jessica Kershaw, *Interior Department Releases Final Rule to Support Safe, Responsible Hydraulic Fracturing Activities on Public and Tribal Lands*, BUREAU OF LAND MGMT. (Mar. 30, 2015), http://www.blm.gov/wo/st/en/info/newsroom/2015/march/nr_03_20_2015.html. However, the U.S. District Court for the District of Wyoming recently granted a motion for preliminary injunction, enjoining the Department of Interior from enforcing the rule pending court review. See generally *Wyo. v. U.S. Dept. of Interior*, 136 F. Supp. 3d 1317 (D. Wyo. 2015). However, as of the date of publication, this injunction was vacated and the case was remanded to the district court.

53. 40 C.F.R. §§ 435.30, 435.32 (1979).

54. See 40 C.F.R. §§ 144.6(b), 144.22 (2011).

55. 21 U.S.C. § 350h (2012).

56. Steve Keane, *Can a Consumer’s Right to Know Survive the WTO?: The Case of Food Labeling*, 16 TRANSNAT’L L. & CONTEMP. PROBS. 291, 294 (2006) (citation omitted).

57. Organic Foods Production Act of 1990, Pub. L. No. 101-624, §§ 2101-2123, 104 Stat. 3935 (codified at 7 U.S.C. §§ 6501-6522).

58. See 7 U.S.C. § 6504 (2012).

59. *Id.*

FDA regulates water quality for irrigation of agricultural products; however, it appears that FDA has not yet critically examined the practice of recycling wastewater from hydraulically fractured oil and gas wells for irrigation purposes.⁶⁰ After Congress passed the Food Modernization and Safety Act⁶¹ amending the Federal Food, Drug, and Cosmetic Act (FFDCA), FDA was directed to conduct rulemaking to establish “science-based minimum standards for the safe production and harvesting of those types of fruits and vegetables, including specific mixes of categories of fruits and vegetables, that are raw agricultural commodities for which the Secretary has determined that such standards minimize the risk of serious adverse health consequences or death.”⁶²

FDA issued a final rule in November 2015 addressing, in part, minimum standards for the quality of agricultural water.⁶³ Essentially, “[a]ll agricultural water must be safe and of adequate sanitary quality for its intended use.”⁶⁴ The rule implements water treatment and minimum quality standards with a focus on microbial quality only,⁶⁵ despite FDA’s acknowledgement that “[p]roduce is vulnerable to contamination with microorganisms of public health significance . . . as well as physical and chemical (including radiological) contaminants.”⁶⁶

Oil and gas activities have been exempted or excluded from a number of environmental regulations; however, many federal programs have sought to address negative impacts posed by the waste products and disposal methods associated with mineral production. Gaps in the federal scheme allow for states to take their own various approaches in regulating this aspect of the industry. Section IV will address how some states have utilized recycled wastewater for agricultural purposes and any regulatory requirements or research endeavors in place to assist states in prudently developing the practice.

60. Moreover, Clean Water Act regulations already permit discharges of produced water into navigable waters west of the 98th meridian when that produced water “has a use in agriculture or wildlife propagation.” 40 C.F.R. § 435.50.

61. FDA Food Safety and Modernization Act of 2010, Pub. L. No. 111-353 (2011).

62. 21 U.S.C. § 305h(a)(1)(A) (2012).

63. See Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 80 Fed. Reg. 74,354, 74,554 (2015).

64. *Id.*

65. See *id.* at 74,359.

66. *Id.* at 74,358 (emphasis added).

IV. DIFFERENT STATE APPROACHES TO RECYCLING WASTEWATER

Many western states, including California, Texas, Oklahoma, Wyoming, and Montana, are major players in the United States' oil and gas industry and are also experiencing abnormally dry conditions⁶⁷ in some regions. However, these states have taken different approaches to recycling well wastewater for beneficial reuse in irrigation for agricultural purposes. California has been "experimenting" with recycling treated wastewater for irrigation for at least twenty years, while researchers in Texas are only beginning to explore this option and its effects.⁶⁸ Oklahoma's governor recently formed a "fact-finding group" to investigate potential beneficial reuse options for produced water, including crop irrigation.⁶⁹ Meanwhile, Montana and Wyoming permit irrigation and watering of livestock and wildlife with produced water from coalbed methane gas wells, with no stringent consumer information disclosure requirements. This section will discuss each of these states' approaches in relation to California's proposed approach to labeling food irrigated with recycled wastewater.

A. California

Wastewater from five oil fields in California is treated and recycled for beneficial reuse.⁷⁰ For example, the Cawelo Water District has been accepting oilfield-produced water at its facilities since it executed agreements with the Valley Waste Disposal Company in 1980, Chevron USA Inc. in 1996, and the Schaefer Oil Company in 2003.⁷¹ Some areas in the San Joaquin Valley have

67. See, e.g., U.S. DROUGHT MONITOR-CALIFORNIA (Mar. 17, 2016), http://droughtmonitor.unl.edu/data/jpg/20160315/20160315_CA_trd.jpg; U.S. DROUGHT MONITOR-TEXAS (Mar. 17, 2016), http://droughtmonitor.unl.edu/data/jpg/20160315/20160315_TX_trd.jpg; U.S. DROUGHT MONITOR-OKLAHOMA (Mar. 17, 2016), http://droughtmonitor.unl.edu/data/jpg/20160315/20160315_OK_trd.jpg.

68. Brandon Mulder, *Researchers Experiment with Oilfield Wastewater to Irrigate Crops*, MIDLAND REPORTER-TELEGRAM (Jan. 14, 2016), http://www.mrt.com/news/top_stories/article_308ceae-bb21-11e5-85b2-afbdb2b9f8a6.html.

69. *Gov. Fallin Forms Fact-Finding Group to Look at Ways "Produced Water" Can Be Reused*, OFFICE OF GOV. MARY FALLIN (Dec. 1, 2015), http://services.ok.gov/triton/modules/newsroom/newsroom_article.php?id=223&article_id=17069 [hereinafter, Fallin].

70. MATTHEW HEBERGER & KRISTINA DONNELLY, PAC. INST., OIL, FOOD, AND WATER: CHALLENGES AND OPPORTUNITIES FOR CALIFORNIA AGRICULTURE 31 (Dec. 2015). The oilfields include Deer Creek, Jasmin, Kern River, Kern Front and Mount Poso.

71. *Agricultural Water Management Plan*, CAWELO WATER DIST. 52 (Feb. 2014), <http://www.water.ca.gov/wateruseefficiency/sb7/docs/2014/plans/Cawelo%20Final%202012%20AWMP.pdf>.

been irrigated by recycled produced water for the past thirty years.⁷² As previously noted, almond, pistachio, and citrus growers are among those farmers who have already been watering crops with recycled wastewater.⁷³ At least one producer that also markets certain food products as “organic” under USDA’s National Organic Program has been identified as a user of recycled wastewater in this region.⁷⁴

California has implemented a recycled water policy through the creation of its State Water Resources Control Board and Regional Boards.⁷⁵ Recycled water is defined as water treated for waste, and which is “suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor [sic] considered a valuable resource.”⁷⁶ Recycling wastewater from oil and gas production appears to be consistent with the definition and broader intent of water policy in California, as long as it is carried out in a way that does not negatively impact human or environmental health.⁷⁷ The Cawelo Water District currently tests produced water supplies intended for agricultural reuse on a monthly basis.⁷⁸ The District provides test results to the Central Valley Regional Water Quality Control Board for review and monitoring.⁷⁹

Despite the consistency that recycling wastewater from hydraulic fracturing for use in irrigation has with state water policy, some groups have voiced concern about the need to inform consumers of the practice.⁸⁰ Acting on this concern, California

72. CAL. ST. WATER RES. CONTROL BD., PROJECT CHARTER: FOOD SAFETY OIL FIELD WASTEWATER REUSE PANEL 1 (Jan. 12, 2016), http://www.waterboards.ca.gov/centralvalley/water_issues/oil_fields/food_safety/meetings/2016_0112_fs_of_water_proj_charter.pdf.

73. Knickmeyer, *supra* note 28.

74. See Alexander Rony, & Mark A. Kastel, *Letter to Miles V. McEvoy, Deputy Administrator National Organic Program*, CORNUCOPIA INST. (Mar. 9, 2016), http://www.cornucopia.org/wp-content/uploads/2016/03/organic-wastewater_160309.pdf; see also Trudy Bialac, *Comments to the National Organic Standards Board*, PCC NATURAL MARKETS (Oct. 5, 2015), <http://www.pccnaturalmarkets.com/issues/statements/organics/comments-to-nosb-2015-10-05.html>.

75. See generally *Recycled Water Policy*, CAL. ST. WATER RES. CONTROL BD. (Sept. 9, 2015), http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/.

76. CAL. WATER CODE § 13050(n) (2012).

77. MICHAEL KIPARSKY & JAYNI FOLEY HEIN, WHEELER INST. FOR L. & POL’Y, REGULATION OF HYDRAULIC FRACTURING IN CALIFORNIA: A WASTEWATER AND WATER QUALITY PERSPECTIVE 27 (Apr. 2013), https://www.law.berkeley.edu/files/ccelp/Wheeler_HydraulicFracturing_April2013.pdf.

78. *Cawelo and Produced Water*, CAWELO WATER DIST., <http://www.cawelowd.org/PrdWater.html> (last visited Nov. 27, 2016).

79. *Id.*

80. See generally Josh Harkinson, *These Popular Fruit and Veggie Brands May Be Grown with Oil Wastewater*, MOTHER JONES (July 24, 2015), <http://www.motherjones.com/environment/2015/07/oil-wastewater-fruits-vegetables-farms>. Representatives from the Sierra Club and the Cornucopia Institute have also called on the USDA to take a proactive step in regulating the use of recycled wastewater on foods bearing the “organic” label under

Assemb. Mike Gatto, introduced Assembly Bill 14 on August 17, 2015.⁸¹ This bill proposes to amend California's Health and Safety Code to include "Article 5: Products Irrigated with Oil and Gas Field Wastewater," which would include food labeling requirements (along with some exceptions) for manufacturers who produce packaged foods containing plants irrigated with wastewater from hydraulically fractured wells. The label would require the following statement: "This product was produced using plants irrigated with recycled or treated hydraulic fracturing or oilfield wastewater."⁸² Since the introduction of the bill, no official action was taken since it was first read. The bill subsequently died in March 2016.⁸³

B. Texas and Oklahoma

Texas has been slow to adopt widespread reuse and recycling policies due to the low cost of disposal wells: the cheapest option for disposing of flowback and produced water.⁸⁴ However, researchers from Texas A&M AgriLife Research, in conjunction with the Texas Railroad Commission, Anadarko Petroleum Corporation, Gibson Energy, and Energy Water Solutions, have formed a coalition to study the effects of irrigating cotton with recycled produced water from nearby oil and gas production in Pecos, Texas.⁸⁵

Oklahoma, like Texas, has also undertaken a preliminary investigation into the potential beneficial reuse of produced waters for crop irrigation, among other uses.⁸⁶ Developing state regulation of irrigation with treated wastewater may become a popular policy choice in Oklahoma due to the dramatic increase in small earthquakes throughout the state over the past decade. Studies

the National Organic Program. *Environmental Advocates and Organic Industry Watchdog ask USDA to Ban Use of "Produced" Wastewater from Oil and Gas Exploration in Organics*, THE CORNUCOPIA INST. (Mar. 22, 2016), <http://www.cornucopia.org/2016/03/environmental-advocates-and-organic-industry-watchdog-ask-usda-to-ban-use-of-produced-wastewater/>; see also Rony & Kastel, *supra* note 74.

81. Gatto, *supra* note 11.

82. *AB-14 Bill History*, *supra* note 14.

83. *Id.*

84. "The ubiquity of disposal wells and their lower cost compared to reuse has made them the primary option . . . [r]ecycling water has been slow to gain traction in Texas, but should increase in the long term." Jackie Benton, *Recycling Fracking Water: Drillers Reuse, Repeat*, TEX. COMPTROLLER OF PUB. ACCOUNTS (Oct. 2015), <https://www.comptroller.texas.gov/economy/fiscal-notes/2015/october/fracking.php> (internal quotation marks omitted).

85. *Growing Cotton in Texas with Recycled Produced Water*, PR NEWSWIRE (Nov. 9, 2015, 10:37 AM), <http://www.prnewswire.com/news-releases/growing-cotton-in-texas-with-recycled-produced-water-300174798.html>.

86. Fallin, *supra* note 69.

have tied this increase in earthquakes to the proliferation of underground injection control wells throughout the state.⁸⁷ The Oklahoma Corporation Commission, the state agency in charge of regulating disposal wells, recently expanded a prior “response strategy” requiring a decrease in fluid volumes injected underground to curtail further risks of triggering earthquakes.⁸⁸ While the order to reduce injection of wastes threatens oil and gas well operators with production decreases and financial losses,⁸⁹ this result may incentivize alternative forms of disposal or reuse if the state continues with this strategy. For now, however, integrating treatment and recycling alternatives are not an economical strategy for many producers.⁹⁰

C. Wyoming and Montana

Produced water from coalbed methane wells is currently used to irrigate over 8,000 acres of agricultural cropland in the Powder River Basin of Wyoming and Montana.⁹¹ However, in 2008, only 8% of the coalbed methane water produced in the Wyoming Powder River Basin was used for managed surface irrigation.⁹² A permit from the Wyoming Department of Environmental Quality is required for surface irrigation if the produced water is obtained directly from the well head.⁹³ However, if the produced water

87. See, e.g., *Induced Earthquakes Numerical Monitoring*, U.S. GEOLOGICAL SURV., <https://earthquake.usgs.gov/research/induced/modeling.php> (last visited Nov. 27, 2016) (“Fluid pressure increases within faults are believed to be the main cause of induced earthquakes.”).

88. OKLA. CORP. COMM., MEDIA ADVISORY - REGIONAL EARTHQUAKE RESPONSE PLAN FOR CENTRAL OKLAHOMA AND EXPANSION OF THE AREA OF INTEREST (Mar. 7, 2016), <http://www.occeweb.com/News/2016/03-07-16ADVISORY-AOI,%20VOLUME%20REDUCTION.pdf>.

89. See Matthew Phillips, *Boom Times for Fracking’s Toxic Wastewater Come to a Shaky End*, BLOOMBERG BUSINESSWEEK (Mar. 17, 2016, 6:00 AM), <http://www.bloomberg.com/news/articles/2016-03-17/boom-times-for-fracking-s-toxic-wastewater-come-to-a-shaky-end> (“Not only have oil prices continued to slide, causing a slowdown in the entire oil and gas industry, but regulations aimed at reducing quakes have put tight restrictions on hundreds of disposal wells . . . For the past year, the Oklahoma Corporation Commission . . . has been layering on restrictions aimed at cutting the amount of water disposed underground. On March 7, the OCC took its most aggressive step yet by ordering the operators of 400 disposal wells in central Oklahoma to cut the amount of water they inject underground. The goal is to reduce total wastewater volume in the area by 40 percent, or about 300,000 barrels a day”).

90. *Id.* (“[Estimates for costs of treating and recycling wastewater range from \$2.50 to \$5 a barrel] . . . Given the state’s 10-to-1 ratio of water to oil production, that would mean oil prices need to be at least in the \$50-a-barrel range for producers to cover their water treatment costs . . . ‘Can they do it? Absolutely. Can they do it economically? No.’”).

91. EFFECTS OF CBM WATER, *supra* note 47, at 102 (“This area comprises approximately 6,000 acres in Wyoming and 2,000 acres in Montana.”).

92. *Id.*

93. *Id.*

derives from “permitted surface impoundments,” no permit is necessary to apply it to agricultural fields.⁹⁴

Coalbed methane produced water is reused to water livestock in a number of coalbed methane projects in the Powder River Basin in Wyoming.⁹⁵ After the initial “flowback period,” produced water tends to exhibit the same characteristics of the naturally occurring salty water found in the fractured rock formation.⁹⁶ Sometimes, this water needs little treatment because it is less contaminated than the initial flowback, which contains chemicals and proppant used in injection; however, some formations produce briny waters that require a certain level of treatment or blending to allow for safe consumption by livestock and wildlife.⁹⁷ Additionally, salty produced waters may not be suitable for irrigation.⁹⁸ Salts may accumulate in the crop’s root zone, preventing the plants from taking up sufficient volumes of water, which reduces crop yields.⁹⁹

While some states already allow for recycling wastewater for agricultural purposes, this practice is prudently limited to water that meets certain water quality standards.¹⁰⁰ Despite the standards already in place, many people are still skeptical of the practice.¹⁰¹ Concerned consumers are already demanding action to address the practice in the context of regulating organic produce standards, while lawmakers have considered requiring food labels to disclose the use of wastewater for irrigation on any produce, organic or conventional.¹⁰² Section V will look further in depth at the federal food labeling regulatory system already in place and the types of challenges that state labeling requirements may face as a result of federal preemption and First Amendment limitations.

V. FOOD LABELING REQUIREMENTS FOR FOOD IRRIGATED WITH OIL AND GAS WASTEWATER

So far, this Note has summarized the process of hydraulic fracturing and outlined the general background regulatory framework in place for dealing with waste fluids that return to the surface once oil and gas well operations have commenced. While

94. *Id.*

95. *Id.* at 103-04.

96. *Frac Water Reuse Technologies*, ANGUIL AQUA SYSTEMS, <http://www.anguil.com/frac-water-recycling> (last visited Nov. 27, 2016).

97. See EFFECTS OF CBM WATER, *supra* note 47, at 103-04.

98. See generally R.S. AYERS & D.W. WESTCOT, WATER QUALITY FOR AGRICULTURE (1985), <http://www.fao.org/docrep/003/T0234E/T0234E00.htm>.

99. *Id.* at § 1.2.1.

100. *Cawelo and Produced Water*, *supra* note 78.

101. See *supra* note 80.

102. *Id.*; see also Gatto, *supra* note 11.

some aspects of federal law touch on wastewater in relation to irrigation, there are apparent gaps in the law with respect to this practice. For example, national organic standards issued by USDA have not kept pace with the growing practice of irrigation with wastewater. Section IV detailed different state approaches concerning alternative uses for recycled wastewater, primarily focusing on California's proposed bill to label foods irrigated with wastewater. This section will now discuss the broader legal framework for food labeling requirements and prohibitions, the substance of potential food labeling laws related to the use of recycled wastewater for irrigation, and the strength of any legal challenges to food labeling laws, like California's proposed policy.

Laws addressing disclosure of irrigation by recycled wastewater could include mandated labeling or provide a framework for voluntary labeling, similar to FDA's voluntary labeling guidelines for genetically engineered food products.¹⁰³ Both mandated and voluntary labeling might include disclosure of either the use or non-use of recycled wastewater as an agricultural production method. These laws may be challenged both on First Amendment grounds and federal preemption grounds, with the strength of such claims turning critically on whether the labeling is mandatory or voluntary. The general federal regulatory background for food labeling is discussed below, followed by an analysis of the strengths and weaknesses of proposed labeling laws when challenged under the First Amendment.¹⁰⁴

A. Food Labeling Legal Framework

The FDA regulates food labeling requirements at the federal level under the Federal Food, Drug, and Cosmetic Act, and the Nutrition Labeling and Education Act. The FFDCA requires mandated food labeling to be truthful and not misleading.¹⁰⁵ The FFDCA specifically prohibits “[t]he introduction or delivery for

103. See U.S. FOOD & DRUG ADMIN., GUIDANCE FOR INDUSTRY: VOLUNTARY LABELING INDICATING WHETHER FOODS HAVE OR HAVE NOT BEEN DERIVED FROM GENETICALLY ENGINEERED PLANTS (2015), <http://www.fda.gov/food/guidanceregulation/guidancedocumentsregulatoryinformation/ucm059098.htm>.

104. This Note will focus solely on First Amendment implications and analysis. While preemption principles and relevant statutory provisions are outlined below, analysis related to their application to a hypothetical “irrigated with fracking water” label is beyond the scope of this Note. Nonetheless, a recent decision from the U.S. District Court for the District of Vermont, now on appeal to the Second Circuit, provides a useful example of federal preemption analysis applied to a state-mandated food label requirement. See *Grocery Mfrs. Ass'n v. Sorrell*, 102 F. Supp. 3d 583 (D. Vt. 2015).

105. Karen A. Goldman, *Labeling of Genetically Modified Foods: Legal and Scientific Issues*, 12 GEO. INT'L & ENVTL. L. REV. 717, 757 (2000).

introduction into interstate commerce any food . . . that is adulterated or misbranded.”¹⁰⁶ “[L]abeling means all labels and other written, printed, or graphic matter (1) upon any article or any of its containers or wrappers, or (2) accompanying such article.”¹⁰⁷ Material changes in the composition of food must be disclosed.¹⁰⁸ Voluntary labeling is also permitted so long as it is truthful and not misleading.¹⁰⁹

Since the passage of the FFDCFA, food labels have been required to include a list of the “accurate name of the food, the name and the address of the manufacturer, a statement of the quantity of contents, and, under most circumstances, a list of ingredients.”¹¹⁰ Other requirements include information about whether the food product is an imitation, whether it includes artificial flavors, colors, or chemical preservatives, and the presence of any “major food allergens.”¹¹¹

The Nutrition Labeling and Education Act of 1990 (NLEA) amended the FFDCFA and established mandatory nutrition labeling for packaged foods. Accordingly, a food is misbranded unless its label bears certain nutrition information like the serving size, total number of servings, and calorie content per serving.¹¹² The NLEA amendments to the FFDCFA also added an express preemption provision applying to state labeling requirements not identical to those required under the FFDCFA and the NLEA.¹¹³ The express preemption provision does not preempt state requirements identical to those required under the NLEA and FDCA.¹¹⁴ Further, implied preemption may apply to state labeling requirements if not expressly preempted by the statute. The two types of implied preemption that are of most consequence to food labeling are conflict preemption and objective and purposes preemption.¹¹⁵ Determining whether either form of implied federal preemption applies to a state requirement involves the aid of two important principles: (1) considering Congress’s purpose in enacting a particular federal statute and (2) applying a “presumption against preemption” of the state law in issue.¹¹⁶

106. 21 U.S.C. § 331(a) (2012).

107. 21 U.S.C. §321(m) (2012) (internal quotations omitted).

108. Goldman, *supra* note 105, at 757.

109. *Id.*

110. Winters, *supra* note 10, at 823 (internal citations omitted).

111. *Id.* at 824.

112. 21 U.S.C. § 343(q) (2012).

113. 21 U.S.C. §343-1 (2012).

114. Winters, *supra* note 10 at 832-33.

115. *Id.* at 834.

116. *Id.* at 834-35.

The “organic” food label is separately regulated under USDA’s National Organic Program.¹¹⁷ Labeling a food product as “organic” is entirely voluntary under the National Organic Program, but USDA assumes that “producers and handlers choose to label their organic products and display the USDA seal to the extent allowed [by regulation] . . . to improve the marketability of their organic product[s].”¹¹⁸ In order to place the “organic” label on a product, the production and handling of the product must meet certain standards. These standards include the requirement that any synthetic substances applied to crops as a crop nutrient or soil amendment must be on the National List of synthetic substances allowed by USDA.¹¹⁹

Synthetic substances allowed for use in organic crop production include various substances for use as disinfectants, herbicides, compost feedstocks, slug or snail bait, and soil amendments, among many other uses.¹²⁰ Synthetic substance present in recycled oil- and gas-production wastewater, even after treatment, might not fall within this list of permitted substances and uses. Indeed, in 2015, testing for wastewater intended for treatment and irrigation in California detected the presence of benzene and acetone.¹²¹ Thus, applying recycled wastewater on products that producers intend to market as “organic” might in fact not satisfy current standards.

B. Potential Challenges to State Food Labeling Requirements

Food labeling requirements are often challenged both on First Amendment and federal preemption grounds, given the FFDCAs and NLEA’s complicated preemptive effects. This Note will primarily focus its analysis on potential First Amendment challenges; however, whether an “irrigated with fracking water” state law is federally preempted remains an open question. Food

117. See NAT’L ORGANIC PROGRAM, PREAMBLE TO FINAL RULE, <https://www.ams.usda.gov/sites/default/files/media/NOP%20Preamble%20Full%20Version.pdf> (“Except for exempt and excluded operations, each production or handling operation or specified portion of a production or handling operation that produces or handles crops, livestock, livestock products, or other agricultural products that are intended to be sold, labeled, or represented as ‘100 percent organic,’ ‘organic,’ or ‘made with organic (specified ingredient or food group(s))’ must be certified. Certified operations must meet all applicable requirements of these regulations.”).

118. NAT’L ORGANIC PROGRAM, PREAMBLE TO LABELING, <https://www.ams.usda.gov/sites/default/files/media/NOP%20Labeling%20Preamble.pdf>.

119. *Id.*

120. See 7 C.F.R. § 205.601 (2015).

121. AMEC FOSTER WHEELER ENVT. & INFRASTRUCTURE, INC., TECHNICAL REPORT: RECLAIMED WATER IMPOUNDMENTS SAMPLING (2015), http://www.waterboards.ca.gov/centralvalley/water_issues/oil_fields/information/disposal_ponds/chevron/2015_0615_com_ch evron_cawello.pdf.

manufacturers may use the First Amendment as a shield from food-labeling requirements, like California's proposed bill that demanded consumer notification of the production method for produce irrigated with wastewater through food labeling. The First Amendment declares that "Congress shall make no law . . . abridging the freedom of speech, or of the press" ¹²² This prohibition is generally understood to apply to any official of the federal government. ¹²³ Moreover, through incorporation by the due process clause of the Fourteenth Amendment, the First Amendment also applies to government action at the state and local level. ¹²⁴ The right to free speech also includes the right not to speak. ¹²⁵ Thus, if California's bill had become law and mandated labeling of manufactured food products containing produce irrigated with wastewater, manufacturers could have challenged the labeling requirement as a violation of their First Amendment protection from "compelled speech."

Commercial advertising is a form of commercial speech that is protected by the First Amendment. ¹²⁶ However, commercial speech is not afforded the same level of protection as other forms of speech, like political or artistic speech. In 1980, the Supreme Court, in *Central Hudson Gas and Electric Corp. v. Public Service Commission of New York*, adopted a test for intermediate scrutiny of restrictions on commercial speech, rather than apply stricter rules that test restrictions on political and artistic speech. ¹²⁷

Under *Central Hudson's* intermediate scrutiny test, courts must first consider whether the speech concerns lawful activity and whether that speech is false or misleading. ¹²⁸ Assuming the speech concerns lawful activity and it is neither false nor misleading, the speech may be restricted only if the regulation "directly advances a substantial governmental interest" and the restriction is "not more extensive than necessary to serve that interest." ¹²⁹ While this test

122. U.S. CONST. amend. I.

123. RICHARD J. BONNIE & RUTH GAARE BERNHEIM, *PUB. HEALTH L., ETHICS, AND POL'Y* 829 (Robert C. Clarke et al. eds., 2015).

124. *Id.*

125. *United States v. United Foods, Inc.*, 533 U.S. 405, 410 (2001) ("Just as the First Amendment may prevent the government from prohibiting speech, the Amendment may prevent the government from compelling individuals to express certain views.") (citations omitted).

126. *Zauderer v. Office of Disciplinary Counsel of Sup. Ct. of Ohio*, 471 U.S. 626, 637 (1985).

127. *See Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n. of N.Y.*, 447 U.S. 557, 573 (1980).

128. *Id.* at 564.

129. *Id.* at 573. This last requirement essentially demands "narrow tailoring" that will achieve a "reasonable fit" between the government's objective and the means chosen to reach that objective. *Id.* However, the means chosen need not be the least restrictive. *Id.*

has largely been applied to *restrictions* on marketing of products that affect the public health, it is not clear whether the *Central Hudson* test applies to other types of regulation like *mandated disclosures* of information about particular products, such as food labeling for production methods.¹³⁰

The Supreme Court has not yet definitively ruled on whether the *Central Hudson* test applies to mandated speech; however, the Second Circuit has addressed the issue in at least two cases reaching inapposite results.¹³¹ First, the Second Circuit applied the *Central Hudson* test to a Vermont law requiring disclosure of the use of a protein growth hormone used in dairy production, ultimately holding that the government's interest was not substantial enough to withstand review.¹³² Years later, the Second Circuit reached a different result in addressing a New York law mandating disclosure of calorie information on chain restaurant menus, ultimately deferring to the local government's public health rationale for the requirement.¹³³ These cases demonstrate that the strength of a First Amendment attack on an "irrigated with fracking water" label requirement depends on whether the court applies the less stringent test under *Zauderer* or the heightened review under *Central Hudson*.

An ongoing discussion about mandating food labeling for products containing "genetically modified organisms" or "GMOs" provides a relevant example for how challenges to an "irrigated with fracking water" food label might play out in court. Historically, in regulating food labeling under the FFDCA, FDA has not required disclosures or labeling of information related to a products method of manufacture.¹³⁴ Rather, food-labeling requirements have

130. BONNIE & BERNHEIM, *supra* note 123, at 832.

131. These different results may be due to a different make-up of judges on the Second Circuit or in different interpretations of the types of information requiring disclosure under the different state laws. Compelled disclosures of factual information that are reasonably related to preventing consumer deception are reviewed under a rational basis test. *See Zauderer*, 471 U.S. at 651 ("[I]n virtually all our commercial speech decisions to date, we have emphasized that because disclosure requirements trench much more narrowly on an advertiser's interests than do flat prohibitions of speech, warnings or disclaimers might be appropriately required in order to dissipate the possibility of consumer confusion or deception . . . We recognize that unjustified or unduly burdensome disclosure requirements might offend the First Amendment by chilling protected commercial speech. But we hold that an advertiser's rights are adequately protected as long as disclosure requirements are reasonably related to the State's interest in preventing deception of consumers.") (internal citations and quotation marks omitted).

132. *See Int'l Dairy Foods Ass'n v. Amestoy*, 92 F. 3d 67, 72 (2d Cir. 1996). Whereas, compelled disclosures for other purposes (besides preventing consumer deception) appear to be reviewed under *Central Hudson's* intermediate scrutiny test.

133. *See N.Y. St. Rest. Ass'n v. N.Y.C. Bd. of Health*, 556 F. 3d 114, 136 (2d Cir. 2009).

134. Goldman, *supra* note 105, at 724.

historically focused on the composition of the food product rather than the method of its production.¹³⁵ Mandated disclosures that food has been irradiated is the only instance in which FDA has required disclosures informing consumers of a method of manufacture.¹³⁶ However, this requirement is limited only to irradiated food when the characteristics of that food as a whole are affected by the irradiation.¹³⁷ With this precedent in mind, FDA has generally treated genetically engineering food products “like other traditional or modern techniques of food crop production or development; the method of development need not be disclosed in the label.”¹³⁸

Disclosing the use of an injectable protein growth hormone, which stimulates milk production in dairy cows, highlights First Amendment implications in the context of food labeling for GMOs.¹³⁹ While the milk itself is not genetically modified, public outcry against the use of the injectable growth hormone led Vermont to pass a law mandating food labeling on milk that disclosed the manufacturer’s use of the hormone for milk production.¹⁴⁰ This law was successfully challenged on First Amendment grounds by a group of dairy manufacturers’ associations when the Second Circuit held that the law failed the *Central Hudson* test.¹⁴¹ According to the Second Circuit, Vermont failed to establish that it had a substantial government interest in requiring the food label.¹⁴² According to the Second Circuit, Vermont’s sole expressed interest for the requirement was “consumer curiosity.”¹⁴³ While the court sympathized with the consumers’ curiosity, it could not “permit the state of Vermont to compel dairy manufacturers to speak against their will.”¹⁴⁴

Challenging a *voluntary* food labeling law under the First Amendment would likely yield a different result. A law merely

135. *Id.*; see also *United States v. Ninety-Five Barrels (More or Less) Alleged Apple Cider Vinegar*, 265 U.S. 438, 445 (1924) (“When considered independently of the product, the method of manufacture is not material. The [Food and Drugs Act of June 30, 1906, Pub. L. No. 59-384, 34 Stat. 768] requires no disclosure concerning it.”)

136. Goldman, *supra* note 105, at 724-25.

137. *Id.* at 725 (for example, changing flavors or shelf life).

138. *Id.* at 726.

139. Genetically engineered bacteria produce bovine somatotrophin (BST), which is injected into cows for milk production. “Recombinant bovine somatotropin (rBST) is a version of BST produced in laboratories through recombinant DNA technology. rBST is injected into the bloodstream of a cow to supplement the amount of BST naturally produced. It stimulates lactation and boosts milk production in treated cows by increasing the efficiency with which supplemented cows convert feed into milk.” *Int’l Dairy Foods Ass’n v. Amestoy*, 898 F. Supp. 246, 248 (D. Vt. 1995).

140. *Int’l Dairy Foods Ass’n v. Amestoy*, 92 F. 3d 67, 73 (2d Cir. 1996); See also VT. STAT. ANN. TIT. 6, § 2754 (terminated).

141. *Int’l Dairy Foods Ass’n*, 92 F. 3d at 73.

142. *Id.*

143. *Id.* at n.1.

144. *Id.* at 74.

permitting voluntary labeling to inform consumers of the use or non-use of recycled wastewater in production likely does not result in “compelled speech,” so the intermediate scrutiny test under *Central Hudson* might not even apply at all. However, food product manufacturers may seek to market their products with labels disclosing that they have not been irrigated with recycled wastewater. Depending on the requirements of a voluntary labeling law and how much it regulates standards or restrictions associated with this type of marketing, manufacturers may resort to challenging those requirements as a restriction on commercial speech.

If a labeling law restricted labels voluntarily disclosing the use or non-use of recycled wastewater in the production process to irrigation practices meeting specific statutory definitions, that restriction would likely withstand a *Central Hudson* analysis. This type of restriction is analogous to a California law restricting manufacturers from labeling consumer goods as “ozone friendly,” “biodegradable,” “photodegradable,” “recyclable,” or “recycled” unless the goods meet the law’s statutory definitions of those specific terms.¹⁴⁵ The Ninth Circuit noted that the California law sought to restrict potentially misleading speech, and the state’s interests in protecting consumers and the environment were “substantial,” thus satisfying the government interest factor of the *Central Hudson* test.¹⁴⁶

The Ninth Circuit also agreed that California’s restriction on eco-labeling “directly advance[d]” the state’s substantial governmental interests.¹⁴⁷ Specifically, the court held that the restriction satisfied this prong of the *Central Hudson* test because it provided more than “ineffective or remote support” for the interest in protecting consumers and the environment.¹⁴⁸ Finally, the Ninth Circuit agreed with the district court in holding that the restriction met the “narrow tailoring” prong of the *Central Hudson* test.¹⁴⁹ In doing so, the court applied a more flexible approach to narrow tailoring, under a “more deferential ‘far-less-restrictive-means’ test for commercial speech.”¹⁵⁰

145. See *Ass’n of Nat. Advertisers, Inc. v. Lungren*, 44 F.3d 726, 727 (9th Cir. 1994).

146. *Id.* at 731-35.

147. *Id.* at 732-33.

148. *Id.* at 732 (“California seeks to guard against a direct, predictable and ongoing result of green marketing—increased sales of goods as a result of potentially specious claims or ecological puffery about products with minimal environmental attributes. This supposition is sufficiently reasonable and substantiated to support the district court’s finding of an adequate fit under the third prong of the *Central Hudson* test.”).

149. *Id.* at 735.

150. *Id.*

Applying the Ninth Circuit's analysis in *Lungren* would likely sustain a state law restricting voluntary food labeling for disclosure of the use or non-use of recycled oil and gas wastewater for irrigation, if it restricts such labeling only to products whose production methods comply with statutory definitions. A state must clearly articulate its substantial interest in protecting consumers and the environment from misleading claims that a product has not been irrigated with such water. Producers may wish to market their food products as "frack-water free" to consumers wary of recycled wastewater in their food system. Conversely, producers may decide to advertise their products as part of a "sustainable" system that treats and recycles water from other industries. Either way, states have a legitimate interest in ensuring that unreliable statements do not mislead consumers. Statutory definitions for what constitutes "use" or "non-use" of wastewater in irrigation may help to ensure consistency in marketing food products. Ensuring consistency appears to "directly advance" the substantial government interest, and it is likely less restrictive than other methods of protecting consumers and the environment, like restricting the use of recycled wastewater in irrigation altogether. Thus, in the First Amendment context, states may be more successful in defending a voluntary labeling law than mandating disclosure of this specific production method.

VI. CONCLUSION

Despite the enormous consumption of water used in the hydraulic fracturing process,¹⁵¹ along with increased drought conditions across oil- and gas-producing states, it is unlikely that hydraulic fracturing will cease in the United States anytime soon. However, further development of alternatives, like recycling wastewater for irrigation, may help develop safer, creative solutions to the water-energy challenge. These future solutions may help mitigate the impacts of drought in agricultural oil- and gas-producing regions; however, this response is riddled with gaps in federal and state law, policies subject to a number of plausible legal challenges, and little research quantifying specific risks posed by recycling wastewater for agricultural purposes.

This Note has discussed some of the ways that different states are responding to the water-energy challenge in the context of recycling wastewater for irrigation. With little federal regulation guiding this sort of recycled wastewater program, states are left

151. Additionally, this consumption is merely representative of a portion of the water involved in the energy-water nexus.

experimenting with what level of regulation will best protect their citizens' health, welfare, and environment. States must balance this interest with the interest in encouraging the oil, gas, and agricultural industries to develop economically feasible solutions. California, Texas, and Oklahoma have all endeavored to study the potential impacts of recycling wastewater; moreover, water districts in California have already condoned this practice for two decades, while Wyoming and Montana have allowed for high quality produced waters to be used in agricultural irrigation and to propagate livestock and wildlife.

This Note has also explained that consumer education remains an important tool in implementing successful and accountable water recycling programs. The public's reaction to California's practices has varied widely, even prompting proposed regulation that appears to be based on the consumer's "right to know." This Note concludes that such a policy is moving the law in the right direction toward protecting human health and the environment; nonetheless, a law like Assemb. Gatto's would likely fail court review pending a First Amendment challenge. Additionally, the effectiveness of any kind of food label depends upon consumers making the ultimate informed choice to purchase or avoid the product at issue.¹⁵² Notifying the public of the use of recycled wastewater for irrigation in their food products may help educate consumers and hold producers accountable; however, this strategy should certainly not be the only method of regulating the practice.

Further research and development of optimal water treatment technologies will contribute to decreased risks associated with potential contamination resulting from irrigation with recycled wastewater. In the meantime, however, proposals like Assemb. Gatto's bill requiring labeling of such production methods for the purpose of informing consumers of potential risks represent valid policy choices. Requiring an informative food label is good policy in light of the fact that the existence of potential risks is still under review in states already irrigating crops with treated wastewaters. This situation is distinguishable from the milk-labeling context in Vermont, discussed in Section V of this Note. In the Vermont case, there was explicit scientific record evidence concluding that protein growth hormone milk was just as safe as milk produced without the

152. See Elise Golan et al., *Do Food Labels Make a Difference?...Sometimes*, U.S. DEP'T OF AGRIC. (Nov. 1, 2007), <http://www.ers.usda.gov/amber-waves/2007-november/do-food-labels-make-a-difference-sometimes> ("Empirical studies have found mixed results on the efficacy of labels in educating consumers and changing consumption behavior. These studies highlight the observation that consumers often make hasty food choices in grocery stores and usually do not scrutinize food labels.").

hormone.¹⁵³ However, this Note makes clear that a mandatory labeling law might still lose out under a First Amendment challenge if states only rely on “consumer curiosity” for the law’s legislative purpose. Ultimately, increasing consumer information regarding the use of recycled wastewater in our food system, in conjunction with technological developments and further study of risks, will help make this practice a valuable alternative to wastewater disposal and further fresh water withdrawals. In turn, this may help to allay at least one facet of the water-energy challenge.

153. See *Int’l Dairy Foods Ass’n v. Amestoy*, 92 F. 3d 67, 73 (2d Cir. 1996) (“Vermont does not claim that health or safety concerns prompted the passage of the Vermont Labeling Law . . . but instead defends the statute on the basis of strong consumer interest and the public’s right to know . . . These interests are insufficient to justify compromising protected constitutional rights.”) (internal quotation marks and citations omitted).

WE'RE ALL IN THIS TOGETHER: A FAIR SHARE APPROACH TO RENEWABLE ENERGY

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I. INTRODUCTION

The United States is on the verge of a major shift to clean, renewable energy.¹ According to President Barack Obama, the development of renewable energy and energy efficiency marks “a new era of energy exploration” in the U.S.² In a joint address to Congress on February 24, 2009, President Obama called for

* B.S. Real Estate, Florida State University (2010); J.D. Candidate, Florida State University College of Law (2017); I am grateful to Professor Hannah J. Wiseman for her guidance and invaluable suggestions; my parents, Jonathan and Carina Tomassetti, for encouraging me to attend law school; and finally to my grandmother, Jackie Tomassetti, for reading iterations of this Note during its development.

1. See *Clean Tech Now*, DEP'T OF ENERGY, <http://energy.gov/clean-tech-now> (last visited Nov. 27, 2016) (explaining that the falling costs of clean energy technologies is creating an increase in demand and deployment of land-based wind power, solar panels, electric cars, and LED lighting).

2. *President Obama Touts Clean Energy on Earth Day*, DEP'T OF ENERGY, (Apr. 29, 2009, 11:04 AM), <http://energy.gov/eere/geothermal/articles/president-obama-touts-clean-energy-earth-day>.

doubling the renewable energy generation capacity within the next three years.³ Since taking office, the President has made the largest investment to clean energy of any administration, which increased solar generation thirty-fold and tripled electricity production from wind power.⁴ In 2013, the President restated his commitment to renewable energy and expanded his plan for a clean energy economy.⁵ With expansive policy in place, the U.S. is committed to leading the renewable energy expansion at the federal level. States, too, have incentivized the construction of large quantities of renewable energy infrastructure through policies that require minimum amounts of electricity to come from renewable sources or that guarantee a certain minimum payment for electricity from renewable sources that is sold to utilities.⁶ However, even with federal and state support, local opposition continues to frustrate renewable energy development.

Currently, one of the greatest barriers to renewable energy is local opposition.⁷ Landowners view renewable developments as threats to local aesthetics and property values.⁸ As a result,

3. The White House, *Remarks of President Barack Obama – Address to Joint Session of Congress*, WHITEHOUSE.GOV (Feb. 24, 2009), <https://www.whitehouse.gov/the-press-office/remarks-president-barack-obama-address-joint-session-congress>.

4. See *A Historic Commitment to Protecting the Environment and Reversing Climate Change*, WHITEHOUSE.GOV, <https://www.whitehouse.gov/climate-change#section-impacts> (last visited Nov. 27, 2016) (explaining how the Obama administration increased solar and wind generation in order to combat climate change).

5. *Id.*

6. Brannon P. Denning, *Environmental Federalism and State Renewable Portfolio Standards*, 64 CASE W. RES. L. REV. 1519, 1529-31 (2014).

7. See generally Hannah Wiseman, Lindsay Grisamer & E. Nichole Saunders, *Formulating A Law of Sustainable Energy: The Renewables Component*, 28 PACE ENVTL. L. REV. 827 (2011) (explaining that environmental reviews, property rights, and transmission infrastructure are barriers to renewable energy); See also Hannah Wiseman, *Expanding Regional Renewable Governance*, 35 HARV. ENVTL. L. REV. 477, 502-03 (2011) (describing how a wind developer had to get zoning approval from four different New York towns to construct wind turbines).

8. See ENVINT CONSULTING & ONTARIO SUSTAINABLE ENERGY ASS'N, GUIDE TO DEVELOPING A COMMUNITY RENEWABLE ENERGY PROJECT IN NORTH AMERICA 10 (2010), <http://www.communityplanning.net/pub-film/pdf/GuideToDevelopingACREProject.pdf> (noting that common local concerns with renewable energy include wildlife, noise, and visual impacts); See Evan Hendershot, *Wind farm denied in Davison County*, THE DAILY REPUBLIC (Feb. 9, 2016), <http://www.mitchellrepublic.com/news/local/3943832-wind-farm-denied-davison-county> (describing a town commission's decision to deny a permit for a wind farm because local residents expressed concerns with the projects effect on their properties); See also Tony Davis, *Solar farm fails to get support from neighbors*, ARIZONA DAILY STAR (Apr. 9, 2011), http://tucson.com/business/local/solar-farm-fails-to-get-support-from-neighbors/article_e9b81880-42f0-5fe2-9fad-8c1ec583df11.html (describing how a solar developer struggled to get local approval because homeowners were concerned about property values and the visual impact of the solar panels).

local governments have enacted zoning ordinances throughout the country to restrict or prohibit the development of renewable infrastructure.⁹

Local reluctance to aid in the expansion of renewable infrastructure raises the difficult issue of how to best allocate land use regulatory authority between states and local governments. Some states have overcome community opposition by broadly invalidating local land use controls that prevent renewable infrastructure.¹⁰ Such legislation is successful at promoting renewable development, but ignores local expertise about the unique conditions affecting the area. Other states have taken a “hands off” approach to local land use control with respect to renewable energy, thereby frustrating renewable energy development.¹¹ With such inconsistency surrounding renewable energy land use authority, developers are apprehensive about moving forward with renewable energy projects.¹² Therefore, a uniform structure is necessary to promote the growth of renewable energy, as encouraged by the President and by a growing number of state laws. This structure must balance local concerns surrounding renewable development with the public need to expand the clean energy economy.

Similar to renewable energy, affordable housing faces local opposition when developers propose such housing in the neighborhoods of residents.¹³ Local residents and business owners believe that affordable housing will decrease property values, reduce public health and safety, and ruin the aesthetics of the area.¹⁴ However, unlike renewable energy, states have successfully encouraged affordable housing development by using Fair Share Plans to

9. See generally *Zimmerman v. Bd. Of Cty. Comm’rs*, 218 P.3d 400 (Kan. 2009) (where a Kansas municipality was allowed to ban wind development); See, e.g., *Ecogen, LLC v. Town of Italy*, 438 F. Supp. 2d 149 (W.D.N.Y 2006) (affirming the validity of a town moratorium prohibiting the construction of windmills).

10. See Minn. Stat. § 216F.07 (2015) (“The site permit [for wind conversion systems] supersedes and preempts all zoning, building, or land use rules, regulations, or ordinances adopted by regional, county, local, and special purpose governments.”); FLA. STAT. § 163.04(1) (2016) (prohibiting the “adoption of an ordinance by a governing body . . . which prohibits or has the effect of prohibiting . . . solar collectors.”).

11. Patricia E. Salkin & Ashira Pelman Ostrow, *Cooperative Federalism and Wind: A New Framework for Achieving Sustainability*, 37 HOFSTRA L. REV. 1049, 1065 (2009) (explaining that wind turbine siting is under the “aegis of local governments” in Iowa, New York, Texas, Idaho, Utah, and Illinois).

12. See Jaron L. Hudgins, *Alternative Energy in the U.S. Energy Supply: Current Trends and Recommendations for the Future*, 8 TEX. J. OIL GAS & ENERGY L. 383, 405-06 (2013) (explaining that marketability is “by far the greatest challenge for alternative energy projects”).

13. Tim Iglesias, *Managing Local Opposition to Affordable Housing: A New Approach to NIMBY*, 12 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 78 (2002).

14. Justin D. Cummins, *Housing Matters: Why Our Communities Must Have Affordable Housing*, 28 WM. MITCHELL L. REV. 197, 212 (2001).

balance local concerns with the public need for affordable housing.¹⁵ Fair Share Plans accomplish this by allocating a proportionate share of the needed affordable housing in the state to each municipality, county, and city located within the state's jurisdiction.¹⁶ By allocating the need to each locality, Fair Share Plans further the state goal of developing affordable housing while simultaneously allowing municipalities to control the growth and development of affordable housing according to its unique area characteristics.

This Note seeks to reconcile the uncertainty surrounding land use authority in renewable energy by implementing a Fair Share Plan similar to Fair Share Affordable Housing Plans. Section II expands on the power of local governments to zone out renewable energy and articulates the concerns local communities have with renewable energy development. Section III outlines the various approaches to renewable energy zoning practices in the U.S., concluding that none of them effectively balance renewable energy and community-based goals without substantially curtailing valuable local land use decision making authority. Section IV describes Affordable Housing and Fair Share Plans. Section V analyzes fair share affordable housing plans throughout the country and extracts the essential elements for renewable energy. Section VI combines and modifies those elements and proposes a fair share plan for renewable energy. This "Fair Share Renewable Energy Plan" would allow communities to weigh their unique local costs and decide how to accommodate renewable energy development within their state.

II. RENEWABLE ENERGY DEVELOPMENTS

In response to climate change, Americans have become increasingly aware of the potential of renewable energy to decrease emission of greenhouse gases and reduce the nation's dependence on fossil fuels. With continuing cost-efficient improvements to renewable energy technologies, there has been an increase in renewable energy development throughout the country. As a result, solar and wind power are the fastest growing sources of electric generation in the U.S.¹⁷ Yet, renewable energy developments can be

15. *Infra* section V describing New Jersey, Massachusetts, and Connecticut's Fair Share Affordable Housing Plans.

16. *Adopt fair-share requirements for affordable housing*, SMART GROWTH AMERICA, <http://old.smartgrowthamerica.org/guides/smart-growth-at-the-state-and-local-level/housing-policy/adopt-fair-share-requirements-for-affordable-housing/> (last visited Nov. 27, 2016).

17. Chris Mooney, *Here's how much faster wind and solar are growing than fossil fuels*, WASH. POST (Mar. 9, 2015), <https://www.washingtonpost.com/news/energy-environment/wp/2015/03/09/heres-how-much-faster-wind-and-solar-are-growing-than-fossil-fuels/>.

impeded by local opposition because such developments intrude into neighborhoods, raising various concerns about the aesthetics, the environment, and property values.¹⁸

A. Solar and Wind Energy Developments

Renewable energy is generally defined as energy collected from resources that are rapidly replaced by natural processes.¹⁹ In 2014, solar and wind energy generation constituted 22% of the total energy generation for renewables.²⁰ Furthermore, the U.S. Energy Information Administration projects that solar and wind generation will make up the most electricity generation additions in 2016.²¹ To understand the impact of such renewable energy projects, one must understand the major types of wind and solar generation developments. Typically, wind and solar generation are broken down into three major types: utility-scale generation, distributed generation, and community-scale generation.²²

Utility-scale generation is a wind facility (wind farm) or solar facility (solar farm) that generates a large quantity of electricity from a single location and transmits the electricity to users through a transmission system.²³ At the utility scale, wind farms consist of many large industrial wind turbines.²⁴ Industrial wind turbines can reach sizes well over 400 feet high.²⁵ These turbines have blades that are between 112 and 176 feet long and sit atop towers with heights ranging between 197 feet and 443 feet.²⁶ On average, wind farms require eighty-five acres of land in order to produce one

18. See *supra* note 8. See also Salkin & Ostrow, *supra*, at 1069-77.

19. *Renewable Energy Explained*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energyexplained/index.cfm?page=renewable_home (last visited Nov. 27, 2016).

20. *Total Energy Review*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/totalenergy/data/monthly/> (last visited Nov. 27, 2016).

21. *Today In Energy*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/todayinenergy/detail.cfm?id=25172> (last visited Nov. 27, 2016).

22. Office of Indian Energy and Economic Dev., *Utility-Scale and Distributed Solar Energy Generation*, TRIBAL ENERGY & ENVTL. INFO. CLEARINGHOUSE, <http://teeic.indianaffairs.gov/er/solar/restech/tech/index.htm> (last visited Nov. 27, 2016); Office of Indian Energy and Economic Dev., *Utility-Scale and Distributed Wind Energy Generation*, TRIBAL ENERGY & ENVTL. INFO. CLEARINGHOUSE, <http://teeic.indianaffairs.gov/er/wind/restech/scale/index.htm> (last visited Oct. 12, 2016); Hannah J. Wiseman & Sara C. Bronin, *Community-Scale Renewable Energy*, 14 SAN DIEGO J. CLIMATE & ENERGY L. 165 (2013).

23. *Utility-Scale and Distributed Solar Energy Generation*, *supra* note 22; *Utility-Scale and Distributed Wind Energy Generation*, *supra* note 22.

24. *Utility-Scale and Distributed Wind Energy Generation*, *supra* note 22.

25. *Size specifications of common industrial wind turbines*, AWEO.ORG, <http://www.aweo.org/windmodels.html> (last visited Nov. 27, 2016).

26. *Id.*

megawatt of energy.²⁷ For reference, a single megawatt wind turbine can provide enough electricity to power between 225 and 300 households.²⁸ Utility-scale solar farms consist of hundreds to thousands of solar collectors.²⁹ Solar farms can use one of several technologies to generate electricity: concentrating solar power (CSP), photovoltaics (PV), or concentrating photovoltaics (CPV).³⁰ CSP solar farms use mirrors that concentrate energy from the sun to heat water in order to turn traditional steam turbines to produce electricity.³¹ PV solar farms convert sunlight directly into electricity through the release of electrons in certain types of materials, such as semiconductors.³² CPV solar farms use mirrors to concentrate sunlight into high-efficiency solar cells.³³ Regardless of the solar collector used, utility-scale solar farms use an average of 2.7 to 2.9 acres to produce 1000 megawatts of energy.³⁴ For solar energy, one megawatt powers an average of 164 homes.³⁵

Distributed generation is the generation of small-scale wind or solar energy at the individual level that is transmitted over a local area.³⁶ For wind or solar energy, individual homes, farms, or businesses may have their own wind turbine or solar units to generate electricity for personal or business use.³⁷ The wind turbines and solar units used for distributed generation are much smaller than their utility-scale facilities, typically generating enough energy to power a single home.³⁸ Unlike utility-scale generation, the excess electricity not used by the landowner can be sold

27. *Areas of industrial wind facilities*, AWE0.ORG, <http://www.aweo.org/wind-area.html>, (last visited Nov. 27, 2016).

28. *Wind Energy: Facts*, MASS. OFFICE OF ENERGY & ENVTL. AFFAIRS, <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/wind/wind-energy-facts.html#>, (last visited Nov. 27, 2016).

29. *Utility-Scale and Distributed Wind Energy Generation*, *supra* note 22.

30. *Utility-Scale Solar Power*, SOLAR ENERGY INDUSTRIES ASS'N, <http://www.seia.org/policy/power-plant-development/utility-scale-solar-power> (last visited Nov. 27, 2016).

31. *Concentrating Solar Power*, SOLAR ENERGY INDUSTRIES ASS'N, <http://www.seia.org/policy/solar-technology/concentrating-solar-power> (last visited Nov. 27, 2016).

32. *Photovoltaic (Solar Electric)*, SOLAR ENERGY INDUSTRIES ASS'N, <http://www.seia.org/policy/solar-technology/photovoltaic-solar-electric> (last visited Nov. 27, 2016).

33. *Concentrating Photovoltaic Technology*, NAT'L RENEWABLE ENERGY LABORATORY, <http://www.seia.org/policy/solar-technology/concentrating-solar-power> (last visited Nov. 27, 2016).

34. SEAN ONG, CLINTON CAMPBELL, PAUL DENHOLM, ROBERT MARGOLIS & GARVIN HEATH, NAT'L RENEWABLE ENERGY LABORATORY, *LAND-USE REQUIREMENTS FOR SOLAR POWER PLANTS IN THE UNITED STATES* (2009), <http://www.nrel.gov/docs/fy13osti/56290.pdf>.

35. *How Many Homes Can Be Powered by 1 Megawatt of Solar Energy?*, SOLAR ENERGY INDUSTRIES ASS'N, <http://www.seia.org/about/solar-energy/solar-faq/how-many-homes-can-be-powered-1-megawatt-solar-energy> (last visited Nov. 27, 2016).

36. *Utility-Scale and Distributed Solar Energy Generation*, *supra* note 22; *Utility-Scale and Distributed Wind Energy Generation*, *supra* note 22.

37. *Id.*

38. *Id.*

to the local utility company and transmitted around the local area for use.³⁹ Additionally, distributed energy generation can be more readily utilized in any geographic location because of the smaller size and reduced requirement for land.⁴⁰

Community-scale generation refers to mid-sized wind and solar sources in close geographic proximity supported by several private parties.⁴¹ To be community-scale energy, the generation must be managed by an organized group of residents and/or business owners.⁴² Typically, community-scale generation produces between five kilowatts to one megawatt of energy, which is enough to offset between 82 and 164 households.⁴³ Community-scale generation produces less energy than utility-scale, but more energy than distributed generation.⁴⁴ Unlike the other types of generation, community-scale generation needs a common source of generation wherein the solar panels or small-to medium-sized wind turbines are installed on separate properties, but the generation is sent to a common transformer or the equipment is constructed within a common area.⁴⁵

Since renewable energy developments require intensive land use, developers need local government land use approvals to construct renewable energy generation. It is through the land use approval process that local government officials and would-be neighbors hinder renewable developments by forcing developers to seek other sites, revise proposals, or block proposals entirely. The next subsection will discuss the common local concerns with renewable energy developments.

B. Local Barriers to Renewable Energy Development

Utility-scale, distributed, and community-scale renewable energy projects provide an opportunity to reduce the United States'

39. *Id.*

40. *Id.*

41. *See generally* Wiseman & Bronin, *supra* note 22.

42. *Id.* at 168.

43. KEVIN BREHM, ET AL., ROCKY MOUNTAIN INSTITUTE, COMMUNITY-SCALE SOLAR: WHY DEVELOPERS AND BUYERS SHOULD FOCUS ON THIS HIGH-POTENTIAL MARKET SEGMENT, <http://www.rmi.org/Content/Files/RMI-Shine-Report-CommunityScaleSolarMarketPotential-201603-Final.pdf> (last visited Nov. 21, 2016); *How many homes can be powered by 1 megawatt of solar energy?*, SOLAR ENERGY INDUSTRIES ASS'N, <http://www.seia.org/about/solar-energy/solar-faq/how-many-homes-can-be-powered-1-megawatt-solar-energy> (last visited Nov. 27, 2016).

44. Wiseman & Bronin, *supra* note 22, at 168.

45. *Id.* at 168-69.

carbon footprint and bring clean energy to the public.⁴⁶ Furthermore, renewable energy provides other benefits, such as reducing dependence on foreign energy resources, reducing individuals' energy-related expenses, and creating jobs.⁴⁷ Recognizing such benefits, federal efforts to incentivize renewables have increased.⁴⁸ For example, the Emergency Economic Stabilization Act of 2008 provides a 30% tax credit on the cost of installing solar electric systems and certain wind systems.⁴⁹ In addition to federal incentives, states also offer a diverse arrangement of incentives and financial mechanisms for energy efficiency such as revolving loan funds, energy performance contracting, tax incentives, rebates, and grants.⁵⁰ The goal of such incentives is to encourage the development of renewables throughout the country. Furthermore, as noted in the introduction, many states indirectly require the construction of renewable infrastructure by mandating that a certain percentage of electricity come from renewable sources.⁵¹ However, even with strong support on the federal and state level, local residents, businesses, and citizens' groups continue to oppose renewable energy projects.⁵² With such opposition, renewable energy regulation lacks uniformity and consistency throughout the country.

Local opposition to renewable energy projects is a form of NIMBY ("not in my backyard") syndrome.⁵³ NIMBYs are nearby homeowners who object to further development within their community because the greater density will adversely affect where they live.⁵⁴ In the U.S., developers need to obtain permits and approvals from zoning authorities in order to begin construction of non-minor projects.⁵⁵ NIMBYs can oppose such developments

46. Sara C. Bronin, *Building-Related Renewable Energy and the Case of 360 State Street*, 65 VAND. L. REV. 1875, 1880 (2012).

47. *Id.*

48. *Id.*

49. See Jaron L. Hudgins, *Alternative Energy in the U.S. Energy Supply: Current Trends and Recommendations for the Future*, 8 TEX. J. OIL GAS & ENERGY L. 383, 406 (2013).

50. *Incentives and Finance Mechanisms for Energy Efficiency*, ENVTL. PROT. AGENCY, https://www.epa.gov/sites/production/files/2016-03/documents/7-incentives_and_finance_mechanisms_for_energy_efficiency.pdf (last visited Nov. 9, 2016) (providing a detailed description of state incentives and financial mechanisms to encourage renewable energy).

51. *U.S. Dep't of Energy, Renewable Portfolio Standard Policies*, NC CLEAN ENERGY TECHNOLOGY CENTER (Oct. 2015), <http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2014/11/Renewable-Portfolio-Standards.pdf>.

52. See Troy A. Rule, *Renewable Energy and the Neighbors*, 2010 UTAH L. REV. 1223, 1223 (2010) (discussing how neighbors are the greatest opposition to distributed renewable energy projects).

53. See generally William A. Fischel, *Voting, Risk Aversion, and the NIMBY Syndrome: A Comment on Robert Nelson's "Privatizing the Neighborhood"*, 7 GEO. MASON L. REV. 881 (1999).

54. *Id.* at 801-803.

55. *Id.*

by voicing their concerns at the zoning and planning board review.⁵⁶ The zoning and planning board review determines whether a development project will receive the permits and approval necessary to begin construction.⁵⁷ Such reviews evaluate the proposed development in light of the site's characteristics, comprehensive plan, and local opinion.⁵⁸ Even if NIMBYs fail to stop the development at the review stage, they can use alternative regulatory tools, such as requirements for preparing environmental impact statements and protecting of endangered species, to stop the project.⁵⁹

In order to stop the development of renewable energy projects, NIMBYs often voice concerns regarding the impacts of solar panels and wind turbines on property values, aesthetics, health and safety, and the environment. A prime example of local opposition frustrating a renewable energy project through zoning regulations occurred in *Zimmerman v. Board of County Commissioners*.⁶⁰

In *Zimmerman*, landowners in Wabaunsee County, Kansas, contracted with developers in order to construct a commercial wind farm on their properties.⁶¹ Before constructing the wind farm, the developers applied to the county zoning board administrator in order to receive permitting and approval.⁶² At the time, Wabaunsee County did not have any zoning regulations relating specifically to wind farms in the county.⁶³ As such, the County officials placed a temporary moratorium on all applications for permits for wind farm projects until the zoning regulations could be reviewed.⁶⁴ Afterwards, the planning commission conducted public meetings, county-wide surveys, and focus groups about amending zoning regulations for commercial wind farms.⁶⁵ The planning commission proposed zoning amendments to the Board of County Commissioners (the "Board") which would allow commercial wind farms as a conditional use, subject to certain conditions.⁶⁶ The Board adopted the amendments permitting small wind farms, but it rejected the planning commission's amendments regulating commercial wind farms and prohibited commercial wind farms in the county.⁶⁷ The landowners sued the Board in district court seeking a judicial

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

60. *Zimmerman v. Bd. of Cty. Comm'rs*, 218 P.3d 400 (Kan. 2009).

61. *Id.* at 405.

62. *Id.*

63. *Id.*

64. *Id.*

65. *Id.* at 406.

66. *Id.* at 406-07.

67. *Id.*

declaration that the Board's actions be null and void.⁶⁸ The district court dismissed the landowners' claims reasoning that the zoning actions taken by the Board were reasonable.⁶⁹ The Supreme Court of Kansas affirmed the lower court's decision.⁷⁰

In finding that the Board's zoning actions were reasonable, the Court looked at the evidence presented showing that the conclusion reached by the Board was reasonably supported by legitimate land use-based concerns.⁷¹ For supporting evidence the Board provided transcripts of its decision to prohibit commercial wind farms.⁷² Specifically, the statements in the transcript demonstrated concerns that wind farms were "incompatible with the rural, agricultural, and scenic character of the County" and that "[wind farms] would not conform to the . . . goals and objectives that were identified by the citizens of the County and incorporated as part of the [comprehensive] [p]lan."⁷³ Additionally, the Board provided eleven reasons, accompanied by a representative sampling of evidence attached as exhibits, to support its findings in the decision.⁷⁴ The listed reasons were: "[1] general welfare; [2] zoning regulations; [3] quality of life; [4] history and culture; [5] environment, wildlife, tallgrass ecosystem; [6] surface and subsurface water; [7] infrastructure, roads and bridges; [8] aesthetics; [9] 2004 Comprehensive Plan; [10] property values in the county; and [11] tourism."⁷⁵ The Court ruled from this evidence "that the County [had] taken into account the benefit or harm involved to the community at large and has exercised a decision on that basis."⁷⁶ The Court therefore held that the zoning regulation prohibiting wind farms was reasonable.⁷⁷

Zimmerman provides an example of how renewable energy projects can be stopped by local opposition during the siting and approval process. However, the concerns that nearby landowners bring to the table should not be disregarded. The permitting process used to approve renewable developments exists to ensure that the negative impacts of turbines and solar panels are taken into account before projects may proceed.⁷⁸ As stated earlier, the

68. *Id.* at 408-09.

69. *Id.* at 409.

70. *Id.* at 432.

71. *Id.* at 412-15.

72. *Id.*

73. *Id.* at 406-07.

74. *Id.* at 408.

75. *Id.* at 408-09.

76. *Id.* at 409.

77. *Id.* at 432.

78. *See* Fischel, *supra* note 53, at 881.

most prominent concerns regarding renewable developments are property values, aesthetics, health and safety, and the environment.

The local concerns regarding renewable developments are supported by early experiences and studies in wind and solar siting. For example, the effect of wind turbines on property values has been studied by multiple groups.⁷⁹ Two of these studies indicate that there is little to no evidence that a wind facility affects property values.⁸⁰ However, these studies are not definitive and require additional findings because property values are the “composite of many factors” making it difficult to isolate the effects of wind turbines.⁸¹

Additionally, communities are concerned about the aesthetic impacts of wind and solar farms.⁸² Wind and solar farms are typically sited in rural locations which tend to have lower population densities.⁸³ Even though fewer people are affected by a renewable energy project in a rural area, residents of less populated areas typically value the tranquility and open space.⁸⁴ When renewable energy developments are proposed in their area, their reactions are subjective and varied.⁸⁵ For example, the U.S. Department of Energy (DOE) reports that some local landowners view wind turbines as “elegant and interesting,” while others feel that wind turbines are “intrusive.”⁸⁶ Either way, the visual impact of renewable projects is a concern to local landowners.

Relatedly, communities have opposed wind turbines and solar panels because of the negative impacts on public health and safety. For example, the visual burdens of wind turbines can cause “annoyance, stress and sleep disturbances.”⁸⁷ Furthermore, there are concerns related to the “shadow flicker,” which is the rotation of the turbine blades and its effects on health, as well as safety concerns related to ice throw, whereby ice that builds up on the

79. U.S. DEP’T OF ENERGY, 20% WIND ENERGY BY 2030: INCREASING WIND ENERGY’S CONTRIBUTION TO U.S. ELECTRICITY SUPPLY 118 (2008), <http://www.nrel.gov/docs/fy08osti/41869.pdf>.

80. *Id.*

81. *Id.*

82. Avi Brisman, *The Aesthetics of Wind Energy Systems*, 13 N.Y.U. ENVTL. L.J. 1, 74-80 (2005) (describing aesthetic opposition to wind turbines); *See, e.g., Ecogen, LLC v. Town of Italy*, 438 F. Supp. 2d 149, 153 (W.D.N.Y. 2006) (describing how residents expressed concern that wind turbines would negatively impact the aesthetics of the town).

83. U.S. DEP’T OF ENERGY, *supra* note 79, at 116.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Visual Health Effects and Wind Turbines*, THE SOCIETY FOR WIND VIGILANCE, <http://www.windvigilance.com/about-adverse-health-effects/visual-health-effects-and-wind-turbines> (last visited Nov. 27, 2016).

turbine blades during the winter is thrown to the ground.⁸⁸ Health concerns with solar panels relate to the emission of radio frequency electromagnetic radiation, which may cause headaches and restlessness in residents living nearby.⁸⁹

Finally, environmental concerns are focused on the preservation of wildlife and the land use impact of renewable energy projects. For example, in 2009, the U.S. Fish and Wildlife Service (FWS) estimated that “between 58,000 and 440,000 birds [were] killed each year by wind turbines in the U.S., with that number growing based on at least 23,000 commercially operating wind turbines”.⁹⁰ Also, new models of solar thermal have been found to cause bird deaths through “solar flux.”⁹¹ Solar flux occurs when the concentrated light from solar thermal technology singes the feathers of birds during flight.⁹² The loss of feathers causes the bird to lose control mid-flight and impact the ground or other objects, causing death.⁹³ In addition to the bird deaths, the large land requirement of solar and wind farms significantly affects the habitats around them.⁹⁴ Because solar farms and wind farms require so much land⁹⁵, there are increased chances of affecting the local environment.

88. U.S. DEP'T OF THE INTERIOR BUREAU OF LAND MGMT., FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT ON WIND ENERGY DEVELOPMENT ON BLM-ADMINISTERED LANDS IN THE WESTERN UNITED STATES, VOL. 1: MAIN TEXT 1-1, 3-17, 3-20 (2005), <http://windeis.anl.gov/documents/fpeis/maintext/Vol1/Vol1Complete.pdf>.

89. *Solar Energy Can Be a Health Hazard*, THE EI WELLSRING, <http://www.eiwellspring.org/solaremfhazard.pdf>, 1 (last visited Nov. 27, 2016).

90. *Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities*, U.S. FISH & WILDLIFE SERVICE, https://www.fws.gov/southwest/es/TexasCoastal/docs/Interim_Guidelines_Avian_and_Bat_Protection_Plan.pdf (last visited Nov. 27, 2016); see Patricia E. Salkin & Ashira Pelman Ostrow, *Cooperative Federalism and Wind: A New Framework for Achieving Sustainability*, 37 HOFSTRA L. REV. 1049, 1072-73 (2009) (asserting that the turbines of California's Altamont Pass wind farm were responsible for killing a significant number of birds).

91. Joe Desmond, *Setting the Record Straight: Solar Flux and Impact to Avian Species*, BRIGHTSOURCE ENERGY (Aug. 19, 2014, 3:00 PM), <http://www.brightsourceenergy.com/setting-the-record-straight-solar-flux-and-impact-to-avian-species#.VwzphPkrJpg>; Phil Taylor, *Bird deaths at Calif. power plant a PR nightmare for industry*, ENVIRONMENT & ENERGY PUBLISHING (Jan. 19, 2015), <http://www.eenews.net/stories/1060011853>.

92. Taylor, *supra* note 91.

93. Rebecca A. Kagan, et al., *Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis*, NATIONAL FISH AND WILDLIFE FORENSICS LABORATORY 1 (2014), <http://alternativeenergy.procon.org/sourcefiles/avian-mortality-solar-energy-ivanpah-apr-2014.pdf>.

94. See PAUL DENHOLM & ROBERT M. MARGOLIS, IMPACTS OF ARRAY CONFIGURATION ON LAND-USE REQUIREMENTS FOR LARGE-SCALE PHOTOVOLTAIC DEPLOYMENT IN THE UNITED STATES 2-3 (2008), <http://www.nrel.gov/docs/fy08osti/42971.pdf>.

95. See NATHAN F. JONES, LIBA PEJCHAR, & JOSEPH M. KIESECKER, THE ENERGY FOOTPRINT: HOW OIL, NATURAL GAS, AND WIND ENERGY AFFECT LAND FOR BIODIVERSITY AND THE FLOW OF ECOSYSTEM SERVICES (2015), <http://bioscience.oxfordjournals.org/content/65/3/290.full.pdf+html> (explaining that coal mining, oil extraction, and natural gas extraction also require a lot of land when considering the life-cycle land-based impacts).

Even though local objections to the installation of wind turbines and solar panels are valid, they must be weighed against the public interest in developing renewable energy. Given the importance of renewable energy, it seems conflicting to allow zealous local opposition to stop renewable development. In light of such dissonance, the next section analyzes the existing governmental models used to regulate renewable energy developments and concludes that none of them effectively balance local concerns with the state objective to facilitate renewable energy development.

III. MODELS OF RENEWABLE ENERGY REGULATION

In order for renewable energy developments to expand, efficient and consistent zoning regulations are required. However, throughout the U.S., there is inconsistency as to how best to allocate land use regulatory authority between states and local governments. Based on the amount of deference given to local governments, legal scholars have identified three common governance structures currently being utilized for the zoning of renewable energy developments.⁹⁶ These structures are (1) Deference to Local Governments, (2) Preemption of Local Governments, and (3) Dual Authority.⁹⁷ The following is a discussion of the benefits and shortfalls of the three approaches, none of which satisfactorily balances local concerns with the public need for clean energy.

A. Deference to Local Government

In the renewable energy regulatory model of deference to local government, local governments have the ultimate power to establish renewable energy ordinances. Local governments are not restricted by state laws and the state maintains a “hands-off approach” in order to preserve the local government autonomy.⁹⁸

Deference to local governments is desirable because the decisions regarding the use of land greatly impact those living

96. Troy A. Rule, *Renewable Energy and The Neighbors*, UTAH L. REV. 1223, 1242-45, 1248-54 (2010) (illustrating the collective action problem that can arise in areas with deferential community governments as it relates to building height restrictions and small wind turbines and discussing the powers of states to preempt private covenants for public policy reasons); See JAMES M. MCELISH, JR. & SARA GERSEN, STATE ENABLING LEGISLATION FOR COMMERCIAL-SCALE WIND POWER SITING AND THE LOCAL GOVERNMENT ROLE 1, 9-11 (2011), <http://www.eli.org/sites/default/files/eli-pubs/d21-02.pdf>.

97. See generally *id.*

98. See Rule, *supra* note 96, at 1242.

nearby.⁹⁹ Allowing communal decisions regarding land use is essential to creating and expressing community character and preferences because each local government has different geographic, topographic, cultural, and socioeconomic characteristics.¹⁰⁰ In other words, “[l]ocal control allows county or municipal officials to create zoning ordinances that fit that locality’s need.”¹⁰¹ Additionally, the local officials are better situated to make local land use decisions because they typically live within the county and are familiar with the local characteristics.¹⁰²

Furthermore, local control can facilitate rapid approval of renewable energy development when there is strong support.¹⁰³ For example, Saskatoon, Canada is regarded as one of the top ten areas in the world with the highest potential for solar energy because of its abundance of year-round sunshine.¹⁰⁴ In 2014, Saskatoon developed a solar city initiative calling for \$200,000 in order to retrofit municipal buildings with solar panels and to incentivize homeowners to convert to solar energy.¹⁰⁵ However, in 2015 the city’s environmental committee denied funding for the project.¹⁰⁶ In order to approve the development of solar generation, local officials have since been voicing their support.¹⁰⁷ The city’s mayor, Don Atchison, voiced his approval of the solar city initiative during the city’s environment, utilities, and corporate services committee meeting stating that he “think[s] solar is the way to the future.”¹⁰⁸

99. Salkin & Ostrow, *supra* note 90, at 1086 (explaining that “a cooperative federalist regime capitalizes on the ability of sub-national governments to serve as ‘laboratories’ by leaving room for state and local governments to experiment with regulatory design”).

100. *See* Rule, *supra* note 96, at 1251; *See also* Jerrold A. Long, *Sustainability Starts Locally: Untying the Hands of Local Governments to Create Sustainable Communities*, 10 WYO. L. REV. 1, 21 (2010) (“[L]and-use authority allows each community to make its own determinations about what it should look like, what types of land uses it will prefer, and how it should develop over time.”).

101. ALISSA DOERR, ZONED OUT: AN ANALYSIS OF WIND ENERGY ZONING IN FOUR MIDWEST STATES 15 (2014), <http://www.cfra.org/sites/www.cfra.org/files/publications/Zoned-Out-An-Analysis-of-Wind-Energy-Zoning-in-Four-Midwest-States.pdf>.

102. *See* Rule, *supra* note 96, at 1251.

103. DOERR, *supra* note 101, at 5-6.

104. Daniel Rosenbloom & James Meadowcroft, *Harnessing the Sun: Reviewing the potential of solar photovoltaics in Canada*, 40 RENEWABLE & SUSTAINABLE ENERGY REV. 488, 490 (ranking Saskatoon, Canada as having the fourth highest potential for solar energy); Phil Tank, *Mayor Voices Support for Solar Power*, SASKATOON STARPHOENIX (Mar. 9, 2016, 4:00 AM), <http://thestarphoenix.com/news/local-news/mayor-voices-support-for-solar-power> (“Saskatoon was regarded as an ideal community . . . due to its abundance of year-round sunshine.”).

105. Tank, *supra* note 104.

106. *Id.*

107. *See* Tank, *supra* note 104; *See also* Charlie Clark, *Ward 6 City Council: Saskatoon as a Solar City? We are well positioned*, (Jan. 25, 2016), <https://web.archive.org/web/20160409184757/http://www.charlieclark.ca/>.

108. Tank, *supra* note 104.

Additionally, City Council members are supporting the solar project by providing information to locals through their web-sites.¹⁰⁹ With such strong support for the solar city initiative, it is almost guaranteed that Saskatoon will have solar generation within the foreseeable future.

Despite its benefits, local deference creates a variety of problems for renewable energy development. Allowing each county, city, and municipality to create its own requirements creates a “piecemeal” system that results in unpredictability and inconsistency.¹¹⁰ For example, County A could have a stringent zoning regulation, County B a lax zoning standard, and County C could have a zoning regulation different from the other two. This is burdensome for renewable energy developers because developers have to get approval from each locality and ensure that the renewable project conforms to each locality’s regulations, which is costly and time-consuming.¹¹¹

Furthermore, getting approval for a renewable energy project under each ordinance can prove to be difficult. First off, it is hard to persuade local communities to revise their land use controls because this would require landowners to relinquish valuable rights.¹¹² Additionally, the ordinances adopted by local officials typically reflect the voice of the community.¹¹³ Also, local opposition can delay or block renewable developments. The NIMBY theory often explains opposition by residents when they do not want to deal with the effects of having a wind turbine or solar panel in their neighborhood.¹¹⁴ Renewable energy developers must overcome community opposition and local ordinances in order to construct a renewable facility in a specific area.

Altogether, there are several benefits and consequences to deferring renewable energy regulation to the local government. There are convincing grounds for local interests to be taken into

109. See Clark, *supra* note 1077.

110. Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 255 (2008) (“[T]his type of piecemeal decision making tends to ignore extralocal effects, exclude low-income outsiders, shift environmental problems to neighbors, and thwart orderly and predictable development.”).

111. See DOERR, *supra* note 101, at 5; See also Hannah Wiseman, *Expanding Regional Renewable Governance*, 35 HARV. ENVTL. L. REV. 477, 502-03 (2011) (explaining how conflicting regulations and complex zoning can act as barriers to entry for wind energy development).

112. See Rule, *supra* note 96, at 1242-45 (“Zoning ordinances and subdivision covenants give landowners exclusion rights in common airspace, rooftops, and other areas . . . protecting countless risks by restricting activities on nearby parcels.”).

113. See DOERR, *supra* note 101, at 17 (“[I]ntense local opposition to wind energy facilities is reflected in ordinances adopted by local leaders.”).

114. *Id.*

account in renewable energy zoning, especially since the local officials and residents understand the nature of their community best. However, the danger of local opinion being intolerant of renewable energy development should not be disregarded because state and federal initiatives to expand renewable energy development can be frustrated by such local opposition. Thus, local deference is an inefficient means for promoting clean energy development.

B. Preemption of Local Governments

In contrast to the local deference regulatory model for renewable development, through a preemption model, states supersede (displace) local government land use authority in order to advance statewide objectives.¹¹⁵ Under this model local governments retain some land use authority because state legislatures historically adopted statutes that delegated authority to local governments to regulate private land use.¹¹⁶ But the local government's powers are limited to those powers delegated to it by the state and can be revoked by passage of new legislation or amendments to the planning and zoning enabling laws.¹¹⁷

Preemption of local government land use regulation by states provides a variety of benefits. First, broad preemption of municipal restrictions allows the state to issue uniform standards that apply throughout the state.¹¹⁸ This results in efficient and predictable regulation for renewable energy development,¹¹⁹ thus solving the piecemeal inefficiency created by solely local deference.¹²⁰ Furthermore, broad preemption serves the state's interest because it ensures that legislative intent to increase renewable energy development within the state will be fulfilled.¹²¹ Another benefit of preemption of local renewable energy law is that it limits the

115. Rule, *supra* note 96, at 1248-54.

116. John R. Nolon, *Historical Overview of the American Land Use System: A Diagnostic Approach to Evaluating Governmental Land Use Control*, 23 PACE ENVTL. L. REV. 821, 830-31 (2006) (discussing Euclidian Zoning and how it "relied on local governments to make land use decisions" and that "[t]he role of the state was to establish the scope of local land use authority.").

117. *See id.* at 830.

118. Rule, *supra* note 96, at 1251.

119. *Id.* (stating that preemption "creates greater regulatory consistency among local jurisdictions" by amending all ordinances at once).

120. *Id.* at 1250-51 (stating that "[e]ven if it were somehow feasible to separately convince each municipality to amend its ordinances, the resulting patchwork of local regulations could create uncertainty and confusion for turbine and solar panel installers.").

121. DOERR, *supra* note 101, at 18 (asserting that "state control of wind energy zoning assures that legislative intent of increasing wind power . . . will more likely be fulfilled.").

NIMBY influence from local officials by moving the land use decision to the state level.¹²² State regulation provides for uniform energy guidelines and creates a level playing field where the developer and local opposition have an equal chance to succeed.

Florida provides an example of legislation that preempts local land use authority over distributed energy, in which “the adoption of an ordinance by a governing body . . . which prohibits . . . the installation of solar collectors, clotheslines, or other energy devices based on renewable resources is expressly prohibited.”¹²³ Many other states have implemented similar laws that invalidate local land use ordinances that hinder both distributed and utility-scale renewable energy.¹²⁴

Additionally, in *Residents Opposed to Kittitas Turbines v. State Energy Facility Site Evaluation Council*, the Supreme Court of Washington upheld the preemption of a county’s land use and zoning laws regulating wind turbine siting.¹²⁵ In *Kittitas Turbines*, the state passed the Energy Facilities Site Locations Act (EFSLA) which governs the construction and location of energy facilities in Washington, in addition to their operation conditions.¹²⁶ “EFSLA expressly preempts energy facility certification decisions by other governmental entities.”¹²⁷ In 2003, Horizon Wind Energy, LLC (Horizon) filed an application with the Energy Facility Site Evaluation Commission (EFSEC) for site certification of the Kittitas Valley Power Project (the “Project”).¹²⁸ The Project proposed the construction of 121 wind turbine generators.¹²⁹ However, Kittitas County (the “County”) had enacted a Wind Farm Resource Overlay Zone ordinance, which required developers to apply for rezoning and amendments to the comprehensive plan in order to construct a wind farm.¹³⁰ Horizon and the County attempted to site the

122. *Id.*

123. FLA. STAT. § 163.04 (2015).

124. See CAL. HEALTH & SAFETY Code § 17959.1 (LexisNexis 2015); DEL. CODE ANN. tit. 29, § 8060 (2015); IND. CODE ANN. § 36-7-2-8(b) (LexisNexis 2016); NEV. REV. STAT. ANN. § 278.0208 (LexisNexis 2013); N.H. REV. STAT. ANN. § 674:63 (LexisNexis 2015); VT. STAT. ANN. tit. 27, § 544 (2015); WIS. STAT. ANN. § 66.0401 (West 2015).

125. *Residents Opposed to Kittitas Turbines v. State Energy Facility Site Evaluation Council*, 165 Wash. 2d 275, 322 (2008).

126. *Id.*

127. *Id.* at 285.

128. *Id.* at 285.

129. *Id.* at 286.

130. *Id.* at 287-88.

wind farm in accordance to the County's Code.¹³¹ Despite negotiations, the parties could not reach an agreement and Horizon requested preemption of the County Code.¹³²

The County attempted to argue that EFSEC could not exercise its preemption authority because the state's Growth Management Act (GMA) "required EFSEC to comply with the County's comprehensive land use plan and regulations."¹³³ The GMA requires state agencies to comply with the local comprehensive plans and development regulations and amendments.¹³⁴ The Court recognized the contradiction between the GMA and EFSLA in that a "state agency cannot both preempt local laws and comply with such laws at the same time."¹³⁵ In order to resolve this tension, the Court applied the general-specific rule, which states a specific statute will always prevail over a general statute.¹³⁶ Here EFSLA represented the specific statute and "govern[ed] a discrete and specific function of certifying sites for the construction and operation of energy facilities."¹³⁷ On the other hand, GMA represented the general statute, "[applying] to the comprehensive planning and management of land within counties and cities."¹³⁸ Therefore, the Court concluded that the GMA did not repeal the preemption power delegated to the EFSEC.¹³⁹

Preemption provides the state with the ability to regulate and promote renewable energy developments consistently and in the face of local opposition. However, preemption has some obvious drawbacks. First, preemption is an aggressive means of countering community resistance by invalidating local restrictions.¹⁴⁰ As Troy A. Rule recognizes, "no two neighborhoods are identical."¹⁴¹ Consequently, broad preemption or the "one-size-fits-all approach" results in inefficiencies and inadequate consideration of localized circumstances affecting an area—thereby ignoring local issues and concerns.¹⁴² Additionally, state policy makers are unable to address all the effects renewable energy developments will have on an area because they do not have the localized knowledge of officials and townspeople who reside in

131. *Id.* at 288.

132. *Id.*

133. *Id.* at 308.

134. *Id.*

135. *Id.* at 309.

136. *Id.*

137. *Id.* at 309-10.

138. *Id.* at 310.

139. *Id.*

140. Rule, *supra* note 96, at 1248.

141. *Id.* at 1251.

142. *Id.*

the area.¹⁴³ Therefore, preemption overlooks local concerns and creates inefficiencies for renewable energy development.

In its entirety, preemption provides an effective means of promoting and encouraging renewable energy. It is prudent for states to preempt local governments in order to ensure clean energy for the future. Yet, local concerns should not be cast away in order to obtain benefits for the public good. More consideration should be given to the concerns of people who will be directly affected by the installation of renewable energy generators. As mentioned earlier, many of the effects from renewable facilities affect only the residents living nearby. Therefore, the preemption model does not adequately balance local concerns with the need for clean energy.

C. Dual Authority

In a dual authority governance structure, state and local governments share authority over the land use regulation of renewable energy projects.¹⁴⁴ This model can vary between states because it is determined by the amount of authority shared between the state and local governments. This section will break down dual authority into three categories: (1) Independent Dual Authority, (2) Defined Scope Local Regulation, and (3) State Regulation Incorporating Local Requirements.

The first type of dual authority shares the land use regulation independently between the state and local government.¹⁴⁵ In this model, state and local regulatory authorities apply separate criteria and developers must satisfy both standards before they build their renewable energy project. South Dakota uses this approach and requires wind facilities to acquire a permit from the state Public Utilities Commission (PUC).¹⁴⁶ The South Dakota Energy Facility Permit Act specifies the factors that shall be considered in any permitting decision and allows for a local committee to issue a report on the proposed project's impacts and any mitigation recommendations.¹⁴⁷ The South Dakota PUC permit for energy generation facilities does not preempt local ordinances unlike a permit for transmission facilities.¹⁴⁸ Therefore, a developer must comply with both the South Dakota PUC permit approval and the local process.

143. *Id.*

144. DOERR, *supra* note 101, at 18.

145. MCELISH, JR. & GERSEN, *supra* note 96, at 9.

146. S.D. CODIFIED LAWS § 49-41B-4 (2016).

147. S.D. CODIFIED LAWS § 49-41B-4.2 (2016); S.D. CODIFIED LAWS § 49-41B-7 (2016).

148. MCELISH, JR. & GERSEN, *supra* note 96, at 9; S.D. CODIFIED LAWS § 49-41B-28 (2016).

This model allows for the state and local government to make their own determinations for the approval of a renewable energy facility.¹⁴⁹ However, requiring approval at both levels can be strenuous and time consuming for developers because local governments may be able to veto a state decision by denying a permit or by imposing conditions that cannot be met.¹⁵⁰

Defined scope regulation is the second type of dual authority, and it provides local governments with land use authority within a range defined by the state. In this model, the local government regulates renewable energy development, but these regulations are subject to state statutes that restrict the local control.¹⁵¹ Limitations on local control encourage renewable energy projects and recognize that local governments are not well suited for certain aspects of renewable energy regulation.¹⁵² Defined scope local regulation provides for regulatory predictability and allows for local control; however, this model can suffer from vague state statutes.¹⁵³ For example, a Wisconsin statute preempts local governments from promulgating more stringent regulations with regards to wind turbine setbacks and other similar siting considerations.¹⁵⁴ Such broad state directives are good for encouraging renewable energy development.¹⁵⁵ However, they are insufficient to create substantial change at the local level because enforcing such statutes can be difficult and expensive.¹⁵⁶ Enforcement requires proving violations of the state statute, which does not provide specific requirements.¹⁵⁷ Therefore, without more specific requirements, enforcement is unlikely and local governments are likely to regulate in their own self-interest.¹⁵⁸

In the third model, State Regulation Incorporating Local Requirements, state regulatory agencies create a one-stop process by incorporating local policy requirements into the state approval process.¹⁵⁹ This process requires the state body to implement local ordinances including those local policies that differ from the state's priorities.¹⁶⁰ This model encourages local government officials to

149. MCELISH, JR. & GERSEN, *supra* note 96, at 9.

150. *Id.*

151. *Id.* at 8-9.

152. *Id.* at 8.

153. *Id.*; Rule, *supra* note 96, at 1245-46.

154. See WISC. STAT. § 66.041 (2016); Wiseman, Grisamer & Saunders, *supra* note 7, at 874-75.

155. Rule, *supra* note 96, at 1246.

156. *Id.*

157. *Id.*

158. *Id.*

159. MCELISH, JR. & GERSEN, *supra* note 145, at 11-13.

160. *Id.*

pass ordinances with clarity in order to have their concerns adequately reflected in the state approval process.¹⁶¹ For example, Oregon's Energy Facility Siting Council states the site certificate "shall require both parties to abide by local ordinances and state law."¹⁶² After issuing the site certificate, "the only issue to be decided . . . for which compliance with governing law was considered and determined . . . shall be whether the permit is consistent with the terms of the site certificate."¹⁶³ Statutes enacted in Rhode Island¹⁶⁴, Minnesota¹⁶⁵, and North Dakota¹⁶⁶ similarly require states to incorporate local requirements in their renewable energy development approval process.¹⁶⁷ State Regulation Incorporating Local Requirements provides developers with an efficient one-stop process for renewable energy projects.¹⁶⁸ However, local concerns may be overlooked because state officials may not adequately understand the localized factors resulting in the local government's policymaking process.¹⁶⁹

IV. FAIR SHARE AFFORDABLE HOUSING

The issue concerning which governance body should control land use authority is not exclusive to energy law. It is the principal argument brought forth by local governments whenever state programs encroach on the zoning and land use powers of a municipality. A sector that has faced much of the same debate is affordable housing. Similar to renewable energy developments, affordable housing has to overcome zoning ordinances and local opposition in order to be developed. However, through the use of Fair Share Plans, several states have successfully balanced local concerns regarding affordable housing with the states' goal of providing housing to its citizens. This section will provide a brief background to affordable housing followed by a break-down of various fair share programs used by states.

161. *Id.*

162. OR. REV. STAT. § 469.401(2) (2015).

163. OR. REV. STAT. § 469.401(3) (2015).

164. R.I. GEN. LAWS § 42-98-7 (2015).

165. MINN. STAT. § 216F.07 (2015).

166. N.D. CENT. CODE § 49-22-16 (2015).

167. MCELFIN, JR. & GERSEN, *supra* note 145, at 11-13 (generally describing the various state models where the state incorporates the local regulatory requirements).

168. Rule, *supra* note 96, at 1251-52.

169. *Id.*

A. Affordable Housing

“Affordable Housing” refers to “dwelling units whose total housing costs are deemed ‘affordable’ to those that have a medium household income.”¹⁷⁰ In the U.S., families who pay more than 30% of their income for housing are considered cost burdened and are therefore unable to afford the local fair-market rent for housing.¹⁷¹ According to the U.S. Department of Housing and Urban Development (HUD), “[a]n estimated 12 million renter and homeowner households now pay more than 50 percent of their annual incomes for housing. A family with one full-time worker earning the minimum wage cannot afford the local fair-market rent for a two-bedroom apartment anywhere in the United States.”¹⁷²

Similar to renewable energy development, affordable housing is a public concern. “Adequate housing is an essential element of human physical and social existence.”¹⁷³ Currently, affordable housing shortages are causing hardship for families because people must choose between paying for housing and purchasing food.¹⁷⁴ Additionally, access to housing is necessary to maintain healthy neighborhoods and communities.¹⁷⁵ Without affordable housing, businesses are unable to fill vacant positions because a growing number of median income workers are unable to live in the communities because housing costs are too high.¹⁷⁶

Additionally, affordable housing faces analogous local opposition when it comes to development. Local residents and business owners are concerned about the effects affordable housing will have on property values, public health and safety, and aesthetics.¹⁷⁷ According to Justin D. Cummins, “the greatest worry [of locals] is that affordable housing will drive down the value of nearby homes, apartments, and other real estate.”¹⁷⁸ Concurrent with property value concerns are the fears of community members

170. BASUDEB BHATTA, ANALYSIS OF URBAN GROWTH AND SPRAWL FROM REMOTE SENSING DATA 23 (2010).

171. *Affordable Housing*, U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/ (last visited Nov. 27, 2016).

172. *Id.*

173. Jessica A. Tober, *Bringing Home, Home: Is There A Home Rule Argument for Affordable Housing?*, 20 S. CAL. REV. L. & SOC. JUST. 91, 91 (2011).

174. Cummins, *supra* note 14, at 201.

175. Tober, *supra* note 173, at 91.

176. Cummins, *supra* note 14, at 202.

177. *Id.* at 212.

178. *Id.*

that affordable housing will cause a rise in crime rates.¹⁷⁹ The reasoning behind the two concerns is that the influx of affordable housing will attract unsavory residents to the neighborhood, increasing crime rates and lowering property values.¹⁸⁰ However, such reasoning is unfounded.¹⁸¹ Affordable housing is typically occupied by poor, destitute families and does not impact property values or crime rates.¹⁸² The final concern voiced by local residents is that affordable housing is unsightly and ugly.¹⁸³ The old concept was that affordable housing units were high density, tall, and not typical of the area.¹⁸⁴ However, by incorporating the architectural and aesthetic standards of the community, new affordable housing is designed to fit into existing communities.¹⁸⁵

Furthermore, affordable housing is comparable to renewable energy development because local governing bodies can deter and stop the development of affordable housing through zoning ordinances. For example, in New Jersey, the town of Mount Laurel had a zoning ordinance that permitted only single-family residential (“9,375 square feet, minimum lot width of 75 feet...and a minimum dwelling floor area of 1,100 square feet”) and one house per lot.¹⁸⁶ Under the ordinance, attached townhouses, apartments, and mobile homes were not allowed anywhere within the township.¹⁸⁷ The

179. *Id.*; Margery A. Turner, *Affordable housing in safe neighborhoods: Four lessons for success*, URBAN INSTITUTE (May 16, 2014), <http://www.urban.org/urban-wire/affordable-housing-safe-neighborhoods-four-lessons-success>.

180. Turner, *supra* note 179.

181. *See Affordable Rental Housing Does Not Reduce Property Values: Evidence from the Twin Cities*, FAMILY HOUSING FUND (May 2014), http://www.fhfund.org/wp-content/uploads/2014/11/AH-Does-Not-Reduce-Property-Values_Updated-11.24.14.pdf (finding that affordable rental housing does not reduce property values); *see also* EDWARD G. GOETZ, HIN KIN LAM, & ANNE HEITLINGER, *THERE GOES THE NEIGHBORHOOD? THE IMPACT OF SUBSIDIZED MULTI-FAMILY HOUSING ON URBAN NEIGHBORHOODS 2* (1996), <http://www.cura.umn.edu/sites/cura.advantagelabs.com/files/publications/H1016.pdf> (determining that affordable housing does not cause an increase in crime); *but see* Susan J. Popkin, et al., *Public Housing Transformation and Crime: Making the Case for Responsible Relocation*, 14 CITYSCAPE: J POLY DEV. & RES. 137, 151-53 (2012), https://www.huduser.gov/periodicals/citysepe/vol14num3/Cityscape_Nov2012_pub_house_trans.pdf (finding that subsidized homes may affect crime rates, but only in communities that are already struggling with disinvestment and worsening crime).

182. *Frequently Asked Questions*, AMCAL, <http://www.amcalhousing.com/frequently-asked-questions/> (last visited Nov. 27, 2016) (“[L]ow-income’ does not mean ‘law breaking.’ Most tenants in affordable housing are hard-working families with children or senior citizens who are living on limited incomes.”).

183. *Affordable Housing*, CITY OF SAN DIEGO REDEVELOPMENT AGENCY, <https://www.sandiego.gov/sites/default/files/legacy/redevelopment-agency/pdf/affhousing/affordablehousingbrochure.pdf> (last visited Nov. 27, 2016).

184. AMCAL, *supra* note 182; *see also* CAL. PLANNING ROUNDTABLE, CAL. DEP’T OF HOUSING AND CMTY. DEV., *MYTHS AND FACTS ABOUT AFFORDABLE & HIGH DENSITY HOUSING 2* (2002) <http://www.hcd.ca.gov/housing-policy-development/mythsfacts.pdf>.

185. CAL. PLANNING ROUNDTABLE, *supra* note 184.

186. *S. Burlington Cty. N.A.A.C.P. v. Mount Laurel Twp.*, 336 A.2d 713, 719-20 (1975).

187. *Id.* at 719.

ordinance, while not as restrictive as those in other municipalities, would realistically only be affordable to persons with middle income.¹⁸⁸ In response to such restrictive zoning, an action was brought against the township attacking the ordinance on the ground that low- and moderate income families were excluded from the municipality.¹⁸⁹ The New Jersey Supreme Court found that a developing municipality may not, by a system of land use regulation, make it physically and economically impossible to provide for low- and moderate-income housing in the municipality for various categories of persons who need and want it.¹⁹⁰ The Court required the trial court to consider “(1) identify the relevant region; (2) determine the present and future housing needs of the region; (3) allocate those needs among the various municipalities in the region; and (4) shape a suitable remedial order.”¹⁹¹ Because of the Court’s decision, the New Jersey legislature recognized the need and importance of affordable housing and created a Fair Share Affordable Housing Plan for the state.¹⁹²

As previously discussed, affordable housing and renewable energy development suffer from similar local opposition and regulation, making them difficult to develop and implement. However, affordable housing has seen increased development and approval from the local level because of Fair Share Plans. The next section analyzes Fair Share Affordable Housing Plans throughout the country in order to grasp the necessary components to develop a fair share plan for renewable energy.

V. MODELS OF STATE FAIR SHARE PLANS

Fair Share Plans are programs that determine where low- and moderate-income housing units should be constructed.¹⁹³ Such programs place affordable housing within regions according to criteria such as placing housing where it will expand housing opportunity, where housing will be needed most, and where housing will be most suitable.¹⁹⁴ The objective of fair share plans are to change the current housing distribution by allocating units in a rational and equitable manner.¹⁹⁵ Fundamental to all fair share

188. *Id.*

189. *Id.*

190. *See id.* at 724.

191. *Id.* at 746-47.

192. *Mount Laurel Doctrine*, FAIR SHARE HOUSING CENTER, <http://fairsharehousing.org/mount-laurel-doctrine/#background> (last visited Nov. 27, 2016).

193. DAVID LISTOKIN, FAIR SHARE HOUSING ALLOCATION 1 (1976).

194. *Id.*

195. *Id.*

programs is the proportionality requirement.¹⁹⁶ The proportionality requirement requires all new housing developments occurring within a community to incorporate a portion of affordable units.¹⁹⁷ Typically the proportionality requirement is between 10% to 15% of the new housing development; however, the requirement can vary depending on the characteristics and needs of the community.¹⁹⁸

Fair share plans originated in the early 1970s and were generally adopted by a public agency or a group associated with a public entity.¹⁹⁹ By 1975, forty jurisdictions had implemented, adopted, proposed, or were considering a fair share plan.²⁰⁰ Currently, several states, including New Jersey, Massachusetts, and Connecticut, have implemented fair share housing programs. This section provides an overview of the unique characteristics in each state's program in order to evaluate the elements that would be most effective for implementing a fair share plan for renewable energy.

A. New Jersey's Administrative Agency

After two prominent decisions by New Jersey's Supreme Court—the *Mount Laurel I* and *Mount Laurel II* decisions²⁰¹—the New Jersey legislature passed the Fair Housing Act (the “Act”) in 1985.²⁰² Under the Act, an administrative agency, the Council on Affordable Housing (COAH), is “responsible for determining each municipality's fair share of the regional need for housing that is affordable to moderate-income, low-income, and very low-income households.”²⁰³

The COAH establishes the fair share obligations of each municipality by examining the “present and future housing needs, in addition to the municipality's capacity to provide housing, based upon growth area acreage, total employment, recent employment

196. *Adopt fair-share requirements for affordable housing*, SMART GROWTH AMERICA, <http://old.smartgrowthamerica.org/guides/smart-growth-at-the-state-and-local-level/housing-policy/adopt-fair-share-requirements-for-affordable-housing/> (last visited Nov. 27, 2016).

197. *Id.*

198. *Id.*

199. LISTOKIN, *supra* note 193, at 1-2.

200. *Id.* at 2.

201. *S. Burlington Cty. N.A.A.C.P. v. Mount Laurel Twp.*, 456 A.2d 390 (1983); *South Burlington Count N.A.A.C.P. v. Township of Mount Laurel*, 92 N.J. 158 (1983) (declaring that local land use regulations that prevent affordable housing opportunities for the poor are unconstitutional and ordered all New Jersey municipalities to take affirmative actions to provide affordable housing to low- and moderate-income people).

202. 1985 N.J. Sess. Law Serv. ch. 222.

203. Thomas Silverstein, *State Land Use Regulation in the Era of Affirmatively Furthering Fair Housing*, 24 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 305, 317 (2015).

growth, and income levels relative to the region as a whole.”²⁰⁴ Additionally, COAH is responsible for certifying municipalities that have developed adequate fair share plans.²⁰⁵ In order to become certified, COAH requires municipalities in New Jersey to submit a fair share housing plan.²⁰⁶

Part of compliance with the fair share directives requires that municipalities adopt ordinances that provide for low- and moderate-income housing. Municipalities may provide for their fair share of affordable housing by “any technique or combination of techniques which would provide a realistic opportunity for the provision of the fair-share.” Additionally, the Act further enumerates nine techniques for a municipality to make affordable housing realistically possible:

- (1) [r]ezoning for densities necessary to assure the economic viability of any inclusionary developments, either through mandatory set-asides or density bonuses, as may be necessary to meet all or part of the municipality's fair share . . . ;
- (2) [d]etermination of the total residential zoning necessary to assure that the municipality's fair share is achieved;
- (3) [d]etermination of measures that the municipality will take to assure that low and moderate income units remain affordable to low and moderate income households for an appropriate period of not less than six years;
- (4) [a] plan for infrastructure expansion and rehabilitation if necessary to assure the achievement of the municipality's fair share of low and moderate income housing;
- (5) [d]onation or use of municipally owned land or land condemned by the municipality for purposes of providing low and moderate income housing;
- (6) [t]ax abatements for purposes of providing low and moderate income housing;
- (7) [u]tilization of funds obtained from any State or federal subsidy toward the construction of low and moderate income housing; and
- (8) [u]tilization of municipally generated funds toward the construction of low and moderate income housing; and
- (9) [t]he purchase of privately owned real property used for residential purposes at the value of all liens secured by the property, excluding any tax liens, notwithstanding that the

204. Julie M. Solinski, *Affordable Housing Law in New York, New Jersey, and Connecticut: Lessons for Other States*, 8 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 36, 53 (1998) (quoting Jennifer M. Morgan, *Zoning for All: Using Inclusionary Zoning Techniques to Promote Affordable Housing*, 44 EMORY L.J. 359, 368 (1995)).

205. *Id.*

206. *Id.*

total amount of debt secured by liens exceeds the appraised value of the property, pursuant to regulations promulgated by the Commissioner of Community Affairs²⁰⁷

Furthermore, municipalities are encouraged to comply with the COAH certification process because it protects the municipality from zoning suits under their fair share ordinance. COAH approval of a municipality's fair share housing element grants the ordinance a presumption of validity that "may be overcome only by clear and convincing evidence that the plan will not meet said municipality's fair share obligation."²⁰⁸

Commentators have recognized that the strength of New Jersey's Fair Housing Act is that it delegates power to the COAH "to evaluate housing needs and to formulate a consistent and rational fair-share distribution."²⁰⁹ The Act's strong encouragement of state-approved fair share plans creates rational planning within a locality, rather than randomly distributing court-ordered builder's remedies²¹⁰ or state-granted building permits throughout the state.²¹¹ Although this coordinated planning helps overcome disorganized development, the Act does not empower the COAH to enforce the fair share requirements.²¹² COAH acts upon request by a municipality and does not have the power to impose sanctions against municipalities for failing to provide the proper number of housing units.²¹³ Therefore, even though New Jersey has a strong agency to provide for fair share housing plans, the COAH lack of power to enforce the Act means that all enforcement is left in the hands of individuals.²¹⁴

B. Massachusetts' Developer Benefits

In Massachusetts, the legislature enacted the Massachusetts Anti-Snob Zoning Act ("Anti-Snob Act") in order to provide legal

207. N.J. STAT. §§ 52:27D-311(a)(1)-(9) (2015).

208. Solinski, *supra* note 204, at 54, 58.

209. *State-Sponsored Growth Management as a Remedy for Exclusionary Zoning*, 108 HARV. L. REV. 1127, 1136 (1995); *see also* Solinski, *supra* note 204.

210. *See generally* DAVID J. FRIZELL & RONALD D. CUCCHIARO, 36 N.J. Prac., Land Use Law § 21.26 (3d ed. 2015) (A builder's remedy is a legal action taken by a property developer in an attempt to force a municipality to permit construction of a large, multi-family housing structure or complex).

211. *State-Sponsored Growth Management as a Remedy for Exclusionary Zoning*, *supra* note 209, at 1136.

212. *Id.*

213. *Id.* at 1135-36.

214. *Id.* at 1136.

recourse against municipalities with zoning ordinances that perpetuated the inability of low- and medium-income families from owning homes.²¹⁵ In recognition that local zoning laws create barriers to affordable housing development, the Anti-Snob Act was designed to override local zoning in order to promote affordable housing in communities where there is an inadequate supply.²¹⁶

According to Christopher Baker, the Anti-Snob Act is a “uniform, streamlined system for developers to obtain the building permits necessary to begin construction [of affordable housing].”²¹⁷ Under the Act, a developer need only submit a single application for a comprehensive zoning permit to the Zoning Board of Appeals (ZBA).²¹⁸ Once the application is submitted, the ZBA will notify all applicable local boards of the filing and request their recommendations and the appearance of representatives deemed necessary to determine whether to grant or deny the permit.²¹⁹ Upon making their determination, the ZBA shall take into consideration the recommendations of the local boards and must “adopt rules, not inconsistent with the purposes of [the Anti-Snob Act].”²²⁰

In addition to the streamlined permitting process, the Anti-Snob Act provides developers with a special appeals process to challenge ZBA permit denials or approvals “with conditions attached that make the project uneconomic.”²²¹ Under the appeal, the housing appeals committee is limited to the issue of whether the decision of the ZBA was reasonable and consistent with the local needs.²²² In the appeals process, the burden falls on the municipality to show “a valid health, safety, environmental, design, open space, or other local concern . . . [which] outweighs the regional housing need.”²²³

The Massachusetts Anti-Snob Zoning Act has proven to be a great asset to developers attempting to create affordable housing within the state. First, the streamlined permitting process allows developers to reduce permitting costs and begin development more quickly, therefore reducing costs.²²⁴ Second, the special developer appeals process reduces legal and delay costs and the HAC regularly

215. Christopher Baker, *Housing in Crisis--A Call to Reform Massachusetts's Affordable Housing Law*, 32 BOSTON COLLEGE ENVTL AFFAIRS L. REV. 165, 168-69 (2005).

216. *Id.* at 169.

217. *Id.*

218. MASS GEN. LAWS ANN. ch. 40B, § 21 (2015).

219. *Id.*

220. *Id.*

221. Sharon Perlman Krefetz, *The Impact and Evolution of the Massachusetts Comprehensive Permit and Zoning Appeals Act: Thirty Years of Experience with A State Legislative Effort to Overcome Exclusionary Zoning*, 22 W. NEW ENG. L. REV. 381, 386 (2001).

222. MASS. GEN. LAWS ANN. ch. 40B, § 23 (2015).

223. Krefetz, *supra* note 221, at 388.

224. Baker, *supra* note 215, at 170.

overturning ZBA decisions provides developers significant leverage in their negotiations with municipalities.²²⁵ One flaw with these developer benefits, however, is that the benefits only apply to municipalities whose affordable housing stocks fall under minimum percentages as designated by the state statute.²²⁶ Therefore, a community that meets the minimum requirements evades the Anti-Snob Act and limits the ability of the developer to bring a claim against the local zoning ordinances.²²⁷

C. Connecticut's Negotiations

In contrast to New Jersey and Massachusetts fair share housing programs, Connecticut's Fair Housing Compact Pilot Program ("Connecticut Act") encourages local governments to work together and negotiate a fair share housing agreement that establishes affordable housing principles for the entire region.²²⁸ The Connecticut Act appointed two regions, the Capital Region Council of Governments and the Greater Bridgeport Regional Planning Agency, to participate in the Pilot Program.²²⁹

The structure of negotiation committee was the most important factor to developing a regional affordable housing agreement in Connecticut. The Connecticut Act called for a diverse negotiation committee including an outside mediator, the Commissioner of Housing, the officers of the regional planning agency, and a representative from each municipality.²³⁰ Connecticut paid for the mediator in order to incentivize the representatives' participation.²³¹ Furthermore, the Connecticut Act required the principles in the fair share housing agreement to be agreed upon by the members of the negotiating committee and brought back to each local jurisdiction.²³² Finally, after reaching a consensus on the affordable housing principles, the fair share housing agreement had to be ratified by 65% of the participating municipalities.²³³ After ratification, the Connecticut Act established a housing

225. *Id.*

226. Baker, *supra* note 215, at 171.

227. *Id.* at 169; MASS. GEN. LAWS ANN. ch. 40B, § 20 (2015).

228. 1988 CONN. ACTS 937 (Reg. Sess.).

229. Charles E. Connerly & Marc Smith, *Developing A Fair Share Housing Policy For Florida*, 12 J. LAND USE & ENVTL L. 63, 94; ROGER L. KEMP, REGIONAL GOVERNMENT INNOVATIONS: A HANDBOOK FOR CITIZENS AND PUBLIC OFFICIALS 282 (2003) (noting the Harford Capitol Region consisted of an area of poverty in the city surrounded by wealthy suburbs).

230. CONN. GEN. STAT. ANN. § 8-386 (2015).

231. 1988 CONN. ACTS 937 (Reg. Sess.); Connerly & Smith, *supra* note 229, at 95.

232. 1988 CONN. ACTS 937 (Reg. Sess.).

233. CONN. GEN. STAT. § 8-386(a) (2016).

fund that set aside infrastructure funds for communities that adopted the agreement.²³⁴

The Connecticut Act demonstrates that local governments, with competing interests, can negotiate a fair share housing agreement when provided with the proper incentives.²³⁵ First, the diverse committee permitted each representative to voice their localized concerns with fair share housing agreement.²³⁶ As Charles E. Connerly and Marc Smith noted, the diversity of representatives at the negotiations created an environment of mutual learning wherein citizens and politicians learned about the housing and political issues confronting affordable housing.²³⁷ Second, the requirement of near unanimity and ratification by the municipalities provided each municipal representative with the ability to negotiate on behalf of their community.²³⁸ The ability to negotiate ensured that the minority municipalities were protected and assured jurisdictions that municipalities would not be forced into an agreement they did not approve.²³⁹ Finally, the state funded mediator and housing fund provided incentivized the participation of the municipalities and qualified more communities for housing aid.²⁴⁰

Therefore, the Connecticut Plan, emphasizing affordable housing allocations negotiated voluntarily by jurisdictions, provides the proper forum for citizens to express their concerns and for the state to expand affordable housing options within the regions.

VI. FAIR SHARE RENEWABLE ENERGY

As noted earlier, the current problem with renewable energy regulation is the lack of uniformity across the country as to whether the state or local government should have the authority to regulate renewable energy. This inconsistency causes developers to view renewable energy projects as risky investments because the possibility of local opposition and litigation can be costly and time consuming. Furthermore, the current models of renewable energy regulation do not properly balance local concerns with state objectives. Instead, the current models prioritize local concern to the point that it frustrates renewable energy development or

234. 1988 CONN. ACTS 937 (Reg. Sess.).

235. Connerly & Smith, *supra* note 229, at 98.

236. *Id.*

237. *Id.* at 95.

238. *Id.*

239. *Id.* at 96.

240. *Id.*

prioritize the state objectives to implement renewable energy projects without taking into consideration the local concerns. Therefore, in order to encourage renewable energy development, there needs to be an effective approach to zoning regulation that reduces the inconsistency and unpredictability caused by the current models.

As seen with affordable housing, a “fair share” plan could provide a framework to solve the problems with the current models of renewable energy regulation. Through the implementation of a proportionality requirement, a renewable energy regulation agency, and a one-stop permitting process, a Fair Share Renewable Energy Plan would create uniformity in the regulation of renewable energy and properly balance state objectives and local concerns.

A. The Proportionality Requirement

The proportionality requirement in affordable housing is the portion of new housing developments that must be affordable to low-medium income families within a community. In affordable housing, the proportionality requirement is between 10- and 15% of all new housing developments in the area. Unlike housing, renewable energy developments are not constructed on a per unit basis. Therefore, the proportionality requirement for renewable energy would be based off of different estimates instead of a percentage of new developments.

For renewable energy, the proportionality requirement should be an amount of kilowatt or megawatt hours consumed in a year allocated equally to each of the localities in the state.²⁴¹ The proportionate share means that local governments must allow a certain amount of renewable energy development in their community whether it be through local funding or private developers. The proportionality requirement provides two key benefits. First, it guarantees the state objective of expanding renewable energy development. This occurs because the state requires each locality to meet its renewable energy portion of the kilowatt hours produced in a year. Second, the proportionality requirement distributes the burden of implementing renewable energy equally among the localities in the state. Equal burden is a beneficial effect of the proportionality requirement because

241. In recognition that the proportionate share requirement may not be feasible for all local governments, there should be opportunities to waive the equal share requirement dependent on factors such as economic feasibility, geographic location, and/or special circumstances.

it does not differentiate between localities. Equal burden means that a single locality will not have to bear the burdens of renewable energy development in its area for the good of providing clean energy to all other localities. Therefore, the positive and negative effects of renewable energy development will be felt by all localities within the state.

There is a concern with the proportionality requirement in that it does not provide the opportunity for local concerns to be voiced. This concern is addressed in the State Agency portion of the Fair Share Renewable Energy Plan below. However, in recognition of the danger of excluding the local voice, it is recommended that an approach similar to the Connecticut Act be used when determining the proportionality requirement.

When Connecticut wanted to implement its fair share plan to affordable housing, it held a meeting wherein state, regional, and local representatives were invited. At the meeting, each representative was able to voice his or her concerns and comment on the proportionate requirement of affordable housing. Such an approach would be useful for a Fair Share Renewable Energy Plan. By providing a forum to discuss and comment on the renewable energy proportionate share, the state allows local representatives to present their view on the proportionate requirement, including, for example, unique local environmental and social concerns. This provides an initial layer of protection for local concerns to renewable energy development. Additionally, this meeting would provide the state with valuable insight into the feasibility of the proportionality requirement. For example, if a state were to broadly require a proportionate share to be shouldered by each locality, there is a possibility that certain localities may be unable to economically meet the proportionate share requirement. By holding a meeting with representatives, the proportionate share can be tailored so as to be an achievable amount for the entire state and can, in some cases, deviate from requiring full equality among jurisdictions.

B. The Renewable Energy Regulation Agency

After establishing the proportionality requirement, an agency should be implemented to approve and certify each municipality's fair share plan. The agency should be modeled after the New Jersey Council on Affordable Housing (COAH). Analogous to COAH, the Renewable Energy Regulation Agency (RERA) should be responsible for certifying that municipalities have developed adequate fair share plans. In order to have compliant fair share

plans, each municipality should have to meet its proportionate share of renewable energy production. Municipalities can meet their proportionate share by funding their own renewable projects, passing zoning ordinances to facilitate renewable energy projects, or allowing private developers to build a certain amount of renewable energy infrastructure in the municipality's jurisdiction. Similar to the COAH requirements, municipalities would provide for their fair-share of renewable energy production by any technique or combination of techniques which would require a realistic opportunity for the provision of the fair share. Such broad language in the fair share plan allows each municipality to tailor its plans to its local characteristics and needs. For example, if one municipality does not want to provide for siting of renewable developments in its area to preserve the aesthetic environment, then the city can support another city's renewable energy development and use the production from the other city to meet its proportionate requirement.

Understandably, with each locality adopting its own plan to meet the proportionate requirement, there will need to be a consideration of various operating factors such as selling of renewable credits and developing a system for verifying credits. However, the focus of this Note is to provide the foundational framework for fair share renewable energy plans. Considerations involving the operationalization of these plans, such as the purchasing of credits, allocation of credits, and various strategies for meeting the fair share requirement, would have to be explored further before fully implementing a fair share plan.

In addition to approving municipal fair-share plans, the RERA should also enumerate and help localities in developing their renewable fair-share plans. For example, in New Jersey, the Fair Housing Act enumerates nine techniques to make affordable housing realistically possible.²⁴² Since each locality may not have the expertise to implement intricate fair share plans, the RERA should be able to provide models and options that cities can use to develop their own fair share plans.

Finally, similar to certified plans under COAH, all plans that meet the requirements as established by RERA should be granted a presumption of validity. This presumption of validity provides protection to the municipality from legal challenges. A court would only overturn the fair share plan if the opposing party could show by clear and convincing evidence that the plan will not meet the municipality fair share obligation. By protecting

242. N.J. STAT. §§ 52:27D-311(a)(1)-(8) (2015).

municipalities from legal challenges the presumption of validity would protect the municipality from having to invest extensive resources in litigation.

The RERA established by the fair share plan provides for multiple benefits. First, by adopting broad language for approving and certifying plans, local concerns are taken into account when it comes to developing renewable energy projects. The broad implementation language allows local governments to consider their local characteristics and tailor their plan to meet the needs of the community. Second, the RERA provides support to municipalities and local governments who do not have the expertise to implement renewable energy developments. With support and models provided by the agency, all municipalities will be able to develop and implement a plan that satisfies their proportionate share requirement. Finally, the greatest benefit of the RERA is that all certified plans are provided a presumption of validity. This presumption can save a municipality litigation costs and protect its plans so long as there is a possibility that the plan will meet the municipality's fair share obligation.

C. Developer One-Stop Shops

The final part of the fair share plan should include efficient approval and permitting processes for developers. In the fair share renewable plan, the renewable energy regulation agency would be the sole provider of permits and approve all renewable energy developments. In reviewing the proposed project, the RERA would notify the municipalities where the proposed renewable energy projects would be located and provide a thirty-day comment period for the locality to comment on the specifications of the project. This would provide a third chance for local concerns to be expressed. In granting or denying the developer's permit, the RERA must base its determination off of the comments and recommendation of the municipality, and should implement conditions so long as they do not have the effect of banning or substantially reducing the amount of renewable energy built within the municipality. By requiring notification to the local governments and providing the local government the ability to comment, the permitting process would encourage negotiations and agreements between the developer and local officials. These negotiations would occur because the costs of changing a proposed project during the permitting stages are higher than in the planning stages of a project. Therefore, since the developer knows that localities can comment on the proposed project once submitted, it is in

the best interest to reach out to the locality about the proposed project and make changes to appease local concerns before submitting the project to permitting review.

Furthermore, by requiring localities to submit their fair share plans to RERA and requiring developers to submit their proposed developments for approval at RERA, the agency would be equipped with the resources necessary to make a determination as to whether the proposed project would fit within the requirements of the municipalities, even if the project spanned multiple localities.

D. Hypothetical Example of the Fair Share Renewable Energy Plan

A stylized example provides a good example of how the Fair Share Renewable Energy Plan would operate. Suppose the state of Greenacres wants to implement a renewable energy fair share plan. Greenacres has four localities within its state and a yearly consumption of 1000 megawatt hours. City A is a beach town that values its aesthetically pleasing beaches to attract tourism. City B is a highly urban city with little room for new developments. City C and D are rural areas with average populations.

In order for Green Acres to implement its fair share plan, it would first have to determine what proportion of energy consumption should come from renewable sources within the state. After conferring with local and regional representatives and providing a period for comments and concerns, Greenacres determines that a 10% energy consumption from renewable energy per year is feasible within the state. Therefore, 100 megawatt hours per year (1000 megawatts times 10%) must be produced from wind or solar sources. This 100 megawatt hour requirement would then be divided equally among the four localities. Each locality would be responsible for the production of 25 megawatt hours or attracting development that would result in the construction of 25 megawatts capacity from renewable sources.

After establishing the 25 megawatt hours proportionate requirement, the localities must develop fair share plans in order to meet the requirement. Since each city has different characteristics that must be considered when it comes to developing its fair share plan, all the plans can be custom written to meet the local needs. For example, Cities C and D both decide to develop wind farms in their municipality that are able to produce enough energy to meet their 25 megawatt hours. City A, valuing its beaches, may not want to have wind turbines or solar panels developed in the city. Instead, City A could purchase credits in from C or D in order to meet its

renewable energy production requirement. Another option for City A is to help fund and expand C and D's wind farms so that the wind farm produces enough megawatts to cover City A's proportionate share requirement. City D in order to comply with its proportionate share decides to develop rooftop solar over its tall buildings and other structures. Here, the fair share plan shows its strengths. It allows municipalities the authority and voice to develop its community to meet the desired characteristics of its residents without frustrating the state goal of renewable energy development. As stated earlier, there are operational considerations that need to be addressed in the future if a fair share plan is to be implemented. These potential solutions are provided as examples for representation purposes.

The actual development of renewable energy projects poses an interesting issue. The ability of a state to build, develop, and own its own renewable energy generator may be infeasible for smaller localities. Therefore, the requirement on the cities is to implement a fair share plan that would provide for the possibility of meeting the proportionate requirement, not the actual construction of renewable energy developments. This is where the one-stop permitting process works because it attracts developers with efficient approval and local support for development to occur. In the Greenacres example, developers would be interested in developing renewable energy projects in Cities B, C, and D because the cities approved plans to have wind turbines and solar panels.

One of the primary weaknesses for the Fair Share Renewable Energy Plan is that renewable energy resources are not evenly distributed. For example, some areas within a state are much windier or sunnier than other areas throughout the state. Therefore, jurisdictions without access to plentiful wind and solar resources would have a much harder time meeting the proportionate share requirement. Furthermore, it would be inefficient to develop wind turbines and solar panels within areas with limited resources because the amount of energy produced would be less efficient than areas with abundant wind and solar resources. However, this problem can be solved through the trading of renewable energy credits produced by other municipalities. For example, if municipality A has abundant wind resources and has a turbine that can exceed the municipalities proportionate renewable energy requirement, then municipality A can sell the excess production to other jurisdictions who are hindered by their limited resources. However, to make such a

credit trading system operational, the issues of double-counting and the effects on impoverished areas need to be resolved.²⁴³

Overall, this framework for a fair share renewable energy project would be a solution to the current patchwork models of renewable energy regulation. First, the fair share proportionate requirement guarantees that renewable energy projects will be developed satisfying the state objective. Second, providing municipalities great liberty as to how to meet their proportionate share requirement enables local concerns to be voiced thereby satisfying residents within each municipality. Therefore, the fair share renewable plan provides states with an effective and efficient solution to the regulation of renewable energy developments.

VII. CONCLUSION

The expansion of renewable energy development is upon us. The federal and state governments support clean and renewable energy and want to expand its production. However, the disorganized and jumbled state of renewable energy regulation throughout the country will continue to frustrate expansion of renewable energy. Therefore, states should model renewable energy regulation after fair share affordable housing plans because they have successfully balanced a public need with the local concern.

The implementation of a Fair Share Renewable Energy Plan with its proportionate requirement, state agency, and developer benefits provides an alternative that is better than the mixture of various regulation models currently in place. It guarantees the implementation of the state objective for renewable energy development. It provides an appropriate amount of consideration for local concerns and local input throughout the regulation process. Finally, it provides developers with an efficient process to incentivize construction and development. While some of the operational factors need to be discussed further, the foundational framework for fair share renewable energy regulation provides the change needed for renewable energy expansion, changing the topic from “who should regulate” to “what is the best way to produce more clean energy.”

243. Ida Martinac, *Considering Environmental Justice in the Decision to Unbundle Renewable Energy Certificates*, 35 GOLDEN GATE U. L. REV. 491, 519-28 (2005) (providing details regarding renewable energy certificate trading and other associated issues).

**SAVING OBAMACARE DID NOT BAKE THE EARTH:
APPLYING THE SUPREME COURT'S *KING V. BURWELL*
FRAMEWORK TO THE CONFLICTING AMENDMENTS
AT THE HEART OF THE EPA'S CLEAN POWER PLAN**

HAMPDEN MACBETH*

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I. INTRODUCTION

During the 2008 Democratic Presidential Primary, then Senator Barack Obama offered three major progressive campaign promises: expanding health care coverage, ending the war in Iraq, and addressing climate change.¹ The first two of these goals were accomplished within President Obama's first term. On March 23, 2010, President Obama signed into law the Patient Protection and Affordable Care Act ("PPACA"),² which, through a series of complex reforms, expanded health insurance coverage to millions of Americans.³ The last U.S. soldiers withdrew from the conflict in Iraq on December 18, 2011.⁴ These achievements, along with others, have made Obama one of the most significant progressive presidents in American history.⁵

However, the third goal remained elusive. During the first two years of the Obama presidency, the House of Representatives passed an ambitious carbon emissions trading regime to curb

1. Barack Obama, *Remarks After the Final Democratic Primary (June 3, 2008)*, <http://www.presidentialrhetoric.com/campaign2008/obama/06.03.08.html> ("Because if we are willing to work for it, and fight for it, and believe in it, then I am absolutely certain that generations from now, we will be able to look back and tell our children that this was the moment when we began to provide care for the sick . . . this was the moment when the rise of the oceans began to slow and our planet began to heal; this was the moment when we ended a war and secured our nation and restored our image as the last, best hope on Earth.").

2. Sheryl Gay Stolberg & Robert Pear, *Obama Signs Health Care Overhaul Bill, With a Flourish*, N.Y. TIMES (Mar. 23, 2010), <http://www.nytimes.com/2010/03/24/health/policy/24health.html>. The PPACA is colloquially known as "Obamacare"; hence the title of this Note. Robert E. Moffit, *Year Six of the Affordable Care Act: Obamacare's Mounting Problems*, HERITAGE FOUND. (Apr. 1, 2016), <http://www.heritage.org/research/reports/2016/04/year-six-of-the-affordable-care-act-obamacares-mounting-problems> ("The Affordable Care Act (ACA, popularly known as Obamacare) . . .").

3. *The Affordable Care Act is Working*, DEPT OF HEALTH & HUMAN SERVS. (June 24, 2015), <http://www.hhs.gov/healthcare/facts-and-features/fact-sheets/aca-is-working/index.html> ("Since the passage of the Affordable Care Act five years ago, about 16.4 million uninsured people have gained health coverage.").

4. Joseph Logan, *Last U.S. Troops Leave Iraq, Ending War*, REUTERS (Dec. 18, 2011), <http://www.reuters.com/article/us-iraq-withdrawal-idUSTRE7BH03320111218>.

5. See, e.g., Paul Krugman, *In Defense of Obama*, ROLLING STONE (Oct. 8, 2014), <http://www.rollingstone.com/politics/news/in-defense-of-obama-20141008?page=5>; Dylan Matthews, *Barack Obama is Officially One of the Most Consequential Presidents in American History*, VOX (Mar. 23, 2016), <http://www.vox.com/2015/6/26/8849925/obama-obamacare-history-presidents> ("Barack Obama . . . will be a particularly towering figure in the history of American progressivism," but treating the President's Clean Power Plan ("CPP") as if it was already enforceable).

greenhouse gas emissions that contribute to climate change.⁶ But the Senate failed to follow suit.⁷ In the wake of the Democratic Party's defeat in the 2010 midterm elections, the White House did not prioritize addressing climate change and no major climate change-related legislation or regulations was enacted in the subsequent two years.⁸

Following the President's reelection in 2012, the administration reprioritized acting on climate change. The president announced his Climate Action Plan ("CAP") on June 25, 2013 to "cut domestic carbon pollution . . . and lead international efforts to address global climate change."⁹ At the heart of CAP is the Environmental Protection Agency's ("EPA") Clean Power Plan ("CPP") to regulate carbon emissions from power plants, the largest single source of carbon emissions in the United States.¹⁰ The CPP was published in the Federal Register on October 23, 2015.¹¹ The CPP could cement a strong climate change legacy for the President.¹²

Yet the President's climate legacy—in particular the CPP that is currently being challenged in the D.C. Circuit¹³—may be at risk

6. Ryan Lizza, *As the World Burns*, NEW YORKER (Oct. 11, 2010), <http://www.newyorker.com/magazine/2010/10/11/as-the-world-burns>.

7. *Id.* (detailing the failed efforts of the Senate and White House to pass a carbon trading regime in 2009 and 2010).

8. See Heather Smith, *Obama's Green Record: Some Small Victories, One Gaping Flop*, GRIST (Dec. 20, 2013), <http://grist.org/climate-energy/obamas-green-record-some-small-victories-one-gaping-flop/> ("We now know what pretty much everyone suspected, which was that the Obama administration deliberately delayed implementing environmental regulations in the years before his reelection, on the grounds that it might keep him from winning a second term.").

9. *Fact Sheet: Timeline of Progress Made in President Obama's Climate Action Plan*, ENVTL. & ENERGY STUDY INST. (Aug. 5, 2015), <http://www.eesi.org/papers/view/fact-sheet-timeline-progress-of-president-obama-climate-action-plan>.

10. *Id.*; *Fact Sheet: President Obama to Announce Historic Carbon Pollution Standards for Power Plants*, WHITE HOUSE (Aug. 3, 2015), <https://www.whitehouse.gov/the-press-office/2015/08/03/fact-sheet-president-obama-announce-historic-carbon-pollution-standards>.

11. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662, (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60) [hereinafter Clean Power Plan].

12. Kristen Meek et al., *6 Ways Obama Can Cement a Legacy on Climate Action*, GREENBIZ (Jan. 14, 2016), <https://www.greenbiz.com/article/6-ways-obama-can-cement-legacy-climate-action> (listing "Implement the Clean Power Plan" as the first step the President can take to cement his climate legacy). Part of that legacy is the administration's successful push for a strong international agreement to reduce carbon emissions at the United Nations Conference on Climate Change in Paris in December 2015. Coral Davenport, *Nations Approve Landmark Climate Accord in Paris*, N.Y. TIMES (Dec. 12, 2015), <http://www.nytimes.com/2015/12/13/world/europe/climate-change-accord-paris.html>. This Note does not focus on the Paris climate agreement.

13. Eric Wolff, *EPA to Lay Out Clean Power Plan Defense for the D.C. Circuit*, POLITICO (Mar. 28, 2016, 10:00 AM), <http://www.politico.com/tipsheets/morning-energy/2016/03/promorning-energy-wolff-213437>. The D.C. Circuit has exclusive jurisdiction amongst Courts of Appeals to hear challenges to national standards promulgated under CAA § 111(d), the section under which the CPP was promulgated. 42 U.S.C. § 7607(b)(1) (2015). The CPP was stayed by the Supreme Court. Adam Liptak & Coral Davenport, *Supreme Court Deals Blow*

because of his other signature domestic achievement—the PPACA.¹⁴ This is because the latest Supreme Court case to hold the PPACA lawful, *King v. Burwell*, eschewed the traditionally deferential *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.* framework¹⁵ that could be used to resolve a critical statutory ambiguity¹⁶ in the Clean Air Act (“CAA”) in favor of the CPP.¹⁷ Instead, the Supreme Court took a less favorable approach because of the “economic and political significance” of the central question in *King*.¹⁸ As the challenge to the CPP in the D.C. Circuit may also pose a question of “economic and political significance,” application

to *Obama’s Efforts to Regulate Coal Emissions*, N.Y. TIMES (Feb. 9, 2016), <http://www.nytimes.com/2016/02/10/us/politics/supreme-court-blocks-obama-epa-coal-emissions-regulations.html>. The D.C. Circuit also took the unusual step of proceeding directly to an en banc review of the CPP. Abby Harvey, *U.S. Court of Appeals Reschedules CPP Oral Arguments*, GHG DAILY MONITOR (May 17, 2016), <http://www.exchangemonitor.com/publication/ghg-daily-monitor/u-s-court-appeals-reschedules-cpp-oral-arguments/>. This Note does not focus on the implications of the stay for the particular question it seeks to answer—can the EPA’s interpretation of § 111(d) survive review under the analysis the court used in its recent health care decision, *King v. Burwell*?—because there is little known about the Court’s rationale for issuing the stay. Lisa Heinzerling, *The Supreme Court’s Clean-Power Power Grab*, 28 GEO. ENVTL. L. REV. 425, 426 (2016) (“The five Justices who voted for the stay declined even to explain their decision, offering instead only five terse identically worded orders in response to five differently argued applications for a stay.”).

14. Jonathan H. Adler, *Could King v. Burwell Spell Bad News for the EPA?*, WASH. POST (July 3, 2015), <https://www.washingtonpost.com/news/volokh-conspiracy/wp/2015/07/03/could-king-v-burwell-spell-bad-news-for-the-epa/> (discussing how the Supreme Court’s decision that kept intact a critical provision of the PPACA in *King v. Burwell* could threaten the lawfulness of the CPP).

15. *King v. Burwell*, 135 S. Ct. 2480, 2488-89 (2015). A search in Westlaw reveals that *Chevron* has been cited in over 14,000 decisions.

16. It is important to note that petitioners in the D.C. Circuit merits challenge to the CPP argue that the language at issue—§ 111(d) of the CAA, the so-called § 112 exclusion—unambiguously prohibits EPA from promulgating the CPP. Brief of Petitioners on Core Legal Issues at 61, *W. Va. v. EPA* (D.C. Cir. Feb. 19, 2016) (No. 15-1363) (“The Section 112 Exclusion invalidates the [CPP] irrespective of the Rule’s contents.”). This Note will establish the language at issue is ambiguous, but first explains the source of the contention that it is not.

17. See generally Adler, *supra* note 14; Recent Regulation, *EPA Interprets the Clean Air Act to Allow Regulation of Carbon Dioxide Emissions from Existing Power Plants*, 129 HARV. L. REV. 1152 (2016).

18. *King*, 135 S. Ct. at 2489 (“Whether those credits are available on Federal Exchanges is thus a question of deep ‘economic and political significance’ . . .”).

of the less favorable framework¹⁹ may lead the D.C. Circuit or the Supreme Court, eventually, to invalidate the CPP.²⁰

This Note will establish that the approach the Supreme Court used in *King*, applied to the critical statutory ambiguity in the CAA, does not threaten the legality of the CPP. Section II of this Note will provide background information on EPA's obligation to regulate carbon emissions, the regulatory design of the CPP, and the statutory ambiguity in EPA's claimed source of authority for the CPP. Section III of this Note will add to the literature surrounding the Court's decision in *King* by providing a three-step analytical framework through which the Court's decision can be understood.²¹ The section will first discuss the statutory interpretation question at play in *King*. Then, it will explore the three steps the Court took to rule in the government's failure: eschewing *Chevron*; determining the critical language is ambiguous; and resolving the ambiguity in a manner that is consistent with the purpose of the PPACA. Section IV will begin by attempting to create some clarity about what courts have meant by the phrase "economic and political significance." It will then pair that analysis with the framework in Section III to show that the CPP can survive review by the courts under the *King* framework because EPA's statutory interpretation at issue in the CPP litigation is more deserving of deference than the government's interpretation in *King* and is consistent with the purpose of the CAA. Section V will offer a conclusion.

19. Although petitioners in the D.C. Circuit challenge to the CPP have argued that it is a question of "economic and political significance" and thus that *King* is relevant to the court's task, they have not argued for the application of the *King* framework to the § 112 exclusion issue. Brief of Petitioners on Core Legal Issues at 23, *W. Va. v. EPA* (D.C. Cir. Feb. 19, 2016) (No. 15-1363). The government in response has only argued for the partial application of the *King* framework to the § 112 exclusion issue. Respondent EPA's Initial Brief at 84, *W. Va. v. EPA* (D.C. Cir. Mar. 28, 2016) (No. 15-1363) (applying the third analytical phase of *King* to the § 112 exclusion issue). Perhaps this is an indication that neither party believes *King* can convince the courts to rule in their favor on the issue. Still, it is worth exploring the outcome of the § 112 exclusion issue under *King*, as there has been speculation that the courts may use *King* to resolve the issue. See, e.g., Emily Hammond & Richard J. Pierce, Jr., *Testing the Limits of Administrative Law and the Electric Grid*, 7 GEO. WASH. J. ENERGY & ENVTL. L. 1, 7-19 ("Furthermore, the significance of the CPP is enormous, both politically and economically" and discussing applying *King* to the § 112 exclusion issue); Adler, *supra* note 14 (discussing the implications of *King*'s eschewing of *Chevron* on the § 112 exclusion issue).

20. Recent Regulation, *supra* note 17, at 1159 ("In the end, the fate of the CPP will almost certainly be determined by the Supreme Court.").

21. See *infra* Section III for a discussion of the literature on *King* and why developing a structural tool for understanding the Court's decision is useful.

II. THE SUPREME COURT, EPA, AND THE CPP

This section of the Note will provide information about EPA's legal responsibility to regulate carbon emissions, the CPP's regulatory scheme, and EPA's statutory authority for the CPP. Subsection A will discuss EPA's responsibility to regulate carbon emissions under Supreme Court case law. Subsection B will review how the CPP regulates carbon emissions from power plants, while Subsection C will examine the statutory authority for the CPP.

A. EPA's Legal Responsibility to Regulate Carbon Emissions from Power Plants

In 2007, in *Mass. v. EPA*, the Supreme Court confirmed that EPA has a legal responsibility to regulate greenhouse gases, an air pollutant under the CAA, if it determines that greenhouse gases endanger public health and welfare.²² In 2009, EPA determined that greenhouse gases are the primary drivers of climate change and may “reasonably be anticipated to endanger public health and welfare.”²³ Further, in 2011, the Supreme Court in *Am. Elec. Power Co. v. Conn.* indicated that EPA could regulate carbon emissions through § 111(d) by finding that the CAA, and in particular EPA's authority to regulate carbon emissions under § 111(d), preempted federal public nuisance claims that sought abatement of carbon emissions from power plants.²⁴ On October 23, 2015, EPA fulfilled its obligation to regulate carbon pollution by publishing a final rule regulating carbon emissions from power plants in the “Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units,” or the CPP.²⁵

22. *Mass. v. EPA*, 549 U.S. 497, 528 (2007) (“On the merits, the first question is whether . . . the Clean Air Act authorizes EPA to regulate greenhouse gas emissions . . . in the event that it forms a ‘judgment’ that such emissions contribute to climate change. We have little trouble concluding that it does.”). See also Hampden Macbeth, *Nuclear Chaos: The Exelon-PHI Merger and What it Means for Nuclear Power in the United States and the EPA's Carbon Emission Rules*, 28 GEO. ENVTL. L. REV. (forthcoming 2016).

23. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,497 (Dec. 15, 2009) (“The Administrator finds that greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare The Administrator reached her determination by considering both observed and projected effects of greenhouse gases in the atmosphere, their effect on climate, and the public health and welfare risks associated with such climate change.”).

24. *Am. Elec. Power Co. v. Conn.*, 131 S. Ct. 2527, 2537 (2011); William W. Buzbee, *Federalism-Facilitated Regulatory Innovation and Regression in a Time of Environmental Legislative Gridlock*, 28 GEO. ENVTL. L. REV. 451, 467 (2016).

25. Clean Power Plan, 80 Fed. Reg. at 64,662 (Oct. 23, 2015).

B. CPP Regulatory Scheme

The CPP requires states to adopt plans to reduce carbon emissions from power plants.²⁶ EPA expects the state plans will reduce carbon emissions from power plants 32% below 2005 levels by 2030.²⁷ The state plans must establish standards of performance that reflect the degree of emissions reductions achievable through an adequately demonstrated Best System of Emission Reduction (“BSER”) that considers the cost of such reductions and “non-air quality health and environmental impact and energy requirements.”²⁸ The BSER is based on three “building blocks,” which already enjoy widespread use by utilities and states.²⁹ The first building block is reducing carbon intensity at power plants through heat rate improvements.³⁰ The second is substituting generation at carbon-intensive affected power plants for generation from less carbon-intensive affected power plants.³¹ The third building block is substituting increased generation from new zero-emission sources of renewable energy for generation from fossil fuel-fired power plants.³²

Complying with the rule is expected to cost the utility industry someplace between \$5.1- and \$8.4 billion.³³ It is also expected to possibly save households \$17 monthly,³⁴ and have between \$25- to \$45 billion in climate and health benefits.³⁵

C. Statutory Authority for the CPP

In publishing the CPP, EPA claimed it had the authority to regulate carbon emissions from power plants under § 111(d) of the CAA³⁶—the statutory provision that the Supreme Court had earlier indicated provided EPA the authority to regulate carbon emissions from power plants.³⁷ Industry and state challengers to the CPP have

26. *Id.* at 64,662.

27. *Id.* at 64,665.

28. *Id.* at 64,707.

29. *Id.* at 64,667.

30. *Id.*

31. *Id.*

32. *Id.*

33. Recent Regulation, *supra* note 17, at 1157.

34. PAT KNIGHT & AVI ALLISON, CUTTING ELECTRIC BILLS WITH THE CLEAN POWER PLAN: EPA’S GREENHOUSE GAS REDUCTION POLICY LOWERS HOUSEHOLD BILLS 9 (2016), <http://www.synapse-energy.com/sites/default/files/Cutting-Electric-Bills-Presentation.pdf>.

35. Clean Power Plan, 80 Fed. Reg. at 64,665.

36. *Id.* at 64,710 (“EPA’s authority for this rule is CAA section 111(d).”).

37. *Am. Elec. Power. Co. v. Conn.*, 131 S. Ct. 2527, 2537 (2011).

alleged that the CPP is unlawful for many reasons,³⁸ including that EPA is prohibited from regulating carbon emissions from power plants under § 111(d).³⁹ This subsection of the Note will discuss the purpose of the CAA, § 111(d)'s place in the CAA, and the language of § 111(d).

The purpose of the CAA is to protect public health and welfare.⁴⁰ Section 111 plays a gap-filling role in the CAA's comprehensive air pollution control scheme for protecting public health and welfare:⁴¹ criteria pollutants are regulated through §§ 108-110; hazardous air pollutants are regulated through §112; and all other pollutants are regulated through § 111.⁴² Section 111(b) regulates new stationary sources that emit other air pollutants that may "reasonably be anticipated to endanger public health or welfare," while § 111(d) regulates the same pollutants from existing stationary sources.⁴³ The pre-1990 version of the CAA reflected § 111(d)'s gap filling role: § 111(d) regulation applied to "any air pollutant . . . for which air quality criteria have not been issued or which is not included on a list published under section [108(a)] or [112(b)(1)(A)]."⁴⁴ Section 111(d) regulated pollutants that were neither criteria pollutants, nor hazardous air pollutants.⁴⁵

In 1990, Congress amended the CAA by making a series of changes to § 112, which necessitated amending the reference to § 112 in § 111(d).⁴⁶ During Congressional consideration of the Clean Air Act Amendments of 1990, two amendments—one by the House and one by the Senate—modifying the reference to § 112 in § 111(d) were passed by both Houses of Congress and signed into law by

38. These arguments include that the rule "transgresses Section 111," abrogates authority granted to the states by the CAA, and unconstitutionally commands and coerces states to adopt federal energy policy. Brief of Petitioners on Core Legal Issues at 29-60, *W. Va. v. EPA* (D.C. Cir. 2016) (No. 15-1363). This Note will not explore these arguments.

39. *Id.* at 61 ("The Section 112 Exclusion invalidates the Rule irrespective of the Rule's contents. . . . [T]he Exclusion prohibits EPA from employing section 111(d) to regulate a source category that is already regulated under section 112.").

40. 42 U.S.C. § 7401(b)(1) (2012) ("The purposes of this subchapter are—(1) to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population . . .").

41. Clean Power Plan, 80 Fed. Reg. at 64,711 ("Together . . . sections 108-110, . . . section 112, and . . . section 111 constitute a comprehensive scheme to regulate air pollutants with 'no gaps in control activities pertaining to stationary source emissions that pose any significant danger to public health or welfare.'" (quoting S. REP. NO. 91-1196, at 20 (1970)).

42. *Id.* at 64,711.

43. *Id.* (quoting 42 U.S.C. § 7411(b)(1)(A) (2012)).

44. Clean Power Plan, 80 Fed. Reg. at 64,711 (emphasis added).

45. *Id.*

46. Avi Zevin, *Dueling Amendments: The Applicability of Section 111(d) of the Clean Air Act to Greenhouse Gases* 7 (Inst. for Pol'y Integrity, Working Paper No. 2014/5, 2014), http://policyintegrity.org/files/publications/2014-5_Zevin.pdf.

the president.⁴⁷ The House amendment was included in the United States Code, and was also included in the Statutes at Large.⁴⁸ Section 111(d) in the United States Code states:

The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any *air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance under this section would apply if such existing source were a new source, and (B) provides for the implementation and enforcement of such standards of performance.*⁴⁹

The italicized language is the critical language because it appears to prohibit the regulation of an air pollutant that is emitted from a source category which is regulated under § 112.⁵⁰ This so-called § 112 exclusion provision in the United States Code would then prohibit EPA from regulating carbon emissions—an air pollutant—from power plants under § 111(d) because power plants—a source category—are regulated under § 112.⁵¹ The CPP would then be unlawful.

However, the Senate amendment, which was included in the Statutes at Large⁵² and was labeled as a conforming amendment,⁵³ modified the pre-1990 version of the CAA by substituting “section 112(b)” for “section 112(b)(1).”⁵⁴ Section 111(d) thus remains a gap-filling provision, commanding EPA to establish standards for “any existing source for any air pollutant . . . which is not included on a list published under [108(a)] or [112(b)].”⁵⁵ As carbon dioxide is

47. *Id.* at 4.

48. Clean Power Plan, 80 Fed. Reg. at 64,712 (“[T]hat the U.S. Code only reflects the House amendment does not change the fact that both amendments were signed into law as part of the 1990 Amendments, as shown in the Statutes at Large.”).

49. 42 U.S.C. § 7411(d) (2012) (emphasis added).

50. Zevin, *supra* note 46, at 3.

51. *Id.* at 4.

52. *Id.*

53. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, § 302, 104 Stat. 2399, 2574.

54. *Id.*

55. Clean Power Plan, 80 Fed. Reg. at 64,713.

not a § 108 criteria pollutant⁵⁶ and is not listed as a hazardous air pollutant under § 112(b),⁵⁷ the Senate amendment would require EPA to regulate carbon emissions—an air pollutant—from power plants—an existing source—not listed under § 108(a) or § 112(b).⁵⁸ This would make the CPP's regulation of carbon emissions from existing power plants lawful.⁵⁹

It is the conflict between these two amendments—a statutory ambiguity—that the courts might seek to resolve through the application of *King*, if certain preconditions that are discussed in Section III are met, and may prove a stumbling block for the CPP.⁶⁰ Application of *Chevron* to this conflict would likely prove helpful to EPA because it directs courts to uphold—defer to—a “reasonable agency interpretation” in the face of statutory ambiguity.⁶¹ This framework is one in which EPA and/or its interpretation is likely, though not guaranteed, to prevail.⁶² Meanwhile application of *King* to this question would make the analysis less certain⁶³ as it eliminates the deference afforded to agencies under *Chevron*,⁶⁴ leaving the fate of the statutory interpretation, and thus the rule itself, in

56. *Criteria Air Pollutants*, ENVTL. PROT. AGENCY, <https://www.epa.gov/criteria-air-pollutants> (last visited Nov. 26, 2016) (listing the six criteria pollutants as particulate matter, photochemical oxidants and ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead).

57. 42 U.S.C. § 7412(b) (2012).

58. See Clean Power Plan, 80 Fed. Reg. at 64,712.

59. *Id.* (“[T]he Section 112 Exclusion resulting from the Senate amendment . . . would not preclude CAA section 111(d) regulation of CO₂ emissions from power plants . . .”). EPA fulfilled the requirement that it regulate pollutants from existing power plants when new power plants are regulated under § 111(b) by publishing regulations for carbon emissions from new power plants under § 111(b) along with its § 111(d) carbon regulations. *Id.* at 64,665.

60. Recent Regulation, *supra* note 17, at 1156 (citing Adler, *supra* note 14).

61. Michael Burger et al., *Legal Pathways to Reducing Greenhouse Gas Emissions Under Section 115 of the Clean Air Act*, 28 GEO. ENVTL. L. REV. 359, 372 n.45 (2016) (“Regardless, the *Chevron* doctrine remains the go-to framework for analysis, directing courts to uphold reasonable agency interpretation in instances where the statute is silent or ambiguous.”).

62. William N. Eskridge, Jr. & Lauren E. Baer, *The Continuum of Deference: Supreme Court Treatment of Agency Statutory Interpretations from Chevron to Hamdan*, 96 GEO. L.J. 1083, 1089-91 (2008) (an empirical study of all 1014 Supreme Court cases between *Chevron* in 1984 and *Hamdan* in 2006 in which an agency statutory interpretation was at issue found that, while *Chevron* was not applied frequently in such cases, that when it was it was associated with high agency win rates). See also Hammond & Pierce, *supra* note 19, at 6 n.84 (“Studies of affirmance rates under the *Chevron* doctrine show agency win rates ranging from about sixty-four percent to about eighty-one percent.” (citing Richard J. Pierce, Jr., *What Do Studies of Judicial Review of Agency Action Mean?*, 63 ADMIN. L. REV. 77, 84 (2011))).

63. See Adler, *supra* note 14 (describing the effect of the *King* decision on the CPP's § 111(d) interpretation as “mak[ing] things more complicated for the Environmental Protection Agency. . . . Yet the Court's treatment of the *Chevron* doctrine—in particular its conclusion that no deference was owed to the IRS on the question of whether the PPACA authorizes tax credits in federal exchanges—could make EPA sweat.”).

64. Vanessa Johnson et al., *King v. Burwell: The Supreme Court's Missed Opportunity to Cure What Ails Chevron*, 42 J. LEGIS. 1, 33 (2016) (describing the Supreme Court's aim in *King* as “eliminating the deference to the agency”).

the hands of the courts.⁶⁵ As the *King* outcome—upholding the PPACA—itself illustrates, eschewing the familiar *Chevron* framework does not guarantee that EPA’s interpretation of § 111(d) and the CPP will be rejected, but it could provide a pathway for the courts to do so.

III. THE SUPREME COURT’S *KING V. BURWELL* DECISION

King is considered one of a trio of recent cases, which also includes *Mich. v. EPA* and *Util. Air Regulatory Grp. v. EPA*, dealing with agency statutory interpretation⁶⁶ and a class of cases that involve Supreme Court review of agency statutory interpretation that pose a question of “economic and political significance.”⁶⁷ *King*, however, is fundamentally different than the other cases. The other cases analyzed the agency statutory interpretation within the *Chevron* framework.⁶⁸ *King*, in an unusual move, refused to apply *Chevron*, even though the Court acknowledged the case was *Chevron*-eligible,⁶⁹ partially because of the “economic and political significance” of the question.

65. Jody Freeman, *The Chevron Sidestep: Professor Freeman on King v. Burwell*, HARV. ENVTL. L. PROGRAM, <http://environment.law.harvard.edu/2015/06/the-chevron-sidestep/> (last visited Nov. 26, 2016) (describing the Court’s rejection of *Chevron* deference in *King* as possibly limiting the “power of both executive branch and independent agencies to interpret the statutes they administer”); Cass R. Sunstein, *The Catch in the Obamacare Opinion*, BLOOMBERG VIEW (June 25, 2015, 12:48 PM), <http://www.bloombergvew.com/articles/2015-06-25/the-catch-in-the-obamacare-opinion> (describing the Court’s decision in *King* as asserting for itself the role of “determin[ing] the correct reading” of ambiguous legislation in declining to apply *Chevron*).

66. See Hammond & Pierce, *supra* note 19 (discussing *King*, *Mich.*, and *Util. Air Regulatory Grp.* in the context of the § 112 exclusion issue); Lisa Heinzerling, *The Power Canons*, 58 WM. & MARY L. REV. (forthcoming 2017) (introducing author’s discussion of *King*, *Mich.*, and *Util. Air Regulatory Grp.* by stating: “[w]ith three recent decisions, the Supreme Court has embraced a new trio of canons of statutory interpretation”).

67. *King v. Burwell*, 135 S. Ct. 2480, 2489 (2015). *King* pulled the “economic and political significance” phrase from *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427 (2014), which quoted *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000).

68. *Mich. v. EPA*, 135 S. Ct. 2699, 2701 (2015) (holding EPA’s interpretation unreasonable under *Chevron*); *Util. Air Regulatory Grp.*, 134 S. Ct. at 2432 (holding EPA’s interpretation permissible under *Chevron*); *FDA v. Brown & Williamson*, 529 U.S. at 123 (declining to defer to FDA’s interpretation under *Chevron* because of the economic and political significance of the question presented); Cass R. Sunstein, *Chevron Step Zero*, 92 VA. L. REV. 187, 247 (2006) (concluding that *Brown & Williamson* was decided at Step One of *Chevron*).

69. *King*, 135 S. Ct. at 2488 (“When analyzing an agency’s interpretation of a statute, we often apply the two-step framework announced in *Chevron*.”); Heinzerling, *supra* note 66 (“The *King v. Burwell* canon is also new. The Court had, in the *Chevron* era, never before put the *Chevron* framework entirely to the side in the circumstances presented in *King*: an interpretation of a statute deemed ambiguous, arrived at after notice-and-comment rulemaking, by the agency charged by statute with making rules to implement the provision interpreted.”).

Consequently, this section, while mindful of *King*'s placement in this cluster and class of cases, will focus extensively on the Court's analysis in *King* because of the novelty of the Court's approach to the statutory interpretation and the lack of scholarship structurally framing the Court's decision. Subsection A will provide background information necessary for understanding the question at the heart of the case. Subsection B will offer a framework for understanding how the Court resolved the central question.

A. The Patient Protection and Affordable Care Act

The PPACA ("the Act") is a comprehensive health insurance reform statute that is intended to increase Americans' access to health care insurance, including the uninsured.⁷⁰ It is based on three major reform pillars.⁷¹ First, the Act requires that each health insurance provider "accept every . . . individual in the State that applies" for health insurance coverage.⁷² Second, it requires individuals to have insurance "coverage or pay a penalty."⁷³ Third, the Act endeavors to make health insurance more affordable by providing tax credits to low-income individuals in order to purchase insurance.⁷⁴

In addition to the three reform pillars, the PPACA also establishes "exchanges" in each state in which health insurance purchasers can compare and shop for insurance plans.⁷⁵ The interaction between the tax credits and the exchanges was the central question in *King*.⁷⁶ Under the PPACA, a state can establish an exchange or, if it chooses not to do so, the Department of Health and Human Services ("HHS") will "establish and operate such [e]xchange within the State"⁷⁷ under § 1321. The amount of the tax credit for each individual taxpayer is partly dependent on whether the taxpayer enrolls in an insurance plan⁷⁸ through "an

70. Arthur Nussbaum, *Can Congress Make You Buy Health Insurance? The Affordable Care Act, National Health Care Reform, and the Constitutionality of the Individual Mandate*, 50 DUQ. L. REV. 411, 413 (2012).

71. *King*, 135 S. Ct. at 2486.

72. *Id.* (quoting 42 U.S.C. § 300gg-1(a)).

73. Alicia Ouellette, *Health Reform and the Supreme Court: The ACA Survives the Battle of the Broccoli and Fortifies Itself Against Future Fatal Attack*, 76 ALB. L. REV. 87, 91 (2013).

74. *King*, 135 S. Ct. at 2487.

75. *Id.*

76. *Id.* ("The issue in this case is whether the Act's tax credits are available in States that have a Federal [e]xchange rather than a State [e]xchange.")

77. *Id.* (quoting 42 U.S.C. § 18041(c)(1) (2015)).

78. *Id.*

[e]xchange established by the State under [§] 1311 of the” Act.⁷⁹ In 2012, the Internal Revenue Service (“IRS”) issued a rule that made tax credits available on exchanges established by both states and those established by HHS.⁸⁰ The *King* petitioners did not want to have to purchase insurance and challenged the IRS’s rule, arguing that the language of the PPACA restricts the use of the tax credits to state-established exchanges and cannot be extended to HHS-run exchanges.⁸¹ Extension of the tax credits to federal exchanges would have required petitioners to purchase health insurance with the tax credits.⁸² The Court granted certiorari to determine whether the IRS’s extension of the use of tax credits to HHS-run exchanges was lawful.⁸³

*B. The Court Employs a Three-Step Process to Resolve
the Question in Favor of the Government*

In the year since the Court decided *King*, there has been a proliferation of commentary and scholarship on the Court’s decision.⁸⁴ But this commentary and scholarship, while analyzing

79. 26 U.S.C. § 36B(b) (2015) (emphasis added).

80. Health Insurance Premium Tax Credit, 77 Fed. Reg. 30,377, 30,378 (May 23, 2012) (codified at 26 C.F.R. pts. 1 and 602) (“The statutory language of section 36B and other provisions of the Affordable Care Act support the interpretation that credits are available to taxpayers who obtain coverage through a State [e]xchange . . . and the Federally-facilitated [e]xchange.”).

81. See *King*, 135 S. Ct. at 2487.

82. *Id.* at 2488. Petitioners were four Virginia residents, which had a federal exchange, and would have received tax credits under the IRS’s rule. *Id.* at 2487-88. This would have brought the cost of buying insurance for the individuals under the income threshold and thus would have required them to either buy health insurance or pay a penalty to IRS. *Id.* at 2488.

83. *Id.* at 2488.

84. See generally Jonathan H. Adler & Michael F. Cannon, *King v. Burwell and the Triumph of Selective Contextualism*, 2015 CATO SUP. CT. REV. 35 (reviewing, criticizing, and assessing the significance of *King*); Emily Hammond, *Deference for Interesting Times*, 28 GEO. ENVTL. L. REV. 441 (2016) (discussing *King* in the context of shifting deference norms); Hammond & Pierce Jr., *supra* note 19 (applying *King* to statutory interpretation issues in the CPP); Recent Regulation, *supra* note 17 (reviewing how *King* may have influenced EPA’s interpretation of CAA provisions in the final version of the CPP); Heinzerling, *supra* note 66 (describing *King* as one of a trio of cases that asserts greater power for the courts in assessing questions of statutory interpretation); Kristin E. Hickman, *The (Perhaps) Unintended Consequences of King v. Burwell*, 2015 PEPP. L. REV. 56 (assessing *King*’s impact on *Chevron* deference and what it means for tax law); Johnson et al., *supra* note 64 (arguing that the Court should have applied *Chevron* to the question in *King* and that it missed an opportunity to “fix the flaws” in *Chevron*); Matthew A. Melone, *King v. Burwell and the Chevron Doctrine: Did the Court Invite Judicial Activism?*, 64 U. KAN. L. REV. 663 (2016) (discussing *King* in critiquing the Court’s deference jurisprudence); Richard M. Re, *The New Holy Trinity*, 18 GREEN BAG 2d 407, 408 (2015) (placing *King* in a trio of recent cases that “calls for consideration of non-textual factors when determining how much clarity is required for a text to be clear”); Adler, *supra* note 14 (questioning whether *King* may pose an obstacle to EPA’s interpretation of the conflicting § 111(d) amendments); Freeman, *supra* note 65 (describing

many different aspects of the Court's decision, has not produced an easy to use structure for understanding how the Court reached its decision⁸⁵ that can be applied to *King*-like statutory interpretation questions in the future. This subsection proposes a three-step framework for understanding how the *King* Court resolved the case's central question in the government's favor.

1. Step One: Eschewing *Chevron U.S.A., Inc. v. Nat. Res. Def. Council*

The Court began its analysis of whether the PPACA provides for the use of tax credits on federally-run exchanges by noting that “[w]hen analyzing an agency’s interpretation of a statute, we often apply the two-step framework announced in *Chevron*.”⁸⁶ *Chevron* involves asking whether the statute is ambiguous and if so whether the agency’s interpretation is reasonable.⁸⁷ Citing *Food and Drug Admin. v. Brown & Williamson*, the Court stated that the *Chevron* framework is based on the premise “that a statute’s ambiguity constitutes an implicit delegation from Congress to the agency to fill in the statutory gaps.”⁸⁸ It went on further: “[i]n extraordinary cases, however, there may be reason to hesitate before concluding that Congress has intended such an implicit delegation.”⁸⁹

The Court said this was one of those cases because two preconditions had been met.⁹⁰ First, the question of whether tax credits could be used on federal exchanges was a question of “economic and political significance” central to the statutory scheme because the tax credits were one of the PPACA’s significant reforms, involved “billions of dollars” in annual spending, and affected the “price of health insurance for millions of people.”⁹¹ The Court found that had

the Court’s eschewing of *Chevron* in *King* as the *Chevron* sidestep); Sunstein, *supra* note 65 (comparing the eschewing of *Chevron* to the Court’s decision in *Marbury v. Madison*).

85. See, e.g., Adler & Cannon, *supra* note 84 (discussing the content of the three steps in the framework this Note develops, but not in those terms or in the order presented in this Note); Hammond, *supra* note 84 (focusing only on this Note’s Step One); Hickman, *supra* note 84 (focusing on the content of this Note’s Step One); Melone, *supra* note 84 (discussing the content of the three steps of this Note’s framework, but without providing any structure for comprehending how the Court reached its decision); Re, *supra* note 84 (focusing on what this Note discusses at Step Two); Freeman, *supra* note 65 (focusing on this Note’s Step One); Sunstein, *supra* note 64 (focusing on this Note’s Step One).

86. *King*, 135 S. Ct. at 2488.

87. *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 842-43 (1984).

88. *King*, 135 S. Ct. at 2488 (quoting *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 159 (2000)).

89. *Id.* at 2488-89 (quoting *Brown & Williamson*, 529 U.S. at 159).

90. *Id.* at 2489.

91. *Id.* (quoting *Brown & Williamson*, 529 U.S. at 160). For a discussion of what the courts mean by “economic and political significance,” see *infra* Section IV.A.1. For an estimate of the economic impact of the tax credits at issue in *King*, see *infra* notes 142, 152.

Congress intended to assign this question to an agency, it would have expressly done so.⁹² Second, it was “especially unlikely that Congress would have delegated this decision to the IRS, which has no expertise in crafting health insurance policy of this sort. This is not a case for the IRS.”⁹³

King Step One might best be summarized as: should *Chevron* apply?

2. Step Two: The Critical Language is Ambiguous

Proceeding to the second phase of its analysis, the Court said it was instead its responsibility to determine the correct reading of “an [e]xchange *established by the State* under [§] 1311 of the” Act.⁹⁴ If the statutory language is clear, the Court must enforce its terms.⁹⁵ However, if the text is ambiguous, the Court will turn to Step Three—analyzing the broader structure of the Act—to determine the meaning of the language.⁹⁶ In determining whether the language is plain, courts “must read the words ‘in their context and with a view to their place in the overall statutory scheme.’”⁹⁷

Turning to the language in question, the Court employed a textualist approach,⁹⁸ breaking it down into three elements that must be satisfied if an individual is to use tax credits to acquire insurance on an exchange.⁹⁹ Those elements are: (1) an individual must enroll through “an exchange”; (2) the exchange must be “established by the State”; and (3) the exchange must be established under § 1311 of the Act.¹⁰⁰ The Court noted that all the parties agreed that a federally-run exchange qualified as “an [e]xchange.”¹⁰¹

On the critical question of whether a federal exchange satisfies the second element of being “established by the State,” the Court continued to use a textualist approach in importing the statute’s definitions of key words to determine if a plain meaning reading of

92. *King*, 135 S. Ct. at 2489.

93. *Id.*

94. *Id.* (“It is instead our task to determine the correct reading of Section 36B.”).

95. *Id.*

96. *Id.* at 2492 (“Given that the text is ambiguous, we must turn to the broader structure of the Act to determine the meaning of Section 36B.”).

97. *Id.* at 2489 (quoting *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000)).

98. FRANK B. CROSS, *THE THEORY AND PRACTICE OF STATUTORY INTERPRETATION* 24 (2009) (“Textualism ‘does not admit of a simple definition, but in practice is associated with the basic proposition that judges must seek and abide by the public meaning of the enacted text, understood in context.’” (quoting John F. Manning, *Textualism and Legislative Intent*, 91 VA. L. REV. 419, 420 (2005))).

99. *King*, 135 S. Ct. at 2489.

100. *Id.*

101. *Id.*

the text was consistent with Congressional intent in passing the legislation.¹⁰² The Court noted that it might seem that a federal exchange could not fulfill the “established by the State” element because the statute’s definition of “State” does not mention the federal government.¹⁰³ But read in context and “with a view to [its] place in the overall statutory scheme” the meaning of the phrase was not so clear.¹⁰⁴ Section 1311 states that all exchanges “shall make available qualified health plans to qualified individuals”¹⁰⁵ and “qualified individuals” are defined in the statute as individuals who “reside in the State that established the [e]xchange.”¹⁰⁶ However, there would be no “qualified individuals” on federal exchanges if the phrase “the State that established the [e]xchange” was given “its most natural meaning” and yet the text of PPACA expects that there will be qualified individuals on every exchange, which would not be the case if federally-run exchanges could not enroll individuals.¹⁰⁷ Consequently, the phrase “established by the State” did not possess its natural meaning in context.¹⁰⁸ On the third element, the Court used much of the same approach as it did in the second element¹⁰⁹ in finding that a federal exchange, because of context and statutory scheme, may be considered established under § 1311 of the Act.¹¹⁰ Importing the PPACA’s definition of “exchange,” meaning an “[e]xchange established under [§ 1311],” to § 1321 suggests that § 1321, authorizing HHS to establish an exchange, authorizes it to do so under § 1311 as otherwise the federal exchange “would not be an [e]xchange at all.”¹¹¹

In the final analysis of the Court’s second analytical phase, the phrase “an [e]xchange established by the State under § 1311” was ambiguous.¹¹² It was possible to construct multiple meanings of the

102. See KATHARINE CLARK & MATTHEW CONNOLLY, A GUIDE TO READING, INTERPRETING AND APPLYING STATUTES 3 (2006), <https://www.law.georgetown.edu/academics/academic-programs/legal-writing-scholarship/writing-center/upload/statutory-interpretation.pdf> (listing the use of statutory definitions as a form of plain meaning statutory interpretation); CROSS, *supra* note 98, at 25 (“The classical textualist approach to statutory interpretation takes the words of the text and attempts to discern their ‘plain meaning.’”).

103. *King*, 135 S. Ct. at 2490. The Act defines “State” to mean “each of the 50 states and the District of Columbia.” *Id.*

104. *Id.* (quoting *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000)).

105. 42 U.S.C. § 18031(d)(2)(A).

106. *Id.* § 18032(f)(1)(A)(ii).

107. *King*, 135 S. Ct. at 2490.

108. *Id.*

109. See *supra* note 102.

110. *King*, 135 S. Ct. at 2490-91.

111. *Id.* at 2490-91.

112. *Id.* at 2491.

language—it could be limited to state exchanges, but it could also refer to all exchanges, including federal exchanges, for the reasons discussed above.¹¹³ Furthermore, several references in the PPACA to the ambiguous language would not make sense if the tax credits were not available on federal exchanges.¹¹⁴ The Court brushed aside the suggestion that it employ the canon against surplusage to find that the words “established by the State” would be unnecessary if they were given the meaning petitioners preferred.¹¹⁵ The “inartful drafting” of the PPACA meant that “rigorous application of the canon” would not provide a “fair construction of the statute.”¹¹⁶

Step Two requires asking if it is possible to construct multiple meanings from the contested language? If it is, then the analysis proceeds to Step Three. If the language is clear, it must be enforced as written.

3. Step Three: The Broad Structure of the Act Necessitates Finding in Favor of the Government

Finding the text ambiguous, the Court employed purposivism¹¹⁷ and used materials cited in briefs to resolve the statutory ambiguity in the third phase of its decision. The Court said that a provision that is ambiguous is “often clarified” by aid of the rest of the broader statutory scheme because “only one of the permissible meanings produces a substantive effect that is compatible with the rest of the law”¹¹⁸ and the Court “cannot interpret federal statutes to negate their own stated purposes.”¹¹⁹

The Court noted that in a state that establishes its own exchange the Act’s reform pillars would work together to expand health insurance coverage by ensuring everyone could get coverage; incentivizing individuals to get insurance, rather than paying a penalty; and ensuring insurance would be more affordable through

113. *Id.* (“The upshot of all this is that the phrase ‘an Exchange established by the State under [§ 1311]’ is properly viewed as ambiguous. The phrase may be limited in its reach to State [e]xchanges. But it is also possible that the phrase refers to *all* Exchanges—both state and federal—at least for the purposes of the tax credits.”).

114. *Id.* at 2491-92.

115. *Id.* at 2492.

116. *Id.*

117. CROSS, *supra* note 98, at 60 (“The broader search for general legislative purpose sometimes goes by the term ‘purposivism.’ . . . Each statute should be fitted into the broad legal landscape in order to best effectuate the purpose of the enacting Congress”).

118. *King*, 135 S. Ct. at 2492 (quoting *United Sav. Ass’n of Tex. v. Timbers of Inwood Forests Assocs.*, 484 U.S. 365, 371 (1988)).

119. *Id.* (quoting *New York State Dep’t of Soc. Servs. v. Dublino*, 413 U.S. 405, 419-20 (1973)).

the tax credits.¹²⁰ However, the petitioners' interpretation of the ambiguous language would mean that the tax credits would not be available in states with a federal exchange.¹²¹ Because the requirement to purchase insurance is tied to an individual's income, many individuals without the aid of the tax credits would not be required to purchase insurance.¹²² The Court stated without tax credits, and with a limited requirement to purchase insurance, individual insurance markets in states with federally-run exchanges could, pulling language from the government's brief,¹²³ enter a "death spiral."¹²⁴ The Court cited studies, discussed in the government's brief¹²⁵ and *amici curiae's* briefs,¹²⁶ which predicted premiums could increase between 35- to 47% and enrollment could decline by approximately seventy percent in states with federal exchanges.¹²⁷ Citing an *amici curiae* brief of economists, the Court said premiums would also rise for those outside the exchanges because the PPACA's first reform pillar "requires insurers to treat the entire individual market as a single risk pool."¹²⁸ Considering the impact petitioners' interpretation would have on health insurance markets, the Court said: "[i]t is implausible that Congress meant the Act to operate

120. *Id.* at 2493.

121. *Id.* ("Under petitioners' reading . . . one of the Act's three major reforms—the tax credits—would not apply.")

122. *Id.* ("So without the tax credits, the coverage requirement would apply to fewer individuals. . . . [A] *lot* fewer.")

123. Brief for Respondents at *15, *King v. Burwell*, 135 S. Ct. 2480 (2015) (No. 14-114), 2015 WL 349885, at *15 (describing the impact of tax credits being unavailable in some states: "The denial of tax credits and the resulting loss of customers would thus have disastrous consequences for the insurance markets in the affected States, which would remain subject to the Act's nondiscrimination rules but without the safeguards Congress deemed essential to preventing death spirals.")

124. *King*, S. Ct. 135 at 2493.

125. Brief for Respondents at *37, *King v. Burwell*, 135 S. Ct. 2480 (2015) (No. 14-114), 2015 WL 349885, at *37 (citing EVAN SALTZMAN & CHRISTINE EIBNER, THE EFFECT OF ELIMINATING THE ACA'S TAX CREDITS IN FEDERALLY FACILITATED MARKETPLACES 5-6 (Jan. 2015)).

126. *See, e.g.*, Brief for Amici Curie Asian & Pacific Islander Am. Health Forum et al. at *28 n.55, *King v. Burwell*, 135 S. Ct. 2480 (2015) (No. 14-114), 2015 WL 350368, at *28 n.55 (same). In all, eight *amici curiae* briefs cited SALTZMAN & EIBNER, *supra* note 125. *See also* Brief of HCA Inc. as Amicus Curiae in Support of Respondent at *20 n.14, *King v. Burwell*, 135 S. Ct. 2480 (2015) (No. 14-114), 2015 WL 365002, *20 n.14 (citing LINDA J. BLUMBERG ET AL., URBAN INSTITUTE, THE IMPLICATIONS OF A SUPREME COURT FINDING FOR THE PLAINTIFF IN KING V. BURWELL: 8.2 MILLION MORE UNINSURED AND 35% HIGHER PREMIUMS 6-7 & fig.1 (2015)). In all, fifteen *amici curiae* briefs cited BLUMBERG ET AL.

127. *King*, 135 S. Ct. at 2493-94.

128. *Id.* at 2494 ("Because the Act requires insurers to treat the entire individual market as a single risk pool, . . . premiums outside the [e]xchange would rise along with those inside the [e]xchange." (citing Brief for Amici Curiae for Bipartisan Economic Scholars in Support of Respondents at *11-12, *King v. Burwell*, 135 S. Ct. 2480 (2015) (No. 14-114), 2015 WL 393821).

in this manner . . . Congress meant for [the tax credits and insurance purchasing requirement] to apply in every State”¹²⁹

Ultimately, the Court concluded that the critical ambiguous provision in the PPACA allowed tax credits to be used on any exchange because doing so was consistent with what it saw as Congress’s plan to “improve health insurance markets,” not ruin them.¹³⁰ Under those circumstances, the Court “[i]f at all possible . . . must interpret the Act in a way that is *consistent* with the former, and avoids the latter.”¹³¹

King Step Three can best be summarized as: how can the language be best interpreted in the context of the broader structure and intent of the underlying legislation?

IV. APPLYING THE SUPREME COURT’S *KING* FRAMEWORK TO THE CPP

This section of the Note will assess how the courts might interpret the § 112 exclusionary language in § 111(d) of the CAA, which is critical to determining the lawfulness of the CPP. Subsection A will examine how the courts will assess this question at *King* Step One; Subsection B will do the same for Step Two; and Subsection C will do the same for Step Three. Woven throughout these analyses will be a discussion of possible counterarguments to each subsection’s analysis.

A. Step One: EPA’s Interpretation Deserves Chevron Deference

This subsection will explore the two pre-conditions that lead the Court to eschew *Chevron* deference in the first phase of its analysis in *King*. First, the subsection will examine why the question here is not one of “economic and political significance.” Second, it will establish that the ambiguous statutory language at issue in the CPP is the sort of question that EPA is best equipped to handle. Lastly, the subsection will conclude by bringing these two analytical strains together to show that EPA is likely to receive *Chevron* deference on the § 112 exclusion issue.

129. *King*, 135 S. Ct. at 2494.

130. *Id.* at 2496.

131. *Id.* (emphasis added).

1. This is Not a Question of “Economic and Political Significance”

The courts have provided limited guidance about what constitutes “economic and political significance,”¹³² or what qualifies as a “major question” or an “important” issue,¹³³ such that *Chevron* deference should not apply at *King* Step One. This subsection will attempt to shed light on what is meant by the phrase “economic and political significance” by examining Supreme Court and D.C. Circuit cases in which the courts stated there was a question of “economic and political significance.” It will also incorporate, where possible,¹³⁴ scholarship on the “economic and political significance” aspects of these cases. This subsection will first discuss the economic part of “economic and political significance” to establish that the § 112 exclusion is at most maybe a question of “economic significance.” Then, the following subsection will explore the political component of “economic and political significance” to show that the § 111(d) issue is not a question of “political significance.”

a. The CPP May Be a Question of Economic Significance

It is unclear what qualifies as an “economic[ally] significan[t]” question. Most decisions that have found a question of “economic and political significance” have not mentioned specific dollar figures that make the case one of “economic significance.” For example, *Brown & Williamson*, which the Court in *King* cited as the source of the “economic significance” language, did not mention

132. David Gamage, *Forward—King v. Burwell Symposium: Comments on the Commentaries (and on Some Elephants in the Room)*, 2015 PEPP. L. REV. 1, 5 (“It is perhaps regrettable that the *King v. Burwell* decision did not better clarify what constitutes a question of ‘deep economic and political significance’ for the purpose of *Chevron* deference.”); Heizerling, *supra* note 66 (“judgments about economic and political importance are subjective and unpredictable”).

133. This “economic and political significance” line of cases is sometimes referred to as the “major questions” or “important issue” canon. The scholarship surrounding this canon has also recognized that the Court has not elucidated when the canon is applicable. Austin Schlick & Michael Steffen, *Should Courts Defer the Least When It Matters the Most?*, 44:3 MD. B.J. 12, 14 (2011) (“As two legal scholars have put it, the notion is ‘that courts should force Congress to speak clearly if it intends to delegate regulatory authority over major political and economic questions.’ The proposed ‘major questions canon’ is inherently subjective and difficult to apply: a ‘major question,’ after all, is in the eye of the beholder.”); Sunstein, *supra* note 68, at 245 (“the distinction between major questions and non-major ones lacks a metric”).

134. Unfortunately, much of the scholarship on this canon merely identifies it or acknowledges that it is hard to determine when it applies, but does not attempt to provide insight into when it might apply. See Hammond, *supra* note 84, at 443 (identifying the “important issue” canon); see generally Sunstein, *supra* note 68 (noting it is hard to distinguish between major and non-major questions, but then focusing on what the canon might mean for *Chevron* and administrative law). So this subsection only includes limited reference to scholarship on what qualifies as “economic and political significance.”

the financial impact of the regulation at issue despite claiming that it was a question of “economic . . . magnitude.”¹³⁵ Even the cases that discuss actual dollar amounts sufficient to be a question of “economic significance” are not clear about when the economic impact of the issue at hand crosses the threshold into being a question of “economic significance.” *King* itself only mentioned “billions of dollars” in annual spending.¹³⁶ *Loving v. Internal Revenue Serv.*, which involved a question about the validity of tax preparation industry regulations, mentioned the “multi-billion dollar tax-preparation industry” in determining the question was one of “economic significance.”¹³⁷ Similarly, in *Util. Air Regulatory Grp.*, which involved a rule that tailored permitting requirements for carbon emissions to large sources, the Supreme Court said the rule that would increase administrative costs for one regulatory program from \$12 million to \$1.5 billion was a question of “economic significance.”¹³⁸ But the Court also noted that the rule would increase the administrative costs for another regulatory program from \$62 million to \$21 billion.¹³⁹ The Court did not state whether \$1.5 billion or \$21 billion was sufficient to make it a question of “economic significance.” It is difficult to know based on the estimated economic impact of a regulation whether it will present a question of “economic significance.”

In the wake of this uncertainty, some scholarship has questioned whether the § 112 exclusion issue rises to the level of the economic impact of the question in *King*.¹⁴⁰ The compliance cost of the CPP for the utility industry is between only \$5.1 and \$8.4 billion¹⁴¹ as compared to the higher price tag for the PPACA tax credits.¹⁴² Additionally, “no reading of section 111(d) would have as significant an effect” on the CAA “as a contrary reading” would have had on the PPACA, potentially sending the health insurance markets into a “death spiral.”¹⁴³ This suggests that the § 112 exclusion and the CPP does not pose a question of “economic significance.”

However, arguments can be made that the § 112 exclusion is a question of “economic significance.” While the CPP compliance costs may not total nearly as much as the spending attached to the tax

135. *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000).

136. *King*, 135 S. Ct. at 2489.

137. *Loving v. IRS*, 742 F.3d 1013, 1021 (D.C. Cir. 2014).

138. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2443-44 (2014).

139. *Id.* at 2443.

140. Recent Regulation, *supra* note 17, at 1156-57.

141. *Id.*

142. Joel Zinberg, *One Easy Obamacare Fix*, U.S. NEWS & WORLD REP. (Apr. 19, 2015, 2:00 PM), <http://www.usnews.com/opinion/economic-intelligence/2015/08/19/obamacare-tax-credit-confusion-is-easily-fixable> (indicating that in 2014, over \$15 billion in PPACA health insurance tax credits were paid out).

143. Recent Regulation, *supra* note 17, at 1157.

credits in *King*, the question here may cross the vague “billions of dollars” or “multi-billion dollar” threshold that the courts thought made the questions one of “economic significance” in *King* and *Loving*. The CPP compliance costs would clear what might have been the \$1.5 billion threshold in *Util. Air Regulatory Grp.* Further, if the courts decide to view this question from a broader perspective, the CPP is expected to have between \$25- and \$45 billion in climate and health benefits. This sort of wide angle view on the impact of the CPP would then place the CPP’s economic impact in excess of the possibly higher \$21 billion threshold in *Util. Air Regulatory Grp.* that the Court found presented a question of “economic significance.”

EPA’s treatment of the § 112 exclusion (and by extension the CPP) may pose a question of “economic significance.”

b. The CPP is Not a Question of Political Significance

Courts have also not clearly articulated what they mean by the phrase “political significance.” Reading between the lines of *King*, *Brown & Williamson*, and *Loving*, it seems that the courts believe that an agency claiming a new regulatory power or a regulation that has a significant impact on a large number of Americans can pose a question of “political significance.” In *Loving*, the D.C. Circuit, reviewing IRS’s statutory interpretation, found it to pose a question of “political significance” as IRS “would be empowered for the first time to regulate hundreds of thousands of individuals”¹⁴⁴ *Loving* also illustrates how the courts’ political analysis is often influenced by economic concerns because the quotation in the preceding sentence continues: “. . . in the multi-billion dollar tax-preparation industry.”¹⁴⁵ Similarly, Sunstein, in discussing the political prong of the Court’s analysis in *Brown & Williamson*, believed it was satisfied when it involved interpreting an ambiguous provision “in a way that would massively alter the preexisting statutory scheme.”¹⁴⁶ While in *King*, the Court offered an alternative rationale for why the question was political—it “affect[ed] the price of health insurance for millions of people,” as it involved billions of dollars of annual spending.¹⁴⁷

The § 111(d) issue is not one of “political significance.” EPA is not claiming a new regulatory power by regulating air pollutants

144. *Loving v. IRS*, 742 F.3d 1013, 1021 (D.C. Cir. 2014).

145. *Id.*

146. Sunstein, *supra* note 68, at 244.

147. *King v. Burwell*, 135 S. Ct. 2480, 2489 (2000).

through § 111(d) as it has done several times in the past.¹⁴⁸ Additionally, while electricity use is ubiquitous in America,¹⁴⁹ and thus the CPP will affect more than the “millions of people” in *King*, the impact will not be as significant as the requirement to purchase insurance in *King*. Households are expected to save \$17 monthly from lower electricity bills as a result of the CPP.¹⁵⁰ But this falls far short of the “economic significance” of the PPACA that requires Americans to spend hundreds or thousands of their own dollars or those of the government’s¹⁵¹ to purchase insurance, or pay hefty penalties for failing to purchase insurance.¹⁵²

2. EPA is Best-Equipped to Handle This Question

The § 112 exclusion issue, unlike the issue in *King*, is a question for EPA. Congress specifically authorized EPA “to prescribe such regulations . . . as are necessary” under the CAA¹⁵³ and courts have recognized that Congress has designated EPA as particularly well-suited “to serve as [the] primary regulator” of carbon emissions.¹⁵⁴ Consequently, it is likely that the courts will find that Congress assigned this statutory interpretation question with implications for carbon emissions regulations to EPA and that EPA’s interpretation will qualify for *Chevron* treatment.

But Jonathan Adler believes that this question is one of legislative process, not regulatory design, significantly weakening

148. See Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills, 61 Fed. Reg. 9905 (Mar. 12, 1996) (codified at 40 C.F.R. pts. 51, 52, and 60); Kraft Pulp Mills; Final Guideline Document; Availability, 44 Fed. Reg. 29,828 (May 22, 1979); Emission Guideline for Sulfuric Acid Mist, 42 Fed. Reg. 55,796 (Oct. 18, 1977) (codified at 40 C.F.R. pt. 60); Phosphate Fertilizer Plants; Final Guideline Document; Availability, 42 Fed. Reg. 12,022 (Mar. 1, 1977).

149. *Access to Electricity (% of Population)*, <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS> (last visited Nov. 26, 2016) (listing U.S. electricity percentage as 100%).

150. See KNIGHT & ALLISON, *supra* note 34, at 9.

151. I.e., the tax credits.

152. See Dan Munro, *Average Cost of Obamacare ‘Silver’ Plan - \$328 Per Month*, FORBES (Sept. 29, 2013, 10:35 AM), <http://www.forbes.com/sites/danmunro/2013/09/29/average-cost-of-obamacare-silver-plan-328-per-month/> (detailing the cost of the mid-tier health insurance plan under the PPACA as \$328 a month); Grace-Marie Turner, *How Much is the Obamacare Mandate Going to Cost You*, FORBES (July 24, 2012, 10:28 AM), <http://www.forbes.com/sites/gracemarieturner/2012/07/24/how-much-is-the-obamacare-mandate-going-to-cost-you/> (noting that the penalty for failing to purchase health insurance for lowest income taxpayers under the PPACA will be \$695 in 2016; but that the penalty scales up to \$2,085 for higher income families).

153. 42 U.S.C. § 7601 (2015).

154. Recent Regulation, *supra* note 17, at 1157 n.48 (quoting *Am. Elec. Power. Co. v. Conn.*, 131 S. Ct. 2527, 2539 (2011)).

the case for applying *Chevron* deference.¹⁵⁵ This argument is unconvincing because, in the face of ambiguity stemming from two diametrically opposed amendments,¹⁵⁶ this is not a question of legislative process. Instead it is one of how to best interpret the amendments in the context of the CAA.¹⁵⁷ Under this circumstance, the courts have acknowledged, even pre-*Chevron*, EPA's expertise in interpreting the CAA and thus EPA is likely to be afforded deference on this question.¹⁵⁸

3. The Courts Likely Will Not Jettison *Chevron* Deference in Assessing the Section 112 Exclusion

Ultimately, the CPP should receive *Chevron* deference for its interpretation of the ambiguous § 112 exclusion provision. The strongest argument for this is that this is the type of question that EPA is meant to resolve—and consequently receive *Chevron* deference on—because it requires EPA expertise in interpreting the CAA and designing a carbon regulatory regime. Moreover, this is at most possibly a question of “economic significance,” but certainly not one of “political significance.” It is not “political[ly] significan[t]” because EPA is not exercising a new regulatory authority in acting under § 111(d) and it will not have a significant financial impact on Americans. It is unlikely that the courts will decline to apply *Chevron* deference when the “economic and political

155. See Adler, *supra* note 14 (“It’s one thing to defer to the EPA over technical matters concerning pollution control, but quite another to defer to the EPA on legislative process . . .”).

156. Both the U. S. Code and case law, despite petitioners’ contention otherwise, are clear that where the United States Code and Statutes at Large conflict, the latter must be given control. 1 U.S.C. § 112 (2015) (“The United States Statutes at Large shall be legal evidence of laws . . .”); *Stephan v. United States*, 319 U.S. 423, 426 (1943) (“[T]he Code cannot prevail over the Statutes at Large when the two are inconsistent.”); *Five Flags Pipe Line Co. v. Dep’t of Transp.*, 854 F.2d 1438, 1440 (D.C. Cir. 1988) (“[W]here the language of the Statutes at Large conflicts with the language in the United States Code that has not been enacted into positive law, the language of the Statues at Large controls.”). This means that the courts must attempt to give effect to both the House and Senate amendment as both are in the Statutes at Large, creating ambiguity. See *Clean Power Plan*, 80 Fed. Reg. at 64,711-12; see *infra* Section IV.B.

157. See *Chevron U.S.A., Inc. v. Nat. Res. Def. Council*, 467 U.S. 837, 842-43 (1984) (once it has been determined that the statutory language is ambiguous, the next step is statutory interpretation: “Rather, if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency’s answer is based on a permissible construction of the statute.”).

158. *Union Elec. Co. v. EPA*, 427 U.S. 246, 256 (1976) (“We have previously accorded great deference to the Administrator’s construction of the Clean Air Act.”); *Nat. Res. Def. Council v. EPA*, 655 F.2d 318, 326 n.14 (D.C. Cir. 1981) (“We are aware that EPA’s interpretation of the Clean Air Act on matters open to reasonable differences of opinion are entitled to deference.”).

significance” of the CPP is not immediately clear and EPA has the expertise to resolve the statutory ambiguity.

B. Step Two: The Language of Section 111(d) is Ambiguous

If the courts do decide that the § 112 exclusion question is one of “economic and political significance,” it is likely that the analysis will proceed to Step Three of this Note’s proposed framework because the language of §111(d) is ambiguous. The language is not clear. The courts must attempt to give effect to two versions of the § 112 exclusion provision¹⁵⁹—one of which would require EPA to regulate carbon emissions from existing power plans under § 111(d) and the other which would prohibit EPA from regulating carbon emissions from existing power plants under § 111(d). The courts cannot attempt to break down the language into its component parts to closely scrutinize the text of the provision, as the Court did in Step Two in *King*, because there is not even an agreement about what it says.¹⁶⁰ The inapplicability of a close textual reading to the question here only further suggests that the courts will decline to use the *King* framework to resolve the § 112 exclusion issue.

If, for some reason, the courts decide to determine § 111(d)’s meaning by inserting both amendments into the language, as a Step Two textualist reading would require, it would only demonstrate the uselessness of the *King* approach to this question. A working paper attempted to “effectuate both provisions” in the same text and found that doing so was “impossible” because once one of the amendments was inserted into the pre-1990 version of the CAA, the words that the second amendment says should be struck do not exist.¹⁶¹ For example, the paper attempted to first insert the Senate amendment and then the House amendment into the text:

Alternatively, one could start with [the Senate amendment]. Section 111(d) would read, as described above, “(1) The Administrator shall prescribe regulations . . . for any existing source for any air pollutant (i)... which is not included on a list published under section [1]08(a) or ~~[1]12(b)(1)(A)~~ **112(b)**. . . .” Trying to then codify [the House amendment’s] direction to “strick[e] ‘or 112(b)(1)(A)’ and insert[] ‘or emitted

159. See last sentence of *supra* note 156.

160. Adler, *supra* note 14 (“Put another way, the question is not about how to interpret Section 111, but what Section 111 actually says.”).

161. Zevin, *supra* note 46, at 14-15.

from a source category which is regulated under section 112” is equally impossible, as 112(b)(1)(A) is not part of the provision as amended.¹⁶²

This exercise illustrates that the courts will not attempt to determine the meaning of the § 112 exclusion by effectuating both amendments in the same base text because doing so cannot answer Step Two’s ultimate question: is it possible to interpret the language, in its context, in such a way that there are multiple meanings?¹⁶³ A textualist approach cannot answer Step Two’s ultimate question because it produces an unworkable and unusable text. As the *King* Court’s textualist approach is incapable of helping the courts determine if the statutory language is ambiguous at Step Two, the courts will either decide that the *King* framework is a poor vehicle to resolving the § 112 exclusion question altogether, or, if the courts insist on employing *King*, conduct a slimmed down Step Two analysis and determine that the two amendments are facially ambiguous.¹⁶⁴

C. Step Three: The Broad Structure of the CAA Likely Necessitates Finding in EPA’s Favor

If the courts apply *King*, the tools the Court used in its third analytical phase will likely require that the courts find in EPA’s favor on the § 112 exclusion issue. Employing purposivism, the courts will look to the broader structure of the CAA to clarify the ambiguous language, ensuring that the interpretation they ultimately adopt does not “negate [the CAA’s] own stated purpose.”¹⁶⁵ The purpose of the CAA is to comprehensively regulate air pollutants in order to protect public health and welfare.¹⁶⁶

162. *Id.* at 15. Zevin continues by trying to effectuate as much of the amendments as possible, and ultimately finds a way to do so. *Id.* But he himself does not think the manner he accomplishes it in is based on reasoning or logic. *Id.* at 15-16 (“However, in order to get to this reading, one has to decide to follow [the House amendment’s] direction to strike, but, for some reason, ignore [the Senate amendment’s] direction to strike. . . . Following only the direction to strike as far as one can, inserting language regardless can allow the inclusion of both provisions into the law, but only at the expense of nonsensical law.”). Additionally, there is nothing in *King* Step Two that would sanction such a move as doing so is not based on the context or structure of the CAA. Consequently, this subsection will not analyze whether attempting to effectuate as much of both amendments as possible could help the courts reach a conclusion at Step Two about whether the § 112 exclusion is ambiguous.

163. *See supra* note 113. If it is possible to give multiple meanings to the language, then the language is ambiguous and the analysis proceeds to Step Three. *See supra* note 96.

164. *See* first paragraph of *supra* Section IV.B.

165. *King v. Burwell*, 135 S. Ct. 2480, 2493 (2015) (quoting *New York State Dep’t of Soc. Servs. v. Dublino*, 413 U.S. 405, 419-20 (1973)).

166. 42 U.S.C. § 7401(b)(1).

But the interpretation of § 111(d) that industry and state challengers of the CPP favor would negate the purpose of the CAA because, as the government articulates in its reply brief in the D.C. Circuit merits challenge, it would strip § 111(d) of nearly all of its effect.¹⁶⁷ The CAA would no longer be a comprehensive statute as non-criteria and non-hazardous air pollutants of any kind from existing sources could no longer be regulated by EPA, if that source was regulated under § 112. Section 111(d) would no longer play its gap filling role, which, as the government points out by citing to *King*, “cannot be squared with the Act’s scheme”¹⁶⁸ to protect public health and welfare.

Further, prohibiting the regulation of carbon emissions from existing power plants, as opponents’ reading of the § 112 exclusion would require, would threaten public health and welfare. Environmental intervenors¹⁶⁹ in the D.C. Circuit merits challenge have explained the impacts of climate change: “Higher temperatures worsen deadly heatwaves, promote the spread of insect-borne diseases, intensify storms and flooding that cause death and injury and enormous property damage, and deepen droughts that threaten crops and water supplies.”¹⁷⁰ Public health *amici curiae* have also extensively detailed the significant public health consequences of failing to address climate change.¹⁷¹ The courts will likely find in EPA’s favor at this step because EPA’s interpretation of § 111(d) would avoid negating the CAA by allowing carbon emissions, which pose a significant threat to humans and their welfare by causing climate change, to proceed unmitigated.

A possible counterargument to this analysis of *King* Step Three is that there are other ways for EPA to regulate carbon emissions under the CAA that could fulfill the CAA’s purpose of promoting public health and welfare by addressing climate change. For example, Michael Burger and others have argued that EPA could regulate carbon emissions through § 115, which provides for the regulation of air pollution that has an international

167. Respondent EPA’s Initial Brief at 78, *W. Va. v. EPA* (D.C. Cir. Mar. 28, 2016) (No. 15-1363) (“Petitioners’ interpretation of Section 111(d) . . . would strip that provision of nearly all effect . . .”).

168. *Id.* at 84 (citing *King*, 135 S. Ct. at 2492).

169. Similar to the *amici curiae* in *King* arguing a finding that tax credits could not be used on federally-run exchanges would have devastating effects for health insurance markets.

170. Initial Brief of Intervenor Environmental and Public Health Organizations at 1, *W. Va. v. EPA* (D.C. Cir. Mar. 29, 2016) (No. 15-1363).

171. *See generally* Brief of the Am. Thoracic Soc’y et al., *W. Va. v. EPA* (D.C. Cir. Mar. 29, 2016) (No. 15-1363) (detailing the public health consequences of carbon emissions-induced climate change and arguing that resolving the § 112 exclusion issue in favor of EPA is consistent with the CAA’s purpose of protecting human health).

component.¹⁷² Thus the CPP opponents' interpretation of § 111(d) need not negate the CAA's public health purpose because the CPP's public health benefits could still be delivered through another provision of the CAA. But the Supreme Court in *King* was asking not only if an interpretation would negate the statute's purpose, but if the adopted interpretation was "consistent" with the statute's purpose.¹⁷³ Viewed through this prism, EPA's interpretation of § 111(d) is consistent with the CAA's purpose to protect public health and welfare by reining in the carbon emissions that intervenors and *amici curiae* have established will have devastating impacts for humanity. Further, as discussed above, challengers' interpretation of the § 112 exclusion would prohibit § 111(d) from fulfilling its critical gap filling role that is essential to protecting public health and welfare. Ultimately, the courts will reject this counterargument—and find in favor of EPA on its interpretation of § 111(d)—because it is not consistent with the CAA's purpose of protecting public health and welfare.

V. CONCLUSION

There are many different issues in the litigation involving the President's Clean Power Plan ("CPP"), but one of the issues that seemed most likely to threaten its lawfulness was two amendments in the 1990 Clean Air Act Amendments. Some scholars were concerned in the wake of the Supreme Court's decision in *King v. Burwell* that it might provide a framework for engaging with the two amendments that could invalidate the CPP. However, the Supreme Court decision that kept intact President Obama's signature domestic legislative achievement—health insurance reform—should not threaten his signature domestic regulatory achievement: regulation of the carbon emissions that contribute to climate change.

This Note has offered a three-step framework for understanding the Court's decision in *King* and applying it going forward. The *King* Court sought to resolve a statutory interpretation question about the availability of tax credits on federally-run health care exchanges. First, at Step One, the Court decided that the IRS's interpretation of the statutory language should not receive *Chevron* deference because the question was of "economic and political significance" and because IRS lacked expertise in crafting health

172. See generally Burger et al., *supra* note 61 (arguing that EPA could regulate carbon emissions through § 115 of the CAA).

173. *King*, 135 S. Ct. at 2496 (2015) ("Congress passed the Affordable Care Act to improve health insurance markets, not to destroy them. If at all possible, we must interpret the Act in a way that is *consistent* with the former, and avoids the later.") (emphasis added).

insurance policy. Second, the Court determined that the statutory language was ambiguous by looking at the language in its context and the overall structure of the Patient Protection and Affordable Care Act (“PPACA”). Third, having determined the language was ambiguous and that the petitioners’ desired outcome would negate the purpose of the PPACA, the Court adopted the IRS’s interpretation of the statutory language because doing so ensured that the Act would function as intended. Tax credits for purchasing health insurance are now available on federally-run exchanges.

The framework the Court used in *King* may prove detrimental to future administrations’ interpretation of statutory language as it asserts the courts’ power to determine the law.¹⁷⁴ But the courts are unlikely to employ it to hold the CPP unlawful by finding that the House’s amendment to § 111(d) prohibits EPA from regulating carbon emissions from existing power plants under that provision. First, the courts are unlikely to decline to apply *Chevron*. The question here is likely not a question of “economic and political significance” because its economic significance is not immediately obvious as that of the tax credits in *King* and it is not politically significant because EPA is not exercising a new regulatory authority or significantly impacting a large number of Americans. Further, interpreting the CAA and developing carbon emissions regulations are the type of agency actions that require EPA’s expertise. However, if the courts decline to provide EPA *Chevron* deference on its interpretation of the § 112 exclusion provision, the courts’ analysis will proceed to Step Three of the *King* framework because the exclusion provision is ambiguous. At Step Three, the courts will likely find that the broader structure and purpose of the CAA necessitates embracing EPA’s understanding of the exclusionary provision, which requires that EPA regulate carbon emissions from existing power plants under § 111(d). Otherwise the petitioners’ interpretation will defeat the CAA’s stated goal of protecting public health and welfare through comprehensively regulating air pollution.

President Obama will leave office knowing that his signature domestic legislative achievement should not prohibit the realization of his signature domestic regulatory achievement—at least on the narrow § 111(d) issue. Consequently, he will likely have fulfilled his three major progressive campaign pledges—expanding access to health care, ending the war in Iraq, and addressing climate change.

174. Heinzerling, *supra* note 66 (describing the effect of *King* as: “the Court took interpretative power from an administrative agency, power that would normally have been the agency’s . . . under *Chevron*, and kept it for itself.”); Sunstein, *supra* note 65 (discussing *King*: “it is also a strong assertion of the court’s, and not the executive branch’s, ultimate power to say what the law is”).

**DEATH WITHOUT DIGNITY:
THE MISNOMER OF EUTHANASIA IN THE
STATE ANIMAL SHELTER SYSTEM AND
A CALL FOR A NO-KILL FLORIDA**

KATHERINE SLOAN*

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I. INTRODUCTION

In 2011, a video surfaced that would shock and horrify animal lovers across the nation. The clip depicts thirty-two year old Beau Anderson—a state certified animal euthanasia specialist—wrapping a leash around the neck of a conscious dog to hold the same in an upright position standing on two legs, and systematically jamming a hypodermic needle filled with poison into the chest of the animal as it cries.¹ Anderson missed his target (the heart of the

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struggling animal) three times before finally landing the killing blow.² He was then shown dragging the dead dog by the neck to a pile of other victims and discarding the body as one would a dirty rag.³ Unfortunately, this scene is all too common in the animal shelter arena in which millions of homeless animals are put to death in some of the most inhumane ways imaginable. This article addresses the process of shelter animal “euthanasia,” the impropriety of the same, and serves as a call to action for Florida legislators to implement the processes necessary to afford animals the dignity they deserve. In five-years or less, Florida could become a No-Kill state by: (1) requiring retail pet stores to obtain animals for sale from state animal shelters; (2) implementing strategies to reunite lost pets with owners; (3) partnering with private rescue organizations and fostering systems; (4) lowering the cost of sterilization programs for low-income families; and (5) eradicating breed bans statewide.

II. THE MISNOMER OF EUTHANASIA

It is impossible to begin an article addressing the No-Kill Movement⁴ without first examining the history of the of the United States (Humane Society).

A. *The Dawning of the SPCA*

The modern movement for the humane treatment of animals began in 1866 when Henry Bergh founded the first Society for the Prevention of Cruelty to Animals (SPCA) in New York City.⁵ At the time, animals outnumbered New York City residents, and homeless animals—including various livestock—were frequently seen lumbering through the streets eating garbage.⁶ Bergh

shelter. Winky was discarded by her former owner and it is her beautiful spirit that prompted Katherine to author this note.

1. Bonnie Snider, *Heart Stick “Euthanasia Specialist” Arrested in Kentucky*, EXAMINER (Nov. 19, 2011, 9:38 AM), <https://web.archive.org/web/20160221091516/http://www.examiner.com/article/heart-stick-euthanasia-specialist-arrested-kentucky>.

2. *Id.*

3. *Id.*

4. See Andrea Toback, *Animal Shelters and the No Kill Movement*, ENCYCLOPEDIA BRITANNICA: ADVOCACY FOR ANIMALS (Jan. 14, 2008), <http://advocacy.britannica.com/blog/advocacy/2008/01/animal-shelters-and-the-no-kill-debate/> (defining No-Kill as a movement requiring all adoptable and treatable animals to be placed into suitable homes with a 90% success rate to allow for the humane euthanization of up to 10% of the intakes to the shelter in order to account for creatures too sick, wounded, or violent to be adopted).

5. NATHAN J. WINOGRAD, *REDEMPTION: THE MYTH OF PET OVERPOPULATION AND THE NO KILL REVOLUTION IN AMERICA* 7 (2d ed. 2009).

6. *Id.*

discovered—through his various travels—his passion for the prevention of animal cruelty and wanted to create a society aimed at eradicating the unethical treatment of animals, in particular, horses.⁷ Under the guidance of Bergh and his *Declaration of the Rights of Animals*, legislation was passed and great strides were made to overhaul the treatment of animals in New York City.⁸

After the death of Bergh, the humane movement for animals ceased to exist for practical purposes.⁹ In fact, his SPCA accepted a contract, which obligated it to begin the oversight and administration of the pound in New York City.¹⁰ This decision was widely rebuffed by Bergh during his lifetime, and so began the SPCA's descent into the regulation and control of the animal population.¹¹

B. The SPCA Loses Its Way

In the summer of 1978, Phyllis Wright—a celebrated animal rights advocate employed by the Humane Society—published an article, *Why Must We Euthanize?*, in the *Humane Society News*.¹² Wright detailed that she “personally put 70,000 dogs and cats to sleep.”¹³ Wright went on to say, “[w]e know that death, humanely administered, is not an evil, but a blessing to animals who are of no comfort to themselves or to the world because they are unwanted”¹⁴ Wright's essay coined the phrase, “putting animals to sleep,” and argued that killing a homeless animal was a kindness.¹⁵ There began the public's introduction to the concept of pet overpopulation and the suggestion that killing was a necessary part of humanity's responsibility for the care and oversight of homeless creatures.¹⁶ Wright suggested, and the public accepted with open-mouthed enthusiasm, that as a result of improper animal care and supervision, companion animals began to breed at alarming rates and the only justifiable solution was

7. *Id.* at 8.

8. *Id.*

9. *Id.* at 15.

10. *Id.* at 13.

11. *See id.* at 11-15.

12. *Id.* at 19-20; Phyllis Wright, *Why Must We Euthanize?*, HUMANE SOC'Y NEWS 24-25 (1978).

13. *Id.*

14. *Id.*

15. WINOGRAD, *supra* note 5, at 19-20; Wright, *supra* note 12, at 24; *see generally* Lee Anne Fennell, *Killing With Kindness: An Inquiry Into the Routinized Destruction of Companion Animals*, 3 BETWEEN THE SPECIES (2003).

16. WINOGRAD, *supra* note 5, at 19-20.

euthanasia.¹⁷ In essence, Wright asserted that an animal is useless and worthless if it is not a part of the human home.

As a direct result of Wright's widely popular essay, animal shelters across the nation instituted a policy of killing animals brought into the facility.¹⁸ Deeming the process, "putting them to sleep," Wright provided an "emotionally acceptable pretext" for the widespread killing of adoptable animals within the shelter systems.¹⁹ The public was thereby lulled into thinking that the process was a spiritual one and that the routine shelter killing was a positive experience for the animal.²⁰ Wright went on to argue that no one wants to kill, but that the killing of millions of animals was imperative to control the population, and blamed the general public and irresponsible ownership for the rising numbers of homeless animals throughout the country.²¹

In contrast to the belief of the public that the organization, People for the Ethical Treatment of Animals (PETA), is a defender of animal rights and in conflict with the ideals of Wright, PETA widely supported her work and to this day insists that killing is a kindness to homeless animals.²² In fact, PETA has publicly admitted that it does not subscribe to the belief that animals have a right to life at all.²³ This is evidenced, perhaps most disturbingly, by the statistics of the PETA-run animal shelters. In 2006, PETA summarily executed 97% of the animals they took into their shelters.²⁴ This number dwarfs the national average wherein roughly 44% of the nation's animals that enter shelters are put to death.²⁵ Specifically, PETA's stance on euthanasia is that it is, "often the most compassionate and dignified way for unwanted animals to leave the world."²⁶

Following the publication of Wright's essay, the term "euthanasia" became the quintessential expression for the killing of

17. *See id.* The use of the term "companion animals" is referring to domesticated dogs and cats.

18. *See id.*

19. *Id.* at xviii, 20; "Such 'putting down' of companion animals has been written of in glowing, almost spiritual terms by some humane professionals." *Id.* at 2; Fennell, *supra* note 15, at 2.

20. *See* WINOGRAD, *supra* note 5, at 20; *see also* Fennell, *supra* note 15, at 2 ("Such 'putting down' of companion animals has been written of in glowing, almost spiritual terms by some humane professionals.").

21. *See* Wright, *supra* note 12.

22. *See* WINOGRAD, *supra* note 5, at 5-6.

23. *Id.* at xix.

24. *Id.*

25. *Pets by the Numbers*, HUMANE SOC'Y OF THE U.S., http://www.humanesociety.org/issues/pet_overpopulation/facts/pet_ownership_statistics.html (last visited Nov. 27, 2016).

26. *Animal Rights Uncompromised: 'No-Kill' Shelters*, PETA, <http://www.peta.org/about-peta/why-peta/no-kill-shelters/> (last visited Nov. 27, 2016).

millions of animals each year. Webster's dictionary defines euthanasia as: "the act or practice of killing or permitting the death of hopelessly sick or injured individuals (as persons or domestic animals) in a relatively painless way for reasons of mercy."²⁷ Thus, by its very definition, euthanasia does not cover the killing of an otherwise healthy animal. This article will henceforth refer to the process by more appropriate terminology demonstrating the cruelty of the procedure.

C. Florida Law and Euthanasia

Currently, the state of Florida addresses the issue of the euthanasia of animals in section 828.058, *Florida Statutes*, which provides that an animal may be legally rendered dead by injecting (either intravenously or through an intraperitoneal injection) a lethal solution into its body.²⁸

The very existence of the statute indicates that the Florida legislature has acceded to the theory that "euthanasia" is a reasonable resolution to the "overpopulation" problem. Florida has limited the methods by which animals may be killed by organizations to what is deemed to be the most humane approach,²⁹ yet examination of the side effects and exact precision required for administration reveals that the process is anything but humane.

27. *Euthanasia*, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (11th ed. 2014).

28. Section 828.058, *Florida Statutes*, provides:

(1) Sodium pentobarbital, a sodium pentobarbital derivative, or other agent the Board of Veterinary Medicine may approve by rule shall be the only methods used for euthanasia of dogs and cats by public or private agencies, animal shelters, or other facilities which are operated for the collection and care of stray, neglected, abandoned, or unwanted animals. A lethal solution shall be used in the following order of preference:

- (a) Intravenous injection by hypodermic needle;
- (b) Intraperitoneal injection by hypodermic needle; or
- (c) If the dog or cat is unconscious with no corneal reflex, intracardial injection by hypodermic needle.

(2) A dog or cat may be tranquilized with an approved and humane substance before euthanasia is performed.

(3) Succinylcholine chloride, curare, curariform mixtures, any substance which acts as a neuromuscular blocking agent, or a chamber which causes a change in body oxygen may not be used on a dog or cat for any purpose. However, whenever an emergency situation exists which requires the immediate euthanasia of an injured, diseased, or dangerous animal, a law enforcement officer, a veterinarian, or an agent of a local animal control unit or the designee of such an agent may humanely destroy the animal . . .

FLA. STAT. §§ 828.058(1)-(3) (2016).

29. *See id.* (limiting the administration of lethal drugs for euthanasia of dogs and cats to three "humane" methods and requiring the drugs to be used in preferential order).

Florida's preferred method for the execution of animals involves the injection of sodium pentobarbital intravenously.³⁰ With this method, sodium pentobarbital is directly injected into the animal's vein, carried by the circulatory system to the heart and eventually enters the brain.³¹ In order for the "label dose"³² to be properly administered, the animal must be (1) large enough to allow the technician to adequately locate a viable vein; (2) calm; and (3) not so ill or injured so as to render veins collapsed or unusable.³³ This process is virtually impossible to complete on tiny dogs and cats, as it is too difficult to locate usable veins, or animals that are terrified of human contact because they cannot be rendered calm enough to properly inject the chemical.³⁴ The seal on sodium pentobarbital vials is so secure that the needle inserted to withdraw the correct dose is automatically dulled and cannot be inserted into the animal without causing severe pain.³⁵ As such, a new needle must be used for the injection into the homeless animal if the process is truly to be humane.³⁶ Moreover, the technician must ensure that the bevel of the needle is pointed up and at a shallow angle to ensure that the needle merely pierces the vein, but does not pass entirely through it to the other side.³⁷ This process is extremely difficult to master without proper training; thus to ensure the least amount of suffering for the animal, a technician must be highly specialized.³⁸ Without proper training, the technician runs the risk of piercing the vein wall or missing the vein entirely, instead injecting the drug outside and causing the drug to pool under the skin.³⁹ Failure to properly execute this technique increases the likelihood for extreme agony experienced by the animal.⁴⁰ This is what is commonly referred to as "blowing the vein," which causes the animal tremendous torment due to chemical imbalances in the body caused by the high pH level of the drug.⁴¹

In order to exterminate animals with veins that are too small for intravenous injection, shelters also administer the sodium

30. FLA. STAT. § 828.058(1) (2016).

31. HUMANE SOC'Y OF THE U.S., EUTHANASIA REFERENCE MANUAL 4 (2nd ed. 2013).

32. *See id.* at 6 (defining "label dose" as 30%-50% more than the technical "lethal dose" which would render an animal dead).

33. *Id.* at 7.

34. *Id.*

35. *Id.* at 11.

36. *Id.*

37. *Id.* at 14-15.

38. *Id.* at 17.

39. *Id.* at 21.

40. *Id.* at 17.

41. *Id.* at 21.

pentobarbital via intraperitoneal (IP) injection.⁴² This procedure involves the injection of sodium pentobarbital directly into the animal's abdominal cavity, the space in the abdomen surrounding most of the internal organs.⁴³ Unfortunately, this is preferred practice for the extermination of the young; frequently in animals less than five weeks of age.⁴⁴ Specifically, The Humane Society advocates that this procedure is most effective for young/tiny animals because their veins are too small for intravenous injection and those that are fearful of human handling because it does not require the precision of intravenous injection.⁴⁵ The problem with this technique is that the drug takes significantly longer to reach the heart and brain, ultimately exposing the animal to extended distress before death.⁴⁶ A higher dose of the drug is required for this method, and there is a high risk that the substance will enter the organs causing the animal pain prior to losing consciousness.⁴⁷ Additionally, this process results in an extended involuntary excitement period referenced in greater detail below.⁴⁸

The final procedure that is permissible in Florida involves intracardiac injection, or "heart sticking,"⁴⁹ as it is commonly known.⁵⁰ Intracardiac injection involves injecting the sodium pentobarbital directly into the heart of the animal.⁵¹ This process is extremely painful for the animal, and in Florida is only to be used when the animal is completely unresponsive.⁵²

However, Florida has allowed for an additional caveat that is often exploited by shelter administrators. As referenced above, Florida permits an animal to be murdered by any "humane" means necessary in circumstances deemed an emergency.⁵³ This includes occurrences wherein the animal is extremely sick or injured or has

42. *Id.* at 23.

43. *Id.* at 22.

44. *Id.* at 23, 25.

45. *Id.* at 22-23.

46. *SEE METHODS FOR THE EUTHANASIA OF DOGS AND CATS, WORLD SOC'Y FOR THE PROT. OF ANIMALS*, <http://www.icam-coalition.org/downloads/Methods%20for%20the%20euthanasia%20of%20dogs%20and%20cats-%20English.pdf>; *Cf. HUMANE SOC'Y OF THE U.S., supra* note 31, at 23.

47. *METHODS FOR THE EUTHANASIA OF DOGS AND CATS, supra* note 46, at 15-16; *HUMANE SOC'Y OF THE U.S., supra* note 31, at 23.

48. *METHODS FOR THE EUTHANASIA OF DOGS AND CATS, supra* note 46, at 16; *HUMANE SOC'Y OF THE U.S., supra* note 31, at 25.

49. *Cardiac Heartsticking*, ANIMAL AID USA, <http://animalaidusa.org/legislation/cardiac-heartsticking/> (last visited Nov. 27, 2016).

50. *HUMANE SOC'Y OF THE U.S., supra* note 31, at 26.

51. *Id.*

52. *Id.* at 26-27.

53. FLA. STAT. § 828.058(3) (2016) ("[W]henver an emergency situation exists which requires the immediate euthanasia of an injured, diseased, or dangerous animal, . . . an agent of a local animal control unit . . . may humanely destroy the animal . . .").

been deemed by shelter employees to be aggressive.⁵⁴ Although it stands to reason that the intention of the legislators was to provide leeway for shelter workers and law enforcement to handle extreme emergencies, this portion of the statute allows for shelter workers to employ the inhumane heart sticking procedure under the guise of handling aggressive dogs. The result of this legislative loophole is that hundreds of thousands of animals may be subjected to a process that effectively involves pinning an animal that is not sedated to the floor and popping its heart with a hypodermic needle. When this process is performed on a conscious animal, the animal is subjected to intense pain as the needles are pushed through the dense nerves surrounding the chest cavity, and the poison is injected directly into the chambers of its still-beating heart.⁵⁵ Even to the most trained technician, finding the chambers of the heart is extremely difficult and the problem is only exacerbated by the fact that the position of the heart can vary across members of the same species and even in the same breed.⁵⁶ As archaic and primeval as this method seems, this is permitted under Florida law in cases of emergency.⁵⁷ Yet, to the general public, this practice is widely unpublicized and a virtual unknown. To the public, animals are simply “put to sleep,” and given a reprieve from the cruelty of life on earth.

The whisper of death does not simply envelope an animal injected with sodium pentobarbital. In contrast, there are four stages of demise that follow the administration of the drug prior to death.⁵⁸ The first stage—voluntary excitement—causes the animal to lose coordination and to become sensitive to stimuli.⁵⁹ The animal can react violently as the brain’s inhibitory centers slowly shut down making the animal disoriented, and it is in this stage that shelter volunteers have the possibility of being injured by an otherwise gentle animal.⁶⁰ The second stage—involuntary excitement—causes the animal to engage in uncontrolled motor activity, such as leg paddling and vocalizations.⁶¹ The animal slips further into a state of surgical anesthesia—the third stage—where the animal loses sensation to all feeling.⁶² The animal descends into the medullary paralysis stage—the final stage—

54. *Id.*

55. HUMANE SOC’Y OF THE U.S., *supra* note 31, at 28.

56. *See id.* at 28.

57. *See* FLA. STAT. § 828.058(3) (2016).

58. HUMANE SOC’Y OF THE U.S., *supra* note 31, at 4-7.

59. *Id.* at 5.

60. *Id.*

61. *Id.*

62. *Id.* at 5-6.

which stops the animal's body from breathing and all core functions cease.⁶³ At this point, the animal is considered dead, though muscle contractions and spasms may follow for several minutes.⁶⁴ In fact, the animal may continue to make gasping sounds as a reflex action immediately following the final phase of death.⁶⁵ The Humane Society stresses that verifying the death of the animal is the most critical part of the killing procedure.⁶⁶ In September of 2014, in Birmingham, Alabama, a black-and-brown mutt was sentenced to death and injected with sodium pentobarbital.⁶⁷ His body was placed into a container to await disposal the following day.⁶⁸ When shelter volunteers entered the facility the next morning, the dog was moving around the shelter, very much alive.⁶⁹ Stories like this are rampant and illustrate dramatically the failures of the current system for killing unwanted animals.

Thus, through the years the mission of the animal rights movement disintegrated into the perverted system of mass slaughter that currently exists in shelters across the country today. In direct contrast to the very definition of euthanasia, currently, approximately 2.4 million healthy, adoptable pets are killed in shelters each year in the U.S.⁷⁰ These animals are dying at alarming rates and, in many cases, in a state of complete agony until their bodies finally give up the will to live. There must be a better way.

III. THE NO-KILL MOVEMENT FINDS A FOOTHOLD

The story of a brave dog named Bummer is one that most San Franciscans are quite familiar with. One fateful day in 1861, two stray dogs were fighting in the streets while humans looked on without taking action.⁷¹ The smaller dog, Lazarus, was bitten by a larger dog and in the process his leg was almost entirely severed.⁷² It was at this moment that Bummer (another stray dog) ran to

63. *Id.* at 6.

64. *Id.*

65. *Id.*

66. *Id.* at 41.

67. Associated Press, *Dog named 'Lazarus' survives euthanasia attempt*, DAILY NEWS (Oct. 5, 2014, 3:43 PM), <http://www.nydailynews.com/news/national/dog-named-lazarus-survives-euthanasia-attempt-article-1.1964074>.

68. *Id.*

69. *Id.*

70. *Pets by the Numbers*, *supra* note 25.

71. WINOGRAD, *supra* note 5, at 33.

72. *Id.*

defend the smaller dog, subsequently carrying it to safety.⁷³ Bummer remained with the injured Lazarus, bringing it food until its leg was healed.⁷⁴ It was this selfless act of love that inspired the city and made the two dogs instant celebrities.⁷⁵ At the time, San Francisco enforced extreme laws surrounding the impounding of stray animals.⁷⁶ In fact, it was illegal at the time for an animal to be on the street without a collar and a verifiable owner.⁷⁷ Dogs who were taken in as strays were eventually put to death at an alarming rate.⁷⁸ Unfortunately, Lazarus was eventually impounded, prompting public outrage.⁷⁹ Petitions circulated for his release and the city stood united in its demand for an exemption from the Canine Murder Law for this animal.⁸⁰ After members of influential high society became involved, the dogs were released, and a call for reform of the shelter system began to take shape.⁸¹ The leader of this animal reform movement was a friend of Henry Bergh, James Hutchinson.⁸² He rallied a city and, although it took many years to find full public support, eventually the No-Kill Movement gained a foothold and began to take shape in San Francisco.⁸³

Although various cities nationwide aspired to become No-Kill, implementing successful strategies proved to be an overwhelming and seemingly impossible task.⁸⁴ After 150 years, however, one state finally found a way to successfully implement a No-Kill strategy statewide.⁸⁵ New Hampshire—to date the most successful No-Kill state in the nation⁸⁶—has successfully committed to and implemented a No-Kill strategy for public and private animal shelters. A No-Kill system is not only possible, but is also already being done throughout our nation and even internationally.

A. *New Hampshire*

73. *Id.*

74. *Id.*

75. *Id.*

76. *Id.*

77. *Id.*

78. *Id.*

79. *Id.* at 34.

80. *Id.* at 33-34.

81. *Id.* at 34.

82. *Id.*

83. *Id.* at 35.

84. See PETER MARSH, GETTING TO ZERO: A ROADMAP TO ENDING ANIMAL SHELTER OVERPOPULATION IN THE UNITED STATES, at v (2012) [hereinafter MARSH, GETTING TO ZERO].

85. *Id.*

86. *Id.*

In the 1980s, New Hampshire made considerable progress in reducing its state's animal shelter death rate.⁸⁷ However, four other states in the New England region had achieved a lower euthanasia rate than New Hampshire by 1992.⁸⁸ Shelter advocate Barbara Carr decided that although many states would be proud to be ranked so low on this totem pole of shame, this was not good enough, and began the process of using shelter statistics to change legislative policies and reduce the kill rate in her state.⁸⁹

The first step in becoming a No-Kill state was to show the general public the severity of the problem.⁹⁰ Put simply, the public needed to see how intensely the shelter system was bleeding out in order to call for change.⁹¹ Animal advocates decided to illustrate, in a very tangible way, how many animals were affected by the shelter's euthanasia policies with the "Chain of Collars."⁹² In the summer of 1992, shelter advocates strung together one collar for each shelter animal murdered at a facility during the first seven months of that year.⁹³ Inscribed on the collar was a crude description of the animal; the resultant chain stretched for nearly a mile around the state capitol building.⁹⁴ This physical representation of the sheer volume of murders provided the public with an understanding of how widespread the issue had become.⁹⁵

Next, animal advocates examined the raw statistics of the animals that entered New Hampshire facilities as well as other state facilities throughout the country annually.⁹⁶ Researchers identified the obvious issue first: that as the intake numbers increased, so too did the number of animals who were killed to make room within shelters.⁹⁷ Thus, reduction of the population of homeless animals who entered the facilities became the primary focus for animal advocates.

In an effort to formulate the most effective programs, researchers examined several states' methods for reducing shelter

87. MARSH, GETTING TO ZERO, *supra* note 84, at 11.

88. *Id.* at 11.

89. *See id.* at 11-20.

90. *Id.* at 3.

91. *Id.*

92. *Id.* at 1-2.

93. *Id.*

94. *Id.* at 2.

95. *See id.* at 4.

96. *Id.* at 13-14.

97. *See* PETER MARSH, REPLACING MYTH WITH MATH: USING EVIDENCE-BASED PROGRAMS TO ERADICATE SHELTER OVERPOPULATION 7 (2010) [hereinafter MARSH, REPLACING MYTH WITH MATH]; *see also* MARSH, GETTING TO ZERO, *supra* note 84, at 22.

intakes, compiling data from those that had been successful.⁹⁸ A pre-release sterilization program had been implemented in the six largest counties in California and had resulted in a 10% reduction in future intake rates across the animal shelters therein.⁹⁹ Moreover, increased sterilization of those animals released by the animal shelters was proven to result in a higher retainer rate once the animal was placed into a home.¹⁰⁰ Statistics revealed that sexually intact dogs were twice as likely to be relinquished to a shelter than those that had been fixed.¹⁰¹ Statistics also revealed that sexually intact cats were 3.3 times more likely to be surrendered to a shelter than cats that had previously been sterilized.¹⁰²

Additionally, researchers identified cost as one of the primary barriers to spay and neuter objectives, with the majority of surrendered animals coming from low-income homes.¹⁰³ As a result, New Hampshire animal advocates implored state legislators to reconsider the spay and neuter bill that had previously been rejected by legislators.¹⁰⁴ After intense legislative debate and campaigning by advocates, the bill reached the Governor, who signed New Hampshire Senate Bill 151 into law.¹⁰⁵ The enacted bill “requir[ed] an animal population fee in addition to licensure fees for certain dogs and establish[ed] a state animal population control program.”¹⁰⁶ Specifically, Chapter 437-A created a statewide, publicly funded spay and neuter program.¹⁰⁷ As a result, low-income residents of the state who were eligible for

98. See MARSH, GETTING TO ZERO, *supra* note 84, at 16; See also MARSH, REPLACING MYTH WITH MATH, *supra* note 97, at 1-5 (associating the cause of overpopulation in animal shelters and the ineffectiveness of programs with the lack of reliable data; and claiming that the application of valuable data in remedying these issues is crucial for success).

99. MARSH, REPLACING MYTH WITH MATH, *supra* note 97, at 13.

100. *Id.* at 9.

101. *Id.* at 10.

102. *Id.*

103. See *id.* at 11; See also MARSH, GETTING TO ZERO, *supra* note 84, at 11-14 (attributing a steep decline in shelter intakes throughout the state of New Hampshire and a 75% reduction in the statewide euthanasia rate to a state-funded spay and neuter program that significantly lowered the cost of sterilization).

104. MARSH, GETTING TO ZERO, *supra* note 84, at 8-9.

105. *Id.*

106. S.B. 151, 1993 Leg., Reg. Sess. (N.H. 1993).

107. N.H. REV. STAT. § 437-A:2 (2015).

various statewide assistance programs¹⁰⁸ were now also eligible for reduced-cost spay and neuter services.¹⁰⁹

Educating the general public as to the proper timing for sterilization was also a key factor in the success of New Hampshire.¹¹⁰ A study revealed that many pet owners allowed their animals to breed because they believed it was in the best interest of the animal to have one successful breeding attempt prior to sterilization.¹¹¹ In fact, early sterilization greatly reduces the risk of various forms of cancer in companion animals.¹¹² By working with local veterinarians, state legislators and shelter employees were able to effectively spread the message that an animal should be sterilized immediately upon reaching sexual maturity.¹¹³ Moreover, data collection began surrounding the reasons for owner relinquishments in the state.¹¹⁴ 40% of dog owners and 33% of cat owners who surrendered an animal cited an unwanted behavior as the primary cause.¹¹⁵ Notably, a great number of the behaviors cited had distinct ties to the fact that the animal was sexually intact, including urination in the home, aggressiveness, and roaming tendencies.¹¹⁶

The results of this legislation were dramatic.¹¹⁷ Between 1994 and 1999, the state's eight largest shelters admitted approximately 31,000 fewer dogs and cats than in the six years preceding the program.¹¹⁸ Over this time period, the state's euthanasia rate dropped 75%.¹¹⁹ With additional revenue from increased dog licenses issued throughout the state, resulting from new state legislation integrating rabies vaccines records with licensing

108. N.H. REV. STAT. ANN. § 437-A:3 (2014) (qualifying residents are those that are eligible for the following: Food Stamp Program, Supplemental Security Income Program, Food Stamp Program, Supplemental Security Income Program, Aid to Families with Dependent Children Act, Aid to the Needy Blind program, Medicaid, the Old Age Assistance program, and the Aid to the Permanently and Totally Disabled program).

109. N.H. REV. STAT. § 437-A:2 (2015).

110. MARSH, REPLACING MYTH WITH MATH, *supra* note 97, at 15.

111. *Id.*

112. *Id.*

113. MARSH, GETTING TO ZERO, *supra* note 84, at 12.

114. *Id.* at 14.

115. MARSH, REPLACING MYTH WITH MATH, *supra* note 97, at 19-20.

116. *Id.*

117. See MARSH, GETTING TO ZERO, *supra* note 84, at 12 (showing how far euthanasia rates drop because of legislation).

118. *Id.* at 27.

119. *Id.* at 12.

records,¹²⁰ adequate funding for the initiative was secured, additionally covering the implementation of vital marketing strategies to notify the public of its existence.¹²¹

A New Hampshire shelter had committed itself to becoming No-Kill by the year 2000.¹²² Surprisingly, it reached the status of No-Kill by 1999,¹²³ and to date, is the most positive example for other shelters desiring to achieve a similar status.

[I]n 2009, nine large shelters in New Hampshire . . . [euthanized] 468 dogs with severe health or behavioral problems. During that year, these same shelters placed 2039 dogs and puppies . . . into new homes in the state. These shelters did not put down a single dog or cat to make room for another animal that had become homeless.¹²⁴

With a primary focus on sterilization and reducing the costs associated with sterilization, these shelters were able to help eliminate the senseless killing of adoptable animals.¹²⁵

Although New Hampshire remains the only state to have been deemed by some as successfully transitioned to No-Kill, numerous cities and counties across the nation have done so by implementing similar programs to that of New Hampshire. Success is possible with “community commitment.”

IV. FLORIDA: THE ROAD TO NO-KILL STATUS

It was 4:15 p.m. on a Friday when a family member—hoping he would be placed for adoption—surrendered a small, black and white, pit bull named Zeus to Hernando County Animal Services.¹²⁶ Within fifteen minutes the puppy had been put to death after being deemed “unadoptable” by the shelter’s two-person evaluation team.¹²⁷ Zeus was assessed and summarily executed in the time it takes to boil a pot of water.¹²⁸ What is perhaps even more disturbing is that a shelter volunteer took a picture of Zeus upon his entry into the

120. *See id.* at 60-61.

121. *Id.* at 61-62.

122. *Id.* at 15.

123. *Id.*

124. *Id.* at 25-26.

125. *Id.* at 27.

126. Michael D. Bates, *Hernando County Animal Services under fire for killing dog*, TAMPA BAY TIMES (Mar. 19, 2013, 3:45 AM), <http://www.tbo.com/news/herando-county-animal-services-under-fire-for-killing-dog-394407>.

127. *Id.*

128. *Id.*

facility and posted the picture on her personal Facebook page that evening in an attempt to find him a home, not knowing that Zeus had already been killed.¹²⁹ Within hours an individual contacted the volunteer, wanting to adopt Zeus first thing Monday morning.¹³⁰ Zeus was never adopted. Zeus was never held. Zeus will never have a family to call his own.

The execution of adoptable animals is not only inhumane, but also entirely unnecessary. Nationally, about 165 million dogs and cats live in homes across the U.S.¹³¹ It is estimated that the number of savable animals in shelters across the nation is up to 4.5 million.¹³² This amounts to less than 3% of the total number of animals that currently live in homes across the country.¹³³ Moreover, every year about twice as many people are looking to bring a new dog or cat into their home than the total number of dogs and cats entering shelters.¹³⁴ With so many American homes seeking to add a new animal companion to their homes each year, it seems glaringly obvious that it is possible to house 100% of the savable animals that currently reside in animal shelters in the U.S.¹³⁵ In order to achieve this goal nationwide, changes must first be implemented within each state. This article will focus on changes that can be made in the state of Florida specifically.

Statistics are difficult to obtain for the entire state, but on a county-by-county basis, where statistics are more readily accessible, the problem is glaringly obvious. In 2014, the most recent year for which statistics have been made available, 12,908 dogs and cats entered Pinellas County Animal Services and 6,543 died there, with 5,691 of that number being from shelter decided euthanasia.¹³⁶ In 2015, Seminole County reported that 7,605 dogs and cats were taken in by shelters in the twelve preceding months.¹³⁷ Of those cats and dogs, 3,713 were killed in these facilities.¹³⁸ That amounts to a kill-rate of 48.8% of all dogs and cats admitted.

129. *Id.*

130. *Id.*

131. WINOGRAD, *supra* note 5, at xi.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. PINELLAS CTY. ANIMAL SERVS., 2014 SHELTER INTAKE AND OUTCOMES REPORT (2014), <http://www.pinellascounty.org/animalservices/stats/2014/AS-CY-2014.pdf> (The 12,908 for intakes includes 805 animals in which owner requested euthanaization).

137. SEMINOLE CTY. ANIMAL CONTROL BD., REGULAR MEETING AGENDA, THURSDAY, DEC. 10 (2015), <http://www.seminolecountyfl.gov/core/fileparse.php/3296/urlt/Agenda-package-12-10-15.pdf>.

138. *Id.*

A. Current Florida Law

In 2015, the Animal Legal Defense Fund released the tenth annual year-end report ranking the animal protection laws of each state.¹³⁹ Florida was ranked as the fourteenth best state in the nation for animal protection.¹⁴⁰ This is largely due to the fact that Florida, along with eighteen other jurisdictions, instituted a statewide ban on breed-specific legislation in 2015.¹⁴¹ Additionally, Florida law is quite detailed regarding the punishment for animal cruelty.¹⁴² For example, an individual convicted of aggravated animal cruelty receives a felony of the third degree and may serve up to five years in prison, pay a fine up to \$10,000, or both.¹⁴³ If that individual knowingly and intentionally tortures or cruelly mistreats an animal (on his or her first offense), he or she faces a mandatory financial penalty of \$2,500 and is subjected to psychological counseling or an anger management treatment program.¹⁴⁴ Moreover, the state goes so far as to make it a criminal offense to neglect an animal by failing to provide the animal with adequate living quarters, food, and water.¹⁴⁵ Further, section 828.24, *Florida Statutes*, specifically forbids anyone in the state to kill an animal, except by what is referred to as “humane methods.”¹⁴⁶

However, this caveat is precisely the problem with current legislation in Florida and where the state must make vast improvement. Current Florida law allows for the killing of animals within the shelter system without regard for the health or adoptability of each animal.¹⁴⁷ Moreover, as referenced in Section II of this article, the methods prescribed by Florida law for these killings are anything but humane.¹⁴⁸ Despite all of the legislation Florida has enacted to protect animals from cruel and inhumane treatment, these laws do little, if anything at all, to protect dogs like Zeus that enter the system and leave in a body bag.

Similar to the legislation that was so successful in New Hampshire, section 823.15, *Florida Statutes*, provides for the

139. See 2015 U.S. Animal Protection Laws Rankings, ANIMAL LEGAL DEFENSE FUND 2 (2015), <http://aldf.org/wp-content/uploads/2015/12/Rankings-Report-2015.pdf>.

140. *Id.* at 6.

141. *Id.* at 4.

142. See, e.g., FLA. STAT. § 828.12 (2016).

143. FLA. STAT. § 828.12(2).

144. FLA. STAT. § 828.12(2)(a).

145. FLA. STAT. § 828.13.

146. FLA. STAT. § 828.24.

147. See FLA. STAT. § 828.058.

148. See *supra* Section II.C.

mandatory sterilization of shelter animals prior to adoption.¹⁴⁹ If the animal has not reached sexual maturity, adopters are required under this section to sign a commitment to guarantee that the animal will be sterilized within thirty days from the date of adoption, or immediately upon reaching sexual maturity.¹⁵⁰ The statute expressly declares it “to be the public policy of the state that every feasible means be used to reduce the incidence of birth of unneeded and unwanted puppies and kittens.”¹⁵¹

This terminology articulates that animals not currently owned are “unneeded,” suggesting that the Florida legislature refuses to recognize an animal’s worth in the absence of human interest.¹⁵² Perhaps equally disconcerting is that the sterilization requirement is included under Title XLVI: Crimes, Chapter 823: Public Nuisances of the Florida Statutes.¹⁵³ Additionally, Florida defines an animal as “every living dumb creature.”¹⁵⁴ Thus, despite the fact that the state seems to purport a commitment to animal welfare and a desire to remedy the companion animal “overpopulation” problem with a statute requiring sterilization similar to that imposed by the state of New Hampshire, the sentiment behind the same, and the lack of specificity to which the statute actually makes sterilization by pet owners financially feasible, renders the legislation deficient. New Hampshire implemented legislation that specifically articulated reductions in the price of sterilization for qualifying residents.¹⁵⁵ Florida has not.¹⁵⁶

Further, it is not enough to require that residents of Florida sterilize their animals in an effort to combat public nuisance. Legislators must see that animals have inherent worth, and that man, as the creature in dominion of the animals, has a duty to protect them, not because they are dumb, but because animals inherently matter.¹⁵⁷

If New Hampshire can eliminate the process of killing healthy, adoptable animals with low cost spay and neuter initiatives, surely the state of Florida can achieve No-Kill status by strategically placing reforms within the state system. Due to the fact that

149. FLA. STAT. § 823.15(3)(a) (2016).

150. *Id.*

151. FLA. STAT. § 823.15(1) (2016).

152. *But see* Judith E. Koons, *Earth Jurisprudence: The Moral Value of Nature*, 25 PACE ENVTL. L. REV. 263, 296-305 (2008); *cf.* WINOGRAD, *supra* note 5, at xix-xx (revealing that PETA has publicly admitted that it does not subscribe to the belief that animals have a right to life at all).

153. *See* FLA. STAT. § 823.15 (2016).

154. FLA. STAT. § 828.02.

155. S.B. 151, 1993 Leg., Reg. Sess. (N.H. 1993).

156. *See* FLA. STAT. § 823.15(4) (2016).

157. *See* Koons, *supra* note 152, at 325-37.

Florida has a much larger population than New Hampshire,¹⁵⁸ Florida will need to implement greater initiatives in order to achieve similar results to those in New Hampshire. However, Florida can become No-Kill quickly with the implementation of a two-prong strategy: (1) increase the number of adoptions from state animal shelters, and (2) decrease the number of admissions to state animal shelters.

B. A Better Way

1. Increasing the Number of Adoptions

It seems obvious that Florida's No-Kill commitment can only be reached by first increasing the number of adoptions from state animal shelters. Section 823.15, *Florida Statutes*, mandates that all Florida animal shelters must collect and publish data of the statistics of animal admissions, adoptions, and euthanasia on a monthly basis.¹⁵⁹ This initiative was required to begin in 2013 in an effort to lift the veil of secrecy that appears to have shrouded the municipal animal shelter world for years. Unfortunately, despite this requirement, recent statistics are still not available to the general public. However, a census conducted by the University of Florida in 2013 revealed numbers for 110 Florida shelters statewide.¹⁶⁰

An interim analysis of this data . . . reveal[ed] that [Florida] animal shelters admitted 213,763 dogs and 233,806 cats for a total of 447,569, with more animals admitted as strays than owner-surrenders. Dogs were more likely to be adopted than cats, . . . [and] [t]he statewide intake rate was 23 cats & dogs per 1,000 [Florida] residents. The statewide euthanasia rate was 11 cats & dogs per 1,000 residents. The overall live release rate for the state was found to be 50% . . . including 37% for cats and 64% for dogs.¹⁶¹

158. *United States by Size*, WORLDATLAS, <http://www.worldatlas.com/aatlas/infopage/usabysiz.htm> (last visited Nov. 27, 2016).

159. See FLA. STAT. § 823.15(2)(a) (2016).

160. CC Miller et al., *Florida Shelter Animal Census: A Snapshot of Statewide Intake and Disposition*, UNIVERSITY OF FLORIDA HEALTH SHELTER MED. (2014), <https://vetmed-maddie.sites.medinfo.ufl.edu/files/2014/03/Abstract-Miller.pdf>.

161. *Id.*

This means that half of all animals admitted to Florida shelters are being executed. This is significantly higher than the national average, which indicates that 31% of dogs and 41% of cats that enter animal shelters nationwide are euthanized.¹⁶²

In light of the fact that 43% of companion animals are purchased from either a breeder or from a retail pet store,¹⁶³ the first logical step in combating the overpopulation of unwanted animals is to regulate the retail pet industry. Moreover, Florida must address the issue of the countless animals who are lost, subsequently enter state shelters, and are then never returned to their owners. Finally, Florida must demand a partnership between private rescue organizations and state animal shelters, to unite animal welfare activists statewide and allow for more stray animals to be fostered across the state, thereby thinning the number of animals residing in state shelter facilities.

a. Reforming Retail Pet Stores

The first step to increasing the number of adoptions from state animal shelters is to reform the market for the sale of companion animals. Currently, Florida is one of twenty-seven states that have enacted laws regulating the treatment of animals offered for sale within the state.¹⁶⁴ Section 828.29, *Florida Statutes*, sets forth the requirements of vaccines, examination, and certification by licensed veterinarians, as well as the conditions in which animals must be housed if offered for sale in retail pet shops.¹⁶⁵ Unfortunately, for all of the great strides that have been made to protect and regulate animals that are offered for sale, an untold number of the same are being supplied to Florida pet stores from puppy mills. Puppy mills are defined as operations that breed animals in inhumane conditions with the primary focus on maximizing output with little regard to health of the animals produced therein.¹⁶⁶ In fact, the large majority of pet stores acquire their animal “inventory” from puppy mills.¹⁶⁷ Puppy mill dogs are regularly unhealthy, and

162. *Pet Statistics*, AM. SOC'Y FOR PREVENTION CRUELTY TO ANIMALS (2016), <https://www.aspca.org/animal-homelessness/shelter-intake-and-surrender/pet-statistics>.

163. *Pets By The Numbers*, *supra* note 25.

164. *The Current State of Pet Shop Laws*, BORN FREE USA, http://www.born-freeusa.org/b4a1_petshoplaws_currentstate.php (last visited Nov. 27, 2016).

165. FLA. STAT. § 828.29 (2016).

166. Michele Lazarow, *The Pet Store and Puppy Mill Connection*, SUN SENTINEL (Sep. 29, 2015), <http://www.sun-sentinel.com/opinion/commentary/fl-viewpoint-puppy-mills-20150929-story.html>.

167. *Id.*; *Don't Buy into Puppy Mills*, HUMANE SOC'Y OF THE U.S., <http://www.humane-society.org/dont-buy-into-puppy-mills.html?referrer=https://www.google.com/> (last visited Nov. 27, 2016).

those that serve as breeding stock are forced to live in disgusting environments with little contact with the outside world.¹⁶⁸ These puppy mills have even begun breeding various mixed breeds that effectively amount to a mix of two American Kennel Club recognized dog breeds to create dogs that are a more desirable size to consumers, or even dogs that do not subject patrons to allergic reactions.¹⁶⁹ These breeds have become so desirable by a public that claims to stay away from shelters in an effort to have purebred animals, that in 2007, the Kennel Club began

allowing dogs owners to register their crossbreeds on one or more of its established registers in an attempt to recognize and legitimize these mixed breeds.¹⁷⁰

The Florida legislature can combat the issue of shelter overpopulation and prohibit the funding of puppy mills by reforming the framework of retail pet stores. Essentially, pet stores must be regulated by the state government and required to obtain their “inventory” from state animal shelters. Thus, local pet stores would only be permitted to sell companion animals to patrons provided the animals are secured from shelters.¹⁷¹

Such reform would have the positive effect of eliminating the market for puppy mills that do not operate in compliance with local animal laws, as well as help increase the adoption numbers of state animal shelters. In fact, various cities across the nation have already successfully implemented programs of this nature.¹⁷² Casselberry, Florida became the first city in Central Florida to enact such a ban on the sale of dogs and cats.¹⁷³ Currently, 108 cities nationwide have enacted similar legislation.¹⁷⁴ Although Casselberry only enacted a partial ban forbidding new businesses from setting up operations within the county—and did not apply measures of reform retroactively to those stores currently selling

168. *Id.*

169. See Brittany Ferrara, *The Truth Behind Hypoallergenic Designer Hybrid Dogs*, EXAMINER (Feb. 19, 2013, 6:10 PM), <https://web.archive.org/web/20160123143310/http://www.examiner.com/article/the-truth-behind-hypoallergenic-designer-hybrid-dogs>.

170. See *Designer Dogs*, KENNEL CLUB, <http://www.thekennelclub.org.uk/our-resources/media-centre/issue-statements/designer-dogs/> (last visited Nov. 27, 2016) (allowing cross-breed dogs to be registered on one or more of the Kennel Club’s established registers).

171. See CASSELBERRY, FLA., CODE §18-2 (2015).

172. See *Jurisdictions with Retail Pet Bans*, BEST FRIENDS ANIMAL SOCIETY, <http://bestfriends.org/resources/jurisdictions-retail-pet-sale-bans> (last visited Nov. 27, 2016).

173. CASSELBERRY, FLA., CODE §18-2 (2015).

174. See *Jurisdictions with Retail Pet Bans*, *supra* note 172.

pets—the decision was met with praise from various local animal activists.¹⁷⁵

The strategy is justifiable as a matter of public policy. By 2011, 56% of American homes included at least one animal.¹⁷⁶ Of those pet owners, 63.2% consider their pet one of the family.¹⁷⁷ Animals are a valuable and important part of our society, and thus necessitate protection.¹⁷⁸ Beyond this value to humanity, animals are living and breathing creatures that have a right to life.¹⁷⁹

Similarly, the Board of Cosmetology in the state of Florida regulates manicure and pedicure specialists.¹⁸⁰ This is primarily a matter of public policy as well, since these specialists directly affect human health and safety. As such, nail technicians are required to be licensed and the salons frequently undergo inspections to ensure strict compliance with the laws.¹⁸¹ The health and safety of millions of animals is directly affected by the sale of the same, and thus also requires similar strict regulation.

The public's interest in purchasing a dog or cat from a pet store originates from multiple misconceptions about the animals that are available at the shelter versus the animals found in the retail stores.¹⁸² One common misconception is that purebred animals cannot be obtained from state shelters.¹⁸³ In fact, the Humane Society estimates that 25% of dogs within the shelter system are purebred animals.¹⁸⁴ Thus, although the retail pet regulations would likely make the acquisition of these breeds slightly more difficult, the animal shelters are able to comply with the current market demands for purebred dog breeds.¹⁸⁵

Moreover, in light of popularity of the aforementioned “designer breeds,” many more Americans are not only tolerating mixed breed dogs, but are actually seeking them.¹⁸⁶ Thus, the demand for such

175. See Casselberry, Fla., Ordinance No. 2015-1430 (Nov. 9, 2015); Bethany Rodgers, *Casselberry adopts partial ban on pet shop sales of dogs, cats*, ORLANDO SENTINEL (Nov. 9, 2015, 7:34 PM), <http://www.orlandosentinel.com/news/breaking-news/os-casselberry-pet-ban-approval-20151109-story.html>.

176. *Pets by the Numbers*, *supra* note 25.

177. *Id.*

178. See Koons, *supra* note 152.

179. See *Thomas Berry's Ten Principles of Jurisprudence*, GLOBAL ALLIANCE FOR THE RIGHTS OF NATURE, <http://therightsofnature.org/thomas-berrys-ten-principles-of-jurisprudence/> (last visited Nov. 27, 2016).

180. FLA. STAT. §§ 477.015-.016 (2016).

181. FLA. STAT. §§ 477.014, .025 (2016).

182. See Lisa Towell, *Myths About Pet Stores and Breeders*, PETA PRIME, (Jan. 18, 2012, 5:36 AM), <http://prime.peta.org/2012/01/myths>.

183. *Id.*

184. *Pets by the Numbers*, *supra* note 25.

185. See *id.*

186. See *Designer Dogs*, *supra* note 170.

breeds will be satisfied through shelter acquisitions since 75% of dogs in shelters would qualify as a “designer breeds.”¹⁸⁷ Requiring local pet stores to obtain animals from a state animal shelter allows for the general public to be exposed to a greater number of homeless animals during the quest to acquire a new pet. Of course, these retail pet bans would not affect local responsible breeders. Provided a local breeder does not open a retail pet store, the breeder—under the proposed legislation—would still be permitted to responsibly breed animals to be sold to the general public.

In order to ensure that breeders are behaving responsibly, Florida legislators should implement a breeder-licensing program similar to the platform that is currently in existence for various service industry providers such as hair stylists and manicure and pedicure specialists.¹⁸⁸ Such licensure would require that the breeder pay a licensing fee¹⁸⁹—thereby raising necessary revenue to assist state animal shelters in the care of homeless animals—as well as comply with a reasonable standard of care for the animal as defined by the legislature.

A model for this standard of care already exists in Florida wherein the state has codified what form of animal neglect constitutes animal cruelty.¹⁹⁰ The licensure requirement should require inspections of the breeding and housing facility—similar to those conducted by health inspectors regulating the beauty industry.¹⁹¹ These inspections would ensure that breeders maintained adequate conditions for the health and welfare of the animals raised therein. Additionally, similar requirements to those currently imposed on retail pet stores in the state of Florida should also be mandated to ensure that each breeder has the animals inspected and vaccinated by veterinarians.¹⁹² The requirement for vaccination against rabies is already mandated by the state,¹⁹³ and such requirement on local breeders would only serve to ensure greater compliance with the same.

The proposed legislation would cause limited disruption to responsible Florida breeders, but the effects of the new laws would be two-fold. First, the legislation would disrupt the puppy mill business within the confines of the state, and would allow the officials to properly prosecute violators of the existing Florida law forbidding animal mistreatment.¹⁹⁴ Since a majority of Florida

187. *See Pets by the Numbers*, *supra* note 25.

188. *See, e.g.*, FLA. STAT. §§ 477.019, .0201 (2016).

189. *See, e.g.*, FLA. STAT. § 447.026.

190. *See* FLA. STAT. § 828.12.

191. *See* FLA. STAT. § 477.025.

192. *See* FLA. STAT. § 828.29.

193. *See* FLA. STAT. § 828.30.

194. *See, e.g.*, FLA. STAT. § 828.12.

retail pet stores currently acquire animals from puppy mills, regulation requiring the animals to be brought in from state shelters would effectively cut off those individuals that run puppy mills from their primary source of income. Moreover, by requiring licensing fees, the state would have an additional source of income to assist the state animal shelters in the care of homeless animals. The purpose of the proposed legislation is not to deny residents a source of revenue or the ability to earn a living, but rather to balance the interest of Floridians with the health, safety, and welfare of companion animals.

b. Reuniting Lost Pets with Owners

Another often overlooked problem that Florida animal shelters are currently facing is that of a low rate of return of lost animals to their owners.¹⁹⁵ It is estimated that only 26% of lost dogs that enter the shelter system are ever reunited with an owner, and as few as 5% of lost cats are returned to a previous owner.¹⁹⁶ The issue appears to stem from the lack of a centralized system aimed at reuniting lost animals with their owners once local animal authorities pick them up.

Currently, there is no single database in the state for the advertisement of animals that have entered facilities. This means that once an owner has discovered that an animal has gone missing, the owner must ascertain which county found her pet, and must either visit the facility to search for her animal or, in the cases of those counties that do advertise homeless animals on the internet, must find the appropriate webpage on which to look for their animal friend.¹⁹⁷

Moreover, many of the websites that do advertise the animals that have entered the facility provide poor quality photos that make it difficult for an owner to determine that her pet is housed therein.¹⁹⁸ Streamlining the system—and providing multiple pictures of each animal—would allow for more members of the general public who have lost an animal to identify and subsequently become reunited with their beloved family member.

195. *Pet Statistics*, *supra* note 162.

196. *Id.*

197. *See, e.g.*, ORANGE COUNTY ANIMAL SERVICES, <http://www.orangecountyfl.net/AnimalsPets.aspx#VuhYgcccZPII> (last visited Nov. 27, 2016).

198. *See, e.g., id.*

Additionally, educating the public as to the importance of pet identification tags and chips is paramount to assisting in this process. In 2007, “[o]n average, only 1.8 percent of all stray dogs and cats taken to participating shelters had microchips.”¹⁹⁹ Of those animals that had a microchip, over 72% were reunited with their proper owner.²⁰⁰ According to the research, the return-to-owner rate for cats with a microchip was twenty times higher than in those without a microchip, and for dogs 2.5 times higher.²⁰¹ The implications are clear: microchips increase the likelihood that an animal will be returned to its family. If an owner takes issue with the physical invasion of a microchip, there are multiple services that sell pet “licenses,” that provide thorough contact information that would assist authorities in returning the pet to its family.²⁰²

c. Partnerships with Private Rescue Groups and the Importance of Fosters

Perhaps the most important step towards increasing the number of adoptions from state animal shelters involves cooperation with the hundreds of private pet rescue groups statewide.²⁰³ Currently, there are hundreds of private rescue organizations throughout Florida.²⁰⁴ These rescue groups are usually staffed by volunteers who band together and attempt to alleviate the pressure on the municipal animal shelters due to the sheer volume of animals brought in each day.²⁰⁵

The fact that these groups use their own private resources to care for the animals, there is often no brick and mortar facility that can be utilized to house them.²⁰⁶ As such, these private animal rescue organizations tend to rely heavily on foster homes to nurture the animals during the adoption process.²⁰⁷ These

199. Emily Caldwell, *Microchips Result In A High Rate of Return of Shelter Animals to Owners*, OHIO ST. U. RES. NEWS, <http://researchnews.osu.edu/archive/shelterchip.htm>.

200. *Id.*

201. *Id.*

202. *See, e.g.*, MY PETDMV, <https://www.mypetdmv.com> (last visited Nov. 27, 2016).

203. *See Florida Dog Rescue Group Directory*, RESCUE SHELTER NETWORK, <http://dog.rescueshelter.com/Florida> (last visited Nov. 27, 2016).

204. *See id.*

205. *Learn About Pet Adoption*, THE SHELTER PET PROJECT, <http://theshelterpetproject.org/about-pet-adoption/> (last visited Nov. 27, 2016).

206. *Adoption FAQs*, THE SHELTER PET PROJECT, <http://theshelterpetproject.org/about-pet-adoption/faqs> (last visited Nov. 27, 2016).

207. *Foster Homes*, PET ALLIANCE, <http://petallianceorlando.org/community-involvement/foster-homes/>.

homes voluntarily provide a safe and healthy environment for the animals while they await a permanent home.²⁰⁸

This foster care system is strikingly analogous to that encouraged by the Department of Children and Family Services (DCF).²⁰⁹ As such, a model currently exists in which state legislators can base a foster system for shelter animals. Foster homes would need to undergo certification of a similar nature to that required by DCF to ensure that the animals are being transferred into the proper environment before adoption.²¹⁰ Additionally, various financial incentives should be offered to those that participate in the program, which could be funded from resources that would otherwise be earmarked for the care of animals in shelter facilities. Further, while in foster care, the animal will be exposed to a family that may decide to permanently adopt him or her. At the very least, being housed in foster care will expose the animal to interaction with humans, and the dog or cat will experience less emotional trauma than that which is currently noted to occur in state shelters.²¹¹ A partnership with these groups will allow for resources to be more evenly distributed; and by increasing the number of temporary homes for the animals within the system, more space would be available in the state facility itself for those animals that require greater medical care or behavioral modification.

2. Decreasing the Number of Animals Entering Shelter Facilities Statewide

The second prong that must be satisfied in order to achieve No-Kill status in Florida is a decrease the number of animals entering shelter facilities. Much like New Hampshire, Florida should examine the statistics of shelter animals as the necessary first step. It is only through obtaining clear statistics—as is currently required by state law—that any positive steps can be undertaken towards the goal of becoming a No-Kill state. New Hampshire legislators needed to understand the sheer volume of animals that entered the state facilities every year in order to determine how to best draft legislation to address the problem. Florida is no different.

208. *Id.*

209. See *Foster Care*, DEP'T OF CHILDREN AND FAMILY SERVS., <http://www.myflfamilies.com/service-programs/foster-care> (last visited Nov. 27, 2016).

210. See *id.*

211. *The Emotional Lives of Shelter Dogs, Part One*, DOGS OUT LOUD, (Nov. 29, 2012), <http://www.dogsoutloud.org/2012/11/the-emotional-lives-of-shelter-dogs-part-one/>.

a. Statewide Low Cost Sterilization Programs

As discussed in Section III of this article, Florida currently has a sterilization requirement for all animals that are adopted from state animal shelters.²¹² Unfortunately, Florida currently does not have legislation that sets forth a statewide, low-cost spay and neuter program for low-income families like that which was so successful in lowering euthanasia rates in New Hampshire.²¹³ This needs to change. The state of New Hampshire was able to achieve a 75% drop in statewide euthanasia rates in seven years through sterilization legislation.²¹⁴ It is therefore imperative that Florida follows suit in an effort to save thousands of healthy animals that walk the halls of the state facilities each year. By reducing the cost associated with spay and neuter procedures Florida would increase the likelihood that an animal would be fixed, thereby reducing the number of unplanned and unwanted animal pregnancies statewide.

The goal of the proposed legislation to reduce the costs associated with spaying and neutering an animal is to encourage those individuals who do not understand proper breeding techniques to sterilize companion animals. This initiative will go hand in hand with the breeder licensure requirement outlined above, and will inevitably assist in lowering shelter intake rates by decreasing the number of animal births statewide. Regulating breeders throughout the state and providing for low cost sterilization alternatives for those unlicensed to engage in animal breeding would ensure that only professionals with sufficient knowledge of proper breeding techniques would be operating statewide, and would reduce the number of unhealthy animals—due to improper breeding²¹⁵—entering the state system each year. As the number of animal intakes decrease, the “need” to execute animals to make space within the municipal animal shelter will be eliminated.

b. Eradicating Breed Bans

An important step towards decreasing the number of animal intakes into state facilities is to disallow breed bans within the state of Florida. Presently, various counties throughout the state have implemented city ordinances that forbid citizens from

212. See FLA. STAT. § 823.15(3) (2016).

213. See N.H. REV. STAT. ANN. § 437-A:2 (1993).

214. MARSH, GETTING TO ZERO, *supra* note 84, at 1.

215. See *Inbreeding*, KENNEL CLUB, <http://www.thekennelclub.org.uk/health/breeding-for-health/inbreeding/> (last visited Nov. 29, 2016).

owning various breeds of dogs that are considered by the city to be dangerous.²¹⁶ One commonly regulated “breed” is known as the “pit bull,” but the term is more accurately characterized as a category of dogs because the “pit bull” includes American Pit Bull Terriers, American Staffordshire Terriers, Staffordshire Bull Terriers, and English Bull Terriers.²¹⁷

One such example of this has been implemented in Miami-Dade County.²¹⁸ No pit bull dogs have been permitted to be sold, purchased, obtained, brought into Miami-Dade County, or otherwise acquired by residents of Miami-Dade County anytime since April 14, 1989.²¹⁹ “No such newly acquired pit bull dogs may be kept, maintained, or otherwise harbored within Miami-Dade County.”²²⁰ Violation of the city ordinance may result in the issuance of a civil violation notice, and humane destruction of the pit bull dog by order of a court of competent jurisdiction.²²¹ Moreover, the ordinance requires “[e]very veterinary office, kennel, commercial breeder, commercial animal establishment, pet shop, and dog grooming business” to post a pit bull sign stating in English, Spanish, and Creole the following:

BOTH PURE AND MIXED BREED PIT BULL DOGS ARE CLASSIFIED AS DANGEROUS. IT HAS BEEN ILLEGAL TO ACQUIRE A NEW PIT BULL DOG SINCE JANUARY 1, 1990. FAILURE TO REGISTER, MUZZLE, CONFINE, AND INSURE A PIT BULL IS A VIOLATION OF THE LAW SUBJECT TO SEVERE PENALTY. Section 5-17.1, Miami-Dade Code.²²²

Subsequently, this ordinance was challenged and found to not be a violation of equal protection and remains in effect to date.²²³ However, the Florida legislature disagrees with the court’s finding

216. See, e.g., MIAMI-DADE COUNTY, FLA., ORDINANCE NO. 89-22 (Apr. 4, 1989).

217. *Breed Specific Legislation*, ASPCA, <http://www.aspc.org/animal-cruelty/dog-fighting/breed-specific-legislation> (last visited Nov. 27, 2016).

218. See MIAMI-DADE COUNTY, FLA., CODE § 5-17 (1989).

219. See MIAMI-DADE COUNTY, FLA., CODE § 5-17.6(b) (1989) (requiring persons to comply with the provisions of this section “after the passage of ninety (90) days after the effective date of Ordinance Number 89-22”); see also MIAMI-DADE COUNTY, FLA., CODE § 5-17.4 (1989) (mandating that every pit owner in Miami-Dade County must register their dog with Animal Services).

220. *Id.*

221. MIAMI-DADE COUNTY, FLA., CODE § 5-17(b)(1)-(2) (1989).

222. MIAMI-DADE COUNTY, FLA., CODE § 5-17.7 (1989).

223. See *State v. Peters*, 534 So. 2d 760 (Fla. 3d DCA 1988) (finding that the ordinance regulating pit bulls did not violate equal protection and is rationally related to the important government purpose).

that breed bans are constitutional.²²⁴ Specifically, section 767.14, *Florida Statutes*, prohibits local governments from banning any specific breed of dog.²²⁵ Thus, the ordinance has been directly preempted, and yet, the county continues to operate with a breed specific ban. This is seemingly justified by dog bite statistics that have deemed pit bulls as a dangerous breed,²²⁶ and the counties appear to rely on the classification of pit bulls as dangerous animals in support of the offending ordinance.²²⁷

As many as 4.5 million people are bitten by dogs each year in the U.S.²²⁸ Although pit bulls have been identified by the American Veterinary Medical Association (AVMA) as a breed more commonly associated with dog bites, the AVMA specifically articulated in its report detailing the findings of various dog bite census collections that it cannot be held that pit bulls are more dangerous than other dog breeds; or even that they are more likely to attack a person because this elevation in the statistics may very well be a direct result of the popularity of the breed among those owners who specifically train the animals for illegal dogfighting.²²⁹ Unfortunately, as a direct result of misinterpretation of studies such as these, city ordinances like the one outlined above continue to operate throughout the state. Additionally, many private insurance companies are now refusing to insure those that own so-called “dangerous breeds.”²³⁰ Accordingly, homeowners are being forced to surrender their pets to state animal shelters in order to live in apartments and homes.²³¹

Of greatest concern is that the incidence of dog bites have a high rate of co-occurrence with other intervening and preventable circumstances.²³² A major concurrent factor in 87.1% of 256 dog bite incidents was the absence of an able-bodied person that could

224. See, e.g., FLA. STAT. § 767.14 (2016).

225. See *id.* (“Nothing in this act shall limit any local government from placing further restrictions or additional requirements on owners of dangerous dogs, . . . provided that no such regulation is specific to breed . . .”).

226. *Literature Review on the Welfare Implications of the Role of Breed in Dog Bite Risk and Prevention*, AM. VETERINARY MED. ASS’N 1 (2014), https://www.avma.org/KB/Resources/LiteratureReviews/Documents/dog_bite_risk_and_prevention_bgnd.pdf [hereinafter *Role of Breed*].

227. See Peters, 534 So. 2d at 764.

228. *Dog Bite Prevention*, AM. VETERINARY MED. ASS’N, <https://www.avma.org/public/Pages/Dog-Bite-Prevention.aspx> (last visited Nov. 27, 2016).

229. *Role of Breed*, *supra* note 226.

230. Wayne T. Price, *Choose: Beloved Pet or Homeowners Insurance*, FLA. TODAY, May 13, 2002 at 2A.

231. See *id.*

232. Gary J. Patronek et al., *Co-occurrence of Potentially Preventable Factors in 256 Dog Bite-Related Fatalities in the United States (2000-2009)*, 243 J. AM. VETERINARY MED. ASS’N 1726 (2013).

intervene.²³³ In 85.2% of the cases, the victims had an incidental or unfamiliar relationship with dogs.²³⁴ Additionally, in 84.4% of the cases, the owners had failed to neuter the dog and the behavior was at least marginally correlated with the animal's sexual maturity.²³⁵ In 76.2% of cases, the dog was kept isolated from regular positive human interaction; 37.5% of the time and the human owner of the dog was proven to have been guilty of prior mismanagement.²³⁶ Finally, in 21.1% of the cases, the owners had a history of abuse and neglect toward dogs.²³⁷

Four or more of these factors co-occurred in 80.5% of the dog bites that resulted in deaths.²³⁸ It is important to note that a valid breed determination was possible for only 17.6% of the dog bites studied, and of that small percentage, over twenty breeds, including two known mixes, were identified.²³⁹ Thus, it is impossible to definitively link pit bulls—or other such designated dangerous breeds—to an increased risk of violence.²⁴⁰ Compounding the inaccuracy of the numbers is the classification of multiple breeds as a “pit bull.”²⁴¹ Thus, the incidence of dog bites resulting from an attack by a pit bull becomes an inflated number that in actuality reflects bites by five different breeds simultaneously.

The Florida legislature should enforce section 767.14, *Florida Statutes*, statewide. These city ordinances that ban various breeds that have been undeservingly named dangerous have directly contributed to the shelter overpopulation issue. The legislature clearly intended to specifically forbid such classification based on breed, and this law preempts any laws enacted by the various cities within the state. Furthermore, a ban based on inaccurate statistics is patently unacceptable and cannot be supported by the state legislature.

V. CONCLUSION

The number of animals that enter shelter facilities each year is staggering. While society seems to have resigned itself to the “necessary evil” of euthanasia, the very term by definition does not embrace the mass killing of healthy and adoptable beings. Many of these creatures never have a chance to find a home and enrich

233. *Id.*

234. *Id.*

235. *Id.*

236. *Id.*

237. *Id.*

238. *Id.*

239. *Id.*

240. *See id.*

241. *See Breed Specific Legislation, supra* note 217.

the lives of many. Despite current societal beliefs, the execution of millions of animals each year is not only inhumane, but also entirely unnecessary.

Florida legislators must end this cruel treatment of animals and, in order to do so, must begin by acknowledging that animals—like all beings—have a right to life. In support of this right, it is essential that the state of Florida put an immediate halt to the practice of “euthanasia,” and publicly declare that healthy and adoptable animals will no longer be executed within the borders of the state. To achieve this, legislators must implement simple strategies to increase the number of animals adopted from state shelters each year, and to decrease the number of animals taken into the shelter systems. Through a methodical application of retail pet store reform, increased breeder regulation, microchipping, and a centralized system to advertise what animals are currently in protective custody, the number of adoptions from state shelters can dramatically increase. State legislators must also pass legislation creating and funding a low-cost spay and neuter program for low-income families and must enforce existing state statutes that preempt city ordinances that enact breed specific bans.

With a concerted community effort, the state of Florida can achieve No-Kill status. We must be a voice for those innocent creatures that otherwise cannot speak for themselves. We must save them. We are their only hope.

ABSTRACTS

John J. Perona, *Beyond the Plant Pest Trigger: Law, Science and Rational Oversight Of Transgenic Crops*, 32 J. LAND USE & ENVTL. L. 75 (2016).

Regulation of transgenic crops in the United States is presently accomplished through the Plant Protection Act, which provides oversight based upon whether the new genetically engineered organism is classified as a plant pest. However, recent advances in agricultural biotechnology and the underlying science of molecular genetics severely challenge the rationale for this scheme, bringing about a new paradigm under which manufacturers of genetically modified commodities are able to bypass regulation almost entirely. The failure to properly regulate engineered crops threatens international commerce in these goods, and places the economic viability of the burgeoning organic agriculture industry at risk. An effective remedy should be possible by revising the coordinated framework for biotechnology regulation that is administered by the Office of Science and Technology Policy in the Executive Branch. This would correct deficiencies in oversight at the Department of Agriculture by requiring greater coordination with offices in the Environmental Protection Agency with expertise in genetic engineering.

Edward L. Rubin, *Rejecting Climate Change: Not Science Denial, but Regulation Phobia*, 32 J. LAND USE & ENVTL. L. 103 (2016).

At this juncture, it seems clear that the most significant impediment to a worldwide effort to combat the disastrous consequences of climate change is the United States. It seems equally clear that the reason why the United States has assumed such a counterproductive role is the existence of a set of attitudes within its political discourse that is generally described as climate change denial. To some extent, these attitudes come from elite groups, such as the Republican Party leadership and the energy industry, but these groups can only dominate public policy because their attitudes resonate with a large portion of the American public. This article explores the reasons why so many people in the U.S deny climate change.

The article rejects the familiar theory that climate change denial is part of a broader rejection of scientific principles by the American public. There is no such general attitude; Americans, including

political conservatives, generally accept scientific findings. Evolution is an exception because of specific conflict with religious doctrine not present in the climate change case. Some of the opposition to climate change relies on conspiracy theories, which Richard Hofstadter called the “paranoid style” of American politics. But this does not provide an explanation; like conspiracy theorists in general, climate change deniers do not condemn their opponents for using science, but rather endorse or even glorify science and condemn their opponents for using it incorrectly.

The more convincingly explanation is that climate change denial is allied to more general anti-regulatory attitudes that prevail among large segments of the public. But the opposition is not typical of mainstream conservatism. Rather than acknowledging the existence of a problem, while arguing that regulatory responses should be used with caution, the current conservative position is the complete refusal to acknowledge that a problem exists in the first place. This is what some survey researchers have described as a “boomerang” effect: in response to factual information linked to a normative recommendation, recipients of the information act in direct opposition to the recommendation. The reason they do so in this case is that a rational policy to combat climate change seems to demand a major alteration of society. Combatting climate change not only expands the scope of regulation, but involves regulations that effect a major transformation of our basic economic system and our personal lifestyles. Almost uniquely (toleration would be another case), it demands a transformation of internalized attitudes. This has produced what can be fairly described as a phobic reaction among many people, that is, an irrational and persistent fear of a given situation.

The article concludes by considering some policies that might circumvent this phobic reaction: mass transit for commuting, intelligent homes, and the encouragement of local food production. In each case, these policies create appealing options for people without demanding major changes in their lifestyle.

David Strifling, *The Microbead-Free Waters Act of 2015: Model for Future Environmental Legislation, or Black Swan?*, 32 J. LAND USE & ENVTL. L. 151 (2016).

Environmental law scholars have long lamented that it has become unthinkable—or at least exceedingly unlikely—for Congress to pass significant new environmental legislation. This is not uniformly the case, as shown by the recent enactment of

Public Law 114-114, the Microbead-Free Waters Act of 2015 (“the Act”). Yet, more nuanced questions must be answered before the Act can be hailed as an important break in the legislative logjam. Was the Act insignificant, simply not worth the time and political currency necessary for opponents of environmental regulation to stop? Was it the fortuitous product of a unique confluence of circumstances, a “black swan”? Or could the circumstances surrounding its passage be instructive for future proponents of environmental legislation? This article asserts that the Act addressed a significant environmental issue, and that the strategic building blocks underlying the Act — including an emphasis on public health issues and broad stakeholder support driven by industry concerns about unfair competition and opposition to local legislation—may provide innovative and useful foundations for future efforts to pass environmental legislation.

Hampden Macbeth, Note, *Saving Obamacare Did Not Bake the Earth: Applying the Supreme Court’s King v. Burwell Framework to the Conflicting Amendments at the Heart of the EPA’s Clean Power Plan*, 32 J. LAND USE & ENVTL. L. 231 (2016).

In the wake of the Supreme Court’s decision in *King v. Burwell* in 2015, there was widespread commentary and scholarship about what it meant for resolving statutory interpretation questions and speculation that it might pose a threat to the lawfulness of the Environmental Protection Agency’s (“EPA”) Clean Power Plan (“CPP”). The extensive commentary and scholarship has not provided an easy to use structure for understanding how the Court reached its decision in *King* that can be applied to *King*-like statutory interpretation questions in the future. This Note addresses this absence in the literature by developing a three-step process for understanding the Court’s approach to the statutory interpretation question in *King* and applies it to one of the statutory interpretation questions—how to handle the conflicting Clean Air Act (“CAA”) §111(d) amendments—at the heart of the ongoing CPP litigation. This analysis establishes that the CPP likely can survive review on this statutory interpretation question under the three-step process the Court used in *King*.

King involved a question of whether the Internal Revenue Service (“IRS”) properly extended the use of tax credits to purchase health insurance under the Patient Protection and Affordable Care Act (“PPACA”) to federally-run exchanges. To resolve this question, the Court first eschewed the traditionally deferential *Chevron v.*

Nat. Res. Def. Council framework for answering questions of statutory interpretation because it was a question of “economic and political significance” and it was not a question for the IRS. Second, the Court determined that the relevant language in the PPACA was ambiguous. Third, the Court found that the broad structure of the PPACA necessitated finding in favor of the government and allowing the use of the tax credits on federal exchanges in order to ensure that the PPACA functioned as Congress intended.

The CPP, which is currently being reviewed in the D.C. Circuit of Appeals and is likely to be reviewed by the Supreme Court, is being challenged as unlawful for many reasons. One of the challenges involves the conflicting §111(d) amendments to the Clean Air Act Amendments of 1990—one of which would prohibit EPA’s CPP regulations and one of which would require EPA to take such action. Applying the above three-step process to this statutory interpretation question reveals that the second Supreme Court decision to find President Obama’s signature domestic legislative achievement—the PPACA—lawful likely did not spell the end of the president’s signature domestic regulatory achievement—the CPP—to reduce the carbon emissions that cause climate change. At Step One of *King*, the question is likely deserving of *Chevron* deference because it is a question that requires EPA’s expertise in developing carbon regulations and interpreting the CAA and it is at most a question of economic, but not political, significance. In the unlikely event that the courts decide that EPA is undeserving of *Chevron* deference and proceed to *King* Step Two, the courts are likely to find that §111(d) is facially ambiguous. At *King* Step Three, the broad structure of the CAA likely requires finding in favor of EPA because allowing EPA to regulate carbon emissions under §111(d) is necessary for ensuring that EPA can regulate non-criteria, non-hazardous air pollutants in order to protect public health and the environment as is the purpose of the CAA.

Katherine Sloan, Note, *Death Without Dignity: The Misnomer of Euthanasia in the State Animal Shelter System and a Call for a No-Kill Florida*, 32 J. LAND USE & ENVTL. L. 261 (2016).

In 2011, a video surfaced that would shock and horrify animal lovers across the nation. The clip depicts thirty-two year old Beau Anderson (a state certified animal euthanasia specialist) wrapping a leash around the neck of a conscious dog to hold the same in an upright position standing on two legs, and systematically

jamming a hypodermic needle filled with poison into the chest of the animal as it cries. Anderson missed his target (the heart of the struggling animal) three times before finally landing the killing blow. He was then shown dragging the dead dog by the neck to a pile of other victims and discarding the body as one would a dirty rag. Unfortunately, this scene is all too common in the animal shelter arena in which millions of homeless animals are put to death in some of the most inhumane ways imaginable. This article addresses the process of shelter animal “euthanasia”, the impropriety of the same, and serves as a call to action for Florida legislators to implement the processes necessary to make Florida a No-Kill state.

AGENCY BEHAVIOR AND DISCRETION ON REMAND

ROBERT L. GLICKSMAN* & EMILY HAMMOND**

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I. INTRODUCTION

The concept of discretion pervades both administrative law and the on-the-ground work of administrative agencies. Despite the prevailing focus of administrative law on judicial review of agency discretion,¹ scholars are increasingly asking what we can learn about agency discretion in the absence of judicial review.² Indeed, such work prompts a reexamination of administrative law and our assumptions about agencies’ legitimacy.

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1. E.g., M. Elizabeth Magill, *Agency Choice of Policymaking Form*, 71 U. CHI. L. REV. 1383, 1413 (2004) (“The dominant narrative of modern administrative law casts judges as key players who help tame, and thereby legitimate, the exercise of administrative power.”).

2. This *Environmental Law Without Courts* Symposium provides a much-needed variety of perspectives on precisely this issue. For other works engaging the topic, see, e.g., David L. Markell & Robert L. Glicksman, *Dynamic Governance in Theory and Application, Part I*, 58 ARIZ. L. REV. 563 (2016); Emily Hammond & David L. Markell, *Administrative Proxies for Judicial Review: Building Legitimacy from the Inside-Out*, 37 HARV. ENVTL. L. REV. 313 (2013); Sidney A. Shapiro & Ronald F. Wright, *The Future of the Administrative Presidency: Turning Administrative Law Inside-Out*, 65 U. MIAMI L. REV. 577 (2011). Other scholars have explored agency aversion to the existence of discretion, which may increase the time and expense of pre-decisional procedures. See J.B. Ruhl & Kyle Robisch, *Agencies Running from Discretion*, 58 WM. & MARY L. REV. 97 (2016).

When a court invalidates an agency action, the agency's response on remand is often left open to the agency's discretion. That is, agencies frequently have significant latitude in whether, how, and when (if ever) to remedy the initial flaw. In the absence of a court's retaining jurisdiction or issuing a mandamus,³ the agency action must fit back into a long list of agency priorities, and may also be the victim of new presidential policies or changes in funding. Although a subsequent final agency action will likely be subject to review, our focus here is on the "in-between": agency behavior following remand.⁴

Compare the following examples. In the 2015 decision *Michigan v. EPA*, the Supreme Court held that U.S. Environmental Protection Agency (EPA) had improperly interpreted language in the Clean Air Act (CAA) to preclude the agency from considering costs in determining whether it was "appropriate and necessary" to regulate hazardous air emissions from power plants.⁵ With this holding in place, the D.C. Circuit considered the matter of disposition on remand: should the rule be remanded with or without vacatur? In an unusual twist, most of the electric utilities that had challenged the rule asked the court to remand without vacatur, because they had already made investments in pollution control equipment for which they were obtaining cost recovery.⁶ On remand—indeed without vacatur⁷—EPA quickly reissued the rule in early 2016, relying on the already-existing record, which included significant cost/benefit data assembled following the decision to regulate.⁸ EPA published the new rule just before the anticipated cut-off date

3. *Cf. Solenex LLC v. Jewell*, 156 F. Supp. 3d 83, 85 (D.D.C. 2015) (finding that the Bureau of Land Management (BLM) had engaged in unreasonable delay for purposes of 5 U.S.C. § 706(1) (2012), in failing to rule on a request to renew a natural gas exploration permit for 29 years, and ordering the agency within three weeks "to submit, and to stick to, an accelerated and fixed schedule" for doing so).

4. During this Symposium's discussion, Professor Mark Seidenfeld noted that our topic *requires* judicial review, which seems contrary to the Symposium's focus on agency action in the absence of judicial review. He is correct, of course, that the predicate of our topic is judicial review. Still, we see parallels between agency discretion on remand and agency discretion in the absence of review.

5. 135 S. Ct. 2699 (2015).

6. Oral Argument at 36:12 to 36:58, *White Stallion Energy Ctr. v. EPA*, 2015 WL 11051103, No. 12-1100 (D.C. Cir. Dec. 15, 2015).

7. *White Stallion Energy Ctr. v. EPA*, No 12-1100, 2015 WL 11051103 (D.C. Cir. 2015).

8. Much of this data is summarized in Justice Kagan's dissenting opinion. *Michigan v. EPA*, 135 S. Ct. at 2719–22 (Kagan, J., dissenting). *See also* Supplemental Finding That It Is Appropriate and Necessary To Regulate Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units, 81 Fed. Reg. 24,420 (Apr. 25, 2016) (to be codified at 40 C.F.R. pt. 63).

for the Congressional Review Act,⁹ in the final year of President Obama's second term.

That quick response stands in contrast to stories like that of EPA's years-long failure to address an interest group's petition to ban the pesticide chlorpyrifos. The saga began with the 2000 petition, and by 2007, the interest group filed a mandamus action against EPA to force a response to the petition.¹⁰ The court refused to grant relief, noting that EPA had a "concrete timeline" for issuing a final response by February 2014.¹¹ When EPA failed to issue a final response to the administrative petition in February 2014 as promised, the interest group filed a renewed petition for a writ of mandamus in September 2014. While that petition was pending, EPA issued a preliminary final denial of the administrative petition.¹² Thereafter, EPA continued to backtrack on its deadlines for itself, moving them from summer 2015 to April 2016 and beyond, until a court ultimately ordered EPA to issue its final decision by March 2017.¹³ At the end of that month, EPA finally issued a decision denying the petition to ban the pesticide under the Food, Drug and Cosmetic Act and the Federal Insecticide, Fungicide, and Rodenticide Act.¹⁴ Perhaps notably, this story spans several presidential administrations, including the first few months of President Trump's term, which began in January 2017.¹⁵

What is the extent of agency discretion following a remand, and how do agencies use that discretion? There are likely many

9. The Congressional Review Act, 5 U.S.C. §§ 801–808 (2012), though rarely invoked until 2017, can create delays for or block administrative regulations—particularly in conjunction with a new presidential term. See Timothy Noah, *Obama Rushes Out Rules to Guarantee Legacy*, POLITICO (May 18, 2016), <http://www.politico.com/story/2016/05/obama-rushes-out-rules-to-guarantee-legacy-223301> (describing interplay with presidential changes). More generally, the Act may induce strategic behavior by agencies. See Note, *OIRA Avoidance*, 124 HARV. L. REV. 994, 1005 (2011).

10. *In re Pesticide Action Network N. Am.*, 532 Fed. Appx. 649 (9th Cir. 2013).

11. *Id.* at 651.

12. Chlorpyrifos Registration Review; Revised Human Health Risk Assessment; Notice of Availability, 80 Fed. Reg. 1909 (Jan. 14, 2015).

13. *In re Pesticide Action Network*, 840 F.3d 1014 (9th Cir. 2016); *In re Pesticide Action Network*, 798 F.3d 809 (9th Cir. 2015).

14. Env'tl. Prot. Agency, Chlorpyrifos; Order Denying P ANNA and NRDC's Petition to Revoke Tolerances, EPA-HQ-OPP-2007-1005; FRL-9960-77 (Mar. 29, 2017).

15. Other examples, such as that of EPA's actions involving greenhouse gas emissions from new motor vehicles following the decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007), are similarly rich. Compare Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,654 (July 30, 2008) (Bush Administration) (providing reasons not to regulate greenhouse gas emissions under the CAA following *Massachusetts v. EPA* remand), with Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (Obama Administration) (finding greenhouse gases cause or contribute to endangerment of public health and welfare pursuant to CAA). See generally Emily Hammond Meazell, *Deference and Dialogue in Administrative Law*, 111 COLUM. L. REV. 1722 (2011) (chronicling other examples of long agency delays following remand) [hereinafter Hammond, *Dialogue*].

variables relevant to those questions. In this Essay, we sketch the interplay of four variables in order to form some preliminary hypotheses and lay a foundation for future empirical work. First, there is the question of the judicial remedy: whether a decision is remanded with or without vacatur, whether there is an injunction, and what the scope of the remedy is, all shape how an agency might behave. Second is the matter of time—both how much freedom the agency has in crafting a timeline, and the actual amount of time the agency takes following the remand to reach initial, intermediate, and final responsive agency actions (if any). Third is the valence of the agency action, that is, whether it is more, or less, aligned with the interests of the group winning the remand and with the then-current presidential administration. Finally, we consider the timing of the presidential administration, paying particular attention to changes that occur or are anticipated to occur over the timeframe at issue.¹⁶

We suspect that, barring a specific and enforceable judicial directive, agencies on remand have almost as much discretion as they would in the first instance. Moreover, we hypothesize that whether agencies stall or act with haste is at least somewhat dependent on the alignment of the agency's policy position with the incumbent President and any anticipated uncertainty regarding a future President. Of course, the vigilance of the original litigants, budgetary constraints, newly created statutory deadlines, and a variety of other factors will influence what happens on remand. But for present purposes, we hope that this initial exploration will yield a useful set of testable hypotheses that can inform more detailed future work.

This Essay proceeds as follows. In Part I's background section below, we briefly describe the nature of judicial review before elaborating our four variables. Next, in Part II we present three case studies to illustrate how our variables interact. Following this exercise, in Part III we propose a set of hypotheses for future empirical work. We conclude with some observations about what this initial look says about agency behavior, discretion, and ultimately, legitimacy.

16. We acknowledge, and concur with, Professor David L. Markell's Comment on this Essay, which emphasizes as well the importance of internal drivers of discretionary agency actions. David L. Markell, *Agency Motivations in Exercising Discretion on Remand*, 32 J. OF LAND USE & ENVTL. L. 513 (2017).

II. BACKGROUND: AGENCY DISCRETION, JUDICIAL REVIEW, AND THE FOUR VARIABLES

As noted above, we focus on four variables that may hold predictive value as to agencies' exercise of discretion following judicial remand: the nature of the remedy; the timeline; the valence of the decision; and the presidential administration. To give those variables context, a brief review of some of the principles of judicial review—and their interplay with agency discretion—may be helpful.

Agencies regularly exercise discretion in implementing delegated statutory authority. Indeed, many of their statutory mandates are broadly worded, requiring regulation “in the public interest” or for “just and reasonable” purposes.¹⁷ Judicial review of the exercise of that discretion tends to be deferential.¹⁸ Sometimes, however, judicial review of discretionary agency decisionmaking is not available at all. For example, the Administrative Procedure Act (APA) exempts certain actions from review,¹⁹ and establishes reviewability requirements like finality.²⁰ The Constitution limits reviewability as well, most often through the standing requirement.²¹ And of course, the vast majority of agency behaviors are never challenged in court, whether because they are too insubstantial or because

17. See *Whitman v. Am. Trucking Ass'n*, 531 U.S. 457, 473–76 (2001) (providing further examples).

18. Too deferential, some would say—at least in certain contexts. See, e.g., Emily Hammond Meazell, *Super Deference, the Science Obsession, and Judicial Review as Translation of Agency Science*, 109 MICH. L. REV. 733 (2011); Stephen Breyer, *Judicial Review of Questions of Law and Policy*, 38 ADMIN. L. REV. 363, 372–77 (1986) (taking issue with excessive deference to agency statutory interpretations). Review of discretionary actions should be distinguished from review of nondiscretionary actions, the latter of which are afforded far less judicial deference. E.g., *Norton v. S. Utah Wilderness All.*, 542 U.S. 55, 64 (2004) (citing Attorney General's Manual on the Administrative Procedure Act (APA) as supporting conclusion that courts are empowered “only to compel an agency ‘to perform a ministerial or non-discretionary act,’ or ‘to take action upon a matter, without directing *how* it shall act”).

19. See 5 U.S.C. § 701(a) (2012) (precluding review of actions made unreviewable by statute or committed to agency discretion by law). These exemptions are interpreted narrowly. *Citizens to Pres. Overton Park, Inc. v. Volpe*, 401 U.S. 402, 410 (1971) (quoting S. REP. NO. 79-752, at 26 (1945)) (concluding that agency discretion exemption is confined to “those rare instances where ‘statutes are drawn in such broad terms that in a given case there is no law to apply’”).

20. 5 U.S.C. § 704 (2012) (making final agency actions reviewable); *Darby v. Cisneros*, 509 U.S. 137 (1993) (interpreting scope of § 704's exhaustion provision); cf. *Abbott Labs. v. Gardner*, 387 U.S. 136, 140 (1967) (recognizing presumption of reviewability); see also *FTC v. Standard Oil Co.*, 449 U.S. 232, 249 n.5 (1980) (concluding that agency action was reviewable unless the agency was able, by “clear and convincing evidence,” to “overcome the strong presumption against a determination that its action is ‘committed to agency discretion’ under 5 U.S.C. § 701(a)(2)”).

21. E.g., *Lujan v. Defs. of Wildlife*, 504 U.S. 555 (1992).

would-be challengers must pick and choose how to spend limited resources.²²

Many of the reviewability limitations are structured around separation-of-powers values and reflect judicial hesitation at dictating agency resource allocation or interfering with agencies' priority-setting decisions.²³ Left without the structural check of judicial review, however, agencies' legitimacy²⁴ must be left to some other external²⁵ or internal²⁶ oversight. External oversight might include congressional actions like hearings, budgetary decisions, and even amendments to statutory mandates. It is our experience that major rulemakings and related judicial decisions—like those culminating in the Clean Water Rule that is the subject of our first case study below—attract significant legislative attention but nevertheless are difficult for Congress to police.²⁷ For both major rules and

22. Hammond & Markell, *supra* note 2, at 314–15.

23. *E.g.*, Heckler v. Chaney, 470 U.S. 821, 831 (1985) (referring to need for agency to engage in “a complicated balancing of a number of factors which are peculiarly within its expertise,” including “whether agency resources are best spent on this violation”); Allen v. Wright, 468 U.S. 737, 752 (1984) (explaining that “the law of Art. III standing is built on a single basic idea—the idea of separation of powers”). *See also* Norton v. S. Utah Wilderness All., 542 U.S. 55, 66 (2004) (describing purpose “to protect agencies from undue judicial interference with their lawful discretion, and to avoid judicial entanglement in abstract policy disagreements which courts lack both expertise and information to resolve”). For criticism of Norton, see Robert L. Glicksman, *Securing Judicial Review of Agency Inaction (and Action) in the Wake of Norton v. Southern Utah Wilderness Alliance*, in STRATEGIES FOR ENVIRONMENTAL SUCCESS IN AN UNCERTAIN JUDICIAL CLIMATE 163 (M. Wolf ed., ELI Press 2005); *see also* Bennett v. Spear, 520 U.S. 154, 177–78 (1997) (noting that final agency action “must mark the ‘consummation’ of the agency’s decisionmaking process”); Franklin v. Massachusetts, 505 U.S. 788, 796–97 (1992) (explaining that the “core question” in assessing whether an agency action is final “is whether the agency has completed its decisionmaking process, and whether the result of that process is one that will directly affect the parties”).

24. Legitimacy may refer to constitutional, statutory, democratic, or procedural legitimacy. *See* Hammond & Markell, *supra* note 2, at 316–17 (collecting varieties). For purposes of our project, compliance with a remand order most strongly reinforces statutory and procedural legitimacy.

25. External checks include congressional and presidential oversight, as well as oversight such as may come from the media, interest groups, or the public. *See, e.g.*, Mariano-Florentino Cuéllar, *Rethinking Regulatory Democracy*, 57 ADMIN. L. REV. 411 (2005) (participation during rulemaking); Elena Kagan, *Presidential Administration*, 114 HARV. L. REV. 2245 (2001) (describing presidential control); Matthew D. McCubbins, Roger G. Noll, & Barry R. Weingast, *Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies*, 75 VA. L. REV. 431, 434 (1989) (fire-alarm model of congressional oversight); Mark Seidenfeld, *A Civic Republican Justification for the Bureaucratic State*, 105 HARV. L. REV. 1511 (1992) (civic republicanism); Miriam Seifter, *Second-Order Participation in Administrative Law*, 63 UCLA L. REV. 1300 (2016) (interest groups).

26. The public administration literature offers perspectives on internal oversight. *See* Shapiro & Wright, *supra* note 2, at 597–603 (collecting sources).

27. *See* Executive Overreach in Domestic Affairs Part II—IRS Abuse, Welfare Reform, and Other Issues, Before the H. Judiciary Comm., Executive Overreach Task Force, 114th CONG. (Apr. 19, 2016), <https://judiciary.house.gov/hearing/executive-overreach-domestic-affairs-part-ii-irs-abuse-welfare-reform-issues/> (considering Clean Water Rule, Clean Power Plan, and other executive actions). Efforts to amend the CAA to strip EPA’s authority to regulate greenhouse gases have failed as of this writing, although it seems possible

run-of-the-mill agency actions, the President seems to have far more impact as a matter of external oversight.²⁸ The role of the media, public engagement, and other democratic and participatory forms of oversight is widely acknowledged in the literature even while its effectiveness is a matter of debate.²⁹ Internal means of agency self-policing are somewhat elusive in the legal literature, having attracted more attention in the field of public administration.³⁰ Still, agency flexibility, agency culture, entrenchment, and design all impact how an agency behaves outside the limelight of judicial review.

These sources of oversight are important not just in the absence of judicial review, but on remand. Suppose an agency action *is* reviewed, and remanded to the agency due to some flaw in the action's procedure or substance. Under many circumstances, the remanded action becomes simply one of many possible priorities that must compete for scarce resources. In other words, as a practical matter the remanded action is akin to general matters of agency discretion that are not (or are not yet) reviewable. However, the procedural posture of the remanded action creates a record that helps illuminate agency behavior more generally. Below, we consider some of the factors bearing on how remanded actions might fare once they are returned to the general mix of agency priorities and discretion. In so doing, we build a universe of remands from which empirical work could be developed, delineate the contours of potential variables, and note tentative hypotheses with respect to those variables.

A. Judicial Remedy

The judicial remedy most clearly drives the amount of discretion an agency has on remand and delineates the set of remands for

Congress may have the votes and presidential support necessary to do that in the Trump Administration.

28. This expectation is constitutionally grounded. See U.S. CONST. art II, § 3 (vesting in the President the duty to "take Care that the Laws be faithfully executed"). It is also descriptively apt, see Ming Hsu Chen, *Administrator-in-Chief* (forthcoming 2017) (describing administrative mechanisms applied by President Obama regarding immigration matters), and judicially accepted, see *Sierra Club v. Costle*, 657 F.2d 298, 405 (D.C. Cir. 1981) ("The court recognizes the basic need of the President and his White House staff to monitor the consistency of executive agency regulations with Administration policy. He and his White House advisers surely must be briefed fully and frequently about rules in the making, and their contributions to policymaking considered.").

29. *E.g.*, Edward Rubin, *The Myth of Accountability and the Anti-Administrative Impulse*, 103 MICH. L. REV. 2073, 2076–98 (2005) (arguing electoral accountability is a myth that cannot legitimize the administrative state); Seifter, *supra* note 25, at 1333–52 (describing myth of representativeness of public interest groups).

30. Shapiro & Wright, *supra* note 2, at 595–603 (making this point and providing overview of public administration literature).

which an empirical project would be relevant. The APA provides a variety of reasons for which a court might set aside an agency action: procedural defects, arbitrary decisionmaking or actions unsupported by substantial evidence, failure to conform to statute, and unconstitutional agency action.³¹ Depending on the type and seriousness of the flaw, the court might vacate the action and remand,³² remand without vacatur,³³ issue a mandamus³⁴ or injunction,³⁵ and/or retain jurisdiction until some flaw is remedied.³⁶

Of these, mandatory or injunctive relief coupled with retaining jurisdiction would most confine agency discretion. The action's priority for the agency and the external check of judicial oversight are both retained, so it is unlikely that cases involving such relief would be appropriate to include in an empirical study focused on discretion. Even so, injunctions can take many forms, ranging from a complete prohibition to an authorization if the agency adheres to conditions specified in the injunction.³⁷ A remand order may enjoin

31. 5 U.S.C. § 706(2) (2012).

32. Some scholars insist this remedy is the only one consistent with the text of the APA, which provides that a court "shall set aside" agency action having the flaws listed in § 702. See Hammond, *Dialogue*, *supra* note 15, at 1738 (collecting sources).

33. Most scholars and courts view this remedy as within judicial discretion, notwithstanding the contrary text of the APA noted above. *E.g.*, Ronald M. Levin, "Vacation" at Sea: *Judicial Remedies and Equitable Discretion in Administrative Law*, 53 DUKE L.J. 291 (2003). Furthermore, if one views the hard look doctrine as too hard, this remedy offers a means of tempering judicial power in the substantive standard. *Id.* at 361; Daniel B. Rodriguez, *Of Gift Horses and Great Expectations: Remands Without Vacatur in Administrative Law*, 36 ARIZ. ST. L.J. 599, 617–18 (2004) (noting that remanding without vacatur is designed to give the agency the chance to improve its reasoning, maintain the stability of a regulatory program pending an agency's response to a judicial remand, and protect the "reliance interests" of those affected by regulation.); Sidney A. Shapiro & Richard W. Murphy, *Arbitrariness Review Made Reasonable: Structural and Conceptual Reform of the "Hard Look"*, 92 NOTRE DAME L. REV. 331, 369–71 (2016) (justifying remand without vacatur as a sensible way of allowing a court to conclude that, notwithstanding curable flaws, a rule is not arbitrary if the agency adopts post hoc fixes for the defects). According to the D.C. Circuit, "[t]he decision whether to vacate depends on 'the seriousness of the order's deficiencies (and thus the extent of doubt whether the agency chose correctly) and the disruptive consequences of an interim change that may itself be changed.'" *Allied-Signal, Inc. v. U.S. Nuclear Reg. Comm'n*, 988 F.2d 146, 150 (D.C. Cir. 1993) (quoting *Int'l Union of United Mine Workers v. Fed. Mine Safety & Health Admin.*, 920 F.2d 960, 966–67 (D.C. Cir. 1990)).

34. These are rare. See *Telecomms. Res. & Action Control Ctr. v. FCC (TRAC)*, 750 F.2d 70, 79 (D.C. Cir. 1984) (stating that agency's delay must be "egregious" in order to justify mandamus).

35. *E.g.*, *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 194–95 (1978) (affirming court of appeals' grant of injunctive relief in landmark Endangered Species Act case).

36. *TRAC*, 750 F.2d at 80 (concluding agency delay was serious enough to justify retaining jurisdiction). Settlement is also a possibility following judicial review, but we do not address it here. *Cf.* Hammond, *Dialogue*, *supra* note 15, at 1740 & n.83 (describing empirical evidence suggesting "remanded actions settle 40% to 50% of the time").

37. See, *e.g.*, *NRDC v. Evans*, 364 F. Supp. 2d 1083, 1139–43 (N.D. Cal. 2003) (crafting "carefully tailored" injunction restricting use of low-frequency sonar in areas rich in marine life, but allowing its use for military testing and training under certain conditions). For a typology of different kinds of injunctions, see Daniel A. Farber, *Equitable Discretion, Legal*

some aspects of an agency's decision but allow others to proceed.³⁸ Even if a court issues a conditional or partial injunction, the specificity with which it describes the conditions can vary. The more specifically the court describes the nature of the agency's required response, the less flexibility the agency has in how it chooses to respond (and perhaps in whether it responds at all). A generally worded injunction to halt the adverse effects of an agency's action may afford it great leeway in determining the best method for doing so.³⁹ Injunctions also can vary in their geographic scope, ranging from site-specific⁴⁰ to nationwide⁴¹ in application. Were we to construct a dataset that eliminated remands that retained jurisdiction and mandated particular action, therefore, we would need to acknowledge that such a dataset could be under-inclusive.

By contrast, in the context of rulemaking actions, vacating a rule in its entirety arguably gives the agency the most discretion on remand because it must start a rulemaking anew if it wishes to continue to pursue the issue.⁴² Barring some other mandatory oversight like a presidential or congressional directive, the agency might

Duties, and Environmental Injunctions, 45 U. PITT. L. REV. 513, 539–41 (1984) (discussing enforcement, compliance, ancillary, and freestanding injunctions).

38. See, e.g., *Pit River Tribe v. U.S. Forest Serv.*, 615 F.3d 1069, 1080–82 (9th Cir. 2010) (upholding district court's remand order requiring the Bureau of Land Management to reconsider its decision to extend term of a geothermal lease, but not requiring it to invalidate the existing lease or to hold a new bidding process); *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 877 (9th Cir. 2004) (affirming district court's decision to allow portions of record of decision to be implemented while invalidating others).

39. The difference between an injunction that requires a particular end result and one that dictates the means of achieving it is analogous to the well-known distinction between performance and design specification standards in environmental law. "A performance standard sets an emission limitation by reference to the pollution level that would be attained through the use of the best available technology, but does not actually mandate the use of any particular technology. In contrast, a design standard requires an actor to use a particular technology." Richard L. Revesz & Allison L. Westfall Kong, *Regulatory Change and Optimal Transition Relief*, 105 NW. U. L. REV. 1581, 1597 (2011); cf. Cary Coglianese, Jennifer Nash & Todd Olmstead, *Performance-Based Regulation: Prospects and Limitations in Health, Safety, and Environmental Protection*, 55 ADMIN. L. REV. 705, 713 (2003) (suggesting that "the two approaches can be better thought of as end points along a spectrum of regulatory approaches").

40. See, e.g., *Defs. of Wildlife v. Martin*, 454 F. Supp. 2d 1085, 1099 (E.D. Wash. 2006) (enjoining snowmobiling in national forest pending consultation under the Endangered Species Act).

41. See, e.g., *California ex rel. Lockyer v. U.S. Dep't of Agric.*, 575 F.3d 999, 1021 (9th Cir. 2009) (upholding nationwide injunction prohibiting Forest Service from violating regulatory restrictions on activities in roadless areas of the national forests as necessary to avoid degradation of those areas); *Nat'l Mining Ass'n v. U.S. Army Corps of Eng'rs*, 145 F.3d 1399, 1408–10 (D.C. Cir. 1998) (nationwide injunction against implementation of Clean Water Act regulation); *Sequoia Forestkeeper v. Tidwell*, 847 F. Supp. 2d 1244, 1253 (E.D. Cal. 2012) (nationwide injunction against implementation of Forest Service regulations concerning administrative appeals).

42. Hammond, *Dialogue*, *supra* note 15, at 1738.

simply move onto other issues. Thus, one way to construct a dataset would be to limit its contents to cases with this type of disposition.

Although that approach would be straightforward, it would miss the richness of detail provided by another common remedy: quite often, courts remand rules without vacating them. Evaluating agencies' exercises of their discretion in such circumstances requires a fact-intensive look at the reason for the remand and the relationship of the flaw to the action as a whole. Indeed, this point is true for nearly every case holding that an agency decision is flawed in some way, regardless of whether there is a vacatur. The Supreme Court has explained the judicial preference for not dictating agency responses on remand, at least in cases in which an agency decision is invalidated as arbitrary and capricious as a result of a flawed or missing explanation.⁴³ Failure to allow the agency to determine whether it can justify reaching the same result with a different or better explanation "erroneously deprive[s] the agency of its usual administrative avenue for explaining and reconciling the arguably contradictory rationales that sometimes appear in the course of lengthy and complex administrative decisions."⁴⁴ It is rare that it would be appropriate for a court to direct a specific result on remand, such as when the agency has delayed action and further delay would risk irreparable harm to litigants' or statutory interests.⁴⁵

As a straightforward illustration of the way discretion can be channeled in the wake of a judicial remand, consider again the example of *Michigan v. EPA*⁴⁶ mentioned in the Introduction.⁴⁷ According to the Supreme Court, the agency's flaw was refusing to consider the costs of regulating hazardous air emissions in its initial decision to regulate under the CAA.⁴⁸ Writing for the majority, Justice Scalia reasoned that the word "appropriate" in the relevant portion of the CAA did not permit the agency to refuse to consider costs.⁴⁹ As noted, the D.C. Circuit remanded the rule without vacating it.⁵⁰ Agencies do not always remedy flaws under

43. Nat'l Ass'n of Home Builders v. Defs. of Wildlife, 551 U.S. 644, 657–58 (2007).

44. *Id.* at 658.

45. *See, e.g.*, Middle Rio Grande Conservancy Dist. v. Norton, 294 F.3d 1220, 1226 (10th Cir. 2002) (ordering agency to prepare EIS in face of lengthy delay and overwhelming evidence of significant environmental impacts); *cf.* Nelson v. United States, 64 F. Supp. 2d 1318, 1326 (N.D. Ga. 1999) (issuing mandatory injunction without remand in face of agency's "erroneous decision").

46. *Michigan v. EPA*, 135 S. Ct. 2699 (2015).

47. *Supra* text accompanying notes 5–9.

48. *Michigan*, 135 S. Ct. at 2711.

49. *Id.* ("The Agency must consider cost—including, most importantly, cost of compliance—before deciding whether regulation is appropriate and necessary.")

50. *Supra* note 7.

these circumstances as quickly as EPA did here,⁵¹ but note that EPA's discretion on remand was channeled: it was *required* to consider costs.⁵² Still, its decision *how* to consider costs was left open to the agency's discretion.⁵³ This short example illustrates how the black-and-white remedy and the reason for it interact to produce something less than full discretion on remand. For this reason, empirical work must consider both the easily⁵⁴ code-able remedy and the reasoning behind it. The latter, of course, is much more difficult to code;⁵⁵ conceiving of it as an ordinal variable may be a possible approach for ranking the amount of discretion available on remand.⁵⁶

One final point is important with respect to the remedy. As our case studies demonstrate, it is common that agency actions on a given issue will be challenged and remanded multiple times, in what one of us has called serial litigation.⁵⁷ It seems likely that the history of a court's and agency's interaction on a particular issue will flavor the nature of the dialogue between them and impact the remedy as well.⁵⁸ For grappling with this possibility empirically, we would want to document the facts of the serial litigation in our coding. Of

51. See, e.g., discussion *infra* Part II.B. (describing time variable).

52. This judicial approach has been dubbed "*Brand X* avoidance" for its impact on agencies' interpretive discretion on remand. Emily Hammond & Richard J. Pierce, Jr., *The Clean Power Plan: Testing the Limits of Administrative Law and the Electric Grid*, 7 GEO. WASH. J. ENERGY & ENV'T'L L. 1, 8 (2016). However, it is also a feature of the landscape any time a court rejects an agency interpretation at *Chevron* step one. For further details, see Emily Hammond et al., *Judicial Review of Statutory Issues Under the Chevron Doctrine*, in A GUIDE TO JUDICIAL AND POLITICAL REVIEW OF FEDERAL AGENCIES 93–100 (2015) (collecting examples).

53. *Michigan*, 135 S. Ct. at 2711 ("The Agency must consider cost—including, most importantly, cost of compliance—before deciding whether regulation is appropriate and necessary. . . . It will be up to the Agency to decide (as always, within the limits of reasonable interpretation) how to account for cost."). EPA also had a litigation history regarding its failure to regulate hazardous air pollutants from power plants, recounted in the lower court's decision. *White Stallion Energy Ctr. v. EPA*, 748 F.3d 1222, 1229–30 (D.C. Cir. 2014), *rev'd*, 135 S. Ct. 2699 (2015).

54. Usually. Sometimes it can be difficult to determine the nature of a court's remedy. But it is objectively verifiable and we would expect little variation among coders.

55. Coders would be required to read opinions, assess the nature of the reasoning, and translate that into a discrete coded value. Readers often interpret such reasoning differently, so we could expect a higher rate of disagreement among coders. The task is further complicated given that judicial review of major administrative actions does not often focus on a single issue; results and reasoning may be mixed. For an example of how such matters were handled for a study of the attitudinal model of judicial review, see Cass R. Sunstein et al., *Ideological Voting on Federal Courts of Appeals: A Preliminary Investigation*, 90 VA. L. REV. 301, 310 n.19–313 n.34 (2004) (describing coding methodology).

56. Ordinal variables can be ordered or ranked. For an example, see Deborah Jones Merritt & Barbara F. Reskin, *Sex, Race, and Credentials: The Truth About Affirmative Action in Law Faculty Hiring*, 97 COLUM. L. REV. 199, 212–13 (1997) (conceptualizing law schools' prestige as an ordinal variable).

57. Hammond, *Dialogue*, *supra* note 15, at 1723.

58. *Id.* at 1742–43.

interest, serial litigation may provide the best window into agency behavior on remand simply because the fact of later judicial review helps document what the agency actually did on remand. This point speaks to the need for greater transparency in matters of agency discretion, but it also suggests there may be selection effects in any comprehensive empirical analysis.⁵⁹

B. Timeline

The degree of discretion a judicial remand affords an agency is also affected by the amount of time the court gives the agency to fashion its response. A specific timetable for the agency's response constrains it in ways that an open-ended remand order does not. The absence of such a timetable affects not only when, but whether an agency will respond. The halting manner in which EPA responded to a petition to ban the pesticide discussed in the Introduction,⁶⁰ for example, reflects initial judicial accommodation of—but eventual frustration with—agency regulatory discretion with respect to timing.⁶¹

In building an empirical study, therefore, we would code whether the court provided a timetable, the length of that timetable, and the length of time to agency action. These variables would likely interact with the nature of the remedy, discussed above, in the following ways. First, a vacatur coupled with no timetable truly puts the issue back into the generalized mix of potential agency actions subject to priority-setting and resource-allocation decisions. The universe of potential actions on the issue, of course, would be confined by the reasoning of the opinion. For example, a judicial holding that an agency clearly lacks statutory authority to regulate a type of behavior closes the door to such regulation in the future. But a procedural flaw, flaw of reasoning, or unreasonable interpretation of an ambiguous statute leaves open the possibility of the agency reaching the same substantive result, or something very different from it, in the future. Moreover, we expect significant interaction with the presidential timeframe, as discussed in more detail below. With those major caveats, therefore, this combination maximizes discretion on remand.

59. Moreover, in such circumstances we are admittedly further away from the concept of agency behavior without courts.

60. See *supra* notes 10–15 and accompanying text.

61. One of us has distinguished between an agency's "regulatory discretion," which involves a decision whether to regulate, and its "legislative discretion," which affects how it chooses to regulate. See Sidney A. Shapiro & Robert L. Glicksman, *Congress, the Supreme Court, and the Quiet Revolution in Administrative Law*, 1988 DUKE L.J. 819, 822.

Second, a remand without vacatur, coupled with no timetable or a very long timetable, may have a similar result as a practical matter.⁶² Although the agency ought to remedy the flaw identified by the court, it might be able to “drag its feet” without consequence because the costs of monitoring and enforcing the judicial decision may be high for the winning party. Further, there is comparatively little benefit to an expeditious response to the remand order because the complained-of agency action remains in effect. For regulated entities, inertia favors compliance; for public interest groups, resources may be better spent elsewhere.⁶³ Thus, we predict that the lack of a timetable,⁶⁴ or a very long timetable, would increase the chance of the agency taking no further action on the matter, regardless of the flaw that generated the remand.⁶⁵

Of course, the ultimate time until an agency takes action is also dependent on the valence and presidential variables, to which we turn next.

62. For an example in which vague remand instructions afforded the BLM ample discretion in deciding when and how to respond to a finding that it had committed National Environmental Policy Act (NEPA) violations in its initial effort to amend its resource management plan to facilitate oil and gas leasing, see (in chronological order) *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683 (10th Cir. 2009) (affirming district court’s finding of a flaw and stating that further site-specific analysis was required); Notice of Availability of the Draft Tri-County Resource Management Plan and Draft Environmental Impact Statement for the Las Cruces District Office, New Mexico, 78 Fed. Reg. 21,965 (Apr. 12, 2013) (providing draft plan, and failing to mention Tenth Circuit decision); Notice of Intent to Prepare a Supplement to the Tri-County Draft Resource Management Plan and Environmental Impact Statement, New Mexico, 78 Fed. Reg. 76,582, 76,582 (Dec. 19, 2013) (explaining plan to prepare supplemental EIS); Bureau of Land Mgmt., Las Cruces Dist. Office, Newsletter 5, TriCounty RMP/EIS (Apr. 2014), http://www.blm.gov/style/medialib/blm/nm/field_offices/las_cruces/las_cruces_planning/tricounty_rmp.Par.87669.File.dat/Public_Newsletter_5.pdf (announcing delay). As of this writing, no plan has been issued, leaving the matter to the Trump Administration.

63. See, e.g., Hammond, *Dialogue*, *supra* note 15, at 1769–72 (recounting agency failure to act following remand without vacatur and without timetable).

64. Several commentators have insisted that a timetable is the best practice. See, e.g., Farber, *supra* note 37, at 127 (suggesting that a rule should be vacated after the timetable for responding to a remand without vacatur has expired); Hammond, *Dialogue*, *supra* note 15, at 1786–87 (suggesting that timetables are necessary to avoid constitutional concerns); Rodriguez, *supra* note 33, at 621 (“There is no clear incentive, save for a timetable that the court [rarely] establishes—for the agency to diligently redesign its decision and rationale Hence, the regulatory process bears costs while the process slowly unfolds.”).

65. In one case, for example, EPA delayed for fifteen years in reissuing regulations under the CAA that the D.C. Circuit remanded without vacatur without imposing a deadline for a response. *Env’tl. Def. v. EPA*, 489 F.3d 1320 (D.C. Cir. 2007) (upholding EPA regulations issued on remand).

C. Valence and Alignment of Policy Interests

Agency actions are regularly challenged by both regulated entities and public interest groups, often in the same proceeding.⁶⁶ With “valence” and “alignment” of policy interests, we want to capture the extent to which an agency’s policy inclination aligns with that of the party winning the remand and the presidential administration. For “valence” we might code whether the litigants’, presidential, and agency’s interests are *regulatory*,⁶⁷ meaning tending toward more or stricter regulations, or *deregulatory*, meaning tending toward fewer or laxer regulations.⁶⁸ For agreement, it would be necessary to code for eight potential combinations.⁶⁹ Notably, the “valence” determination is better suited to substantive outcomes than procedural ones. When remands are for procedural defects, further work would be needed to assign a valence to the parties’ procedural interests.

All else being equal, we predict that when an agency’s and president’s valence are out of alignment with that of the winning litigant, we could expect on remand inaction, delay, or exercises of discretion that are contrary to the court’s expressed interests.⁷⁰ When all valences align, however, we predict relatively expeditious exercises of discretion that reinforce the interest alignment. Complications may arise in making observations. For example, imagine that a winning litigant obtained a remand for an agency’s flawed support of a rule aimed at regulating toxics; here the litigant would have argued that the rule was not stringent enough. If on remand the agency adopts a slightly more restrictive rule, it would be coded

66. See, e.g., *Utility Air Reg. Group v. EPA*, 134 S. Ct. 2427 (2014) (various challenges to EPA’s regulation of greenhouse gas emissions from stationary sources under the CAA); *In re Polar Bear Endangered Species Act Listing and § 4(d) Rule Litig.*, 794 F. Supp. 2d 65 (D.D.C. 2011), *aff’d*, 709 F.3d 1 (D.C. Cir. 2013) (various challenges to agency’s decision to list polar bears as threatened but not endangered species).

67. We use the term “regulatory” broadly to include anything that qualifies as “agency action” under the APA, 5 U.S.C. § 551(13) (2012), not just regulations adopted after rulemaking proceedings.

68. Admittedly, this could be a challenging task in cases with multiple challengers with opposing interests, and judicial holdings that reach mixed results. Specifying the action on remand as precisely as possible, and tailoring that to the particular remand reasoning and advocate, would be critical.

69. These are full alignment/regulatory; full alignment/deregulatory; agency/president alignment/regulatory; agency/president alignment/deregulatory; agency/litigant alignment/regulatory; agency/litigant alignment deregulatory; litigant/president alignment/regulatory; and litigant/president alignment/deregulatory.

70. Of course, this measurement will always be more complicated in mixed judicial outcomes. Moreover, general judicial attention to this concern may alleviate the possibility of foot-dragging. See, e.g., *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 127 (D.C. Cir. 2015) (urging agency to act promptly on remand); *North Carolina v. EPA*, 550 F.3d 1176, 1178 (D.C. Cir. 2008) (emphasizing need for agency to act to remedy flaw on remand).

as regulatory in nature. But if the agency's (and president's) usual valences were deregulatory, one would expect that the agency chose the least restrictive of increased regulatory options within the zone of reasonableness. A subsequent legal challenge might help tease the matter out, and enable a coder to characterize the remand action as deregulatory. But coding this way would require significant judgment and could introduce errors into the dataset.

Further, the agency's or presidential valence may well change over the course of the time period under observation. Among other things, our final variable is meant to capture such circumstances.

D. Presidential Administration Over Time

Normatively, presidential control of agency behavior has both proponents and adversaries in the literature.⁷¹ As a positive matter, however, presidential control of agencies is well documented.⁷²

71. See, e.g., Daniel A. Farber & Anne Joseph O'Connell, *The Lost World of Administrative Law*, 92 TEX. L. REV. 1137, 1162–67 (2014) (describing drift in OIRA's role away from presidential mandates in executive orders); Kagan, *supra* note 25, at 2372 (describing and arguing for enhanced judicial deference); Thomas O. McGarity, *EPA at Helm's Deep: Surviving the Fourth Attack on Environmental Law*, 24 FORDHAM ENVTL. L. REV. 205 (2012–2013) (criticizing); Emily Hammond Meazell, *Presidential Control, Expertise, and the Deference Dilemma*, 61 DUKE L.J. 1763, 1800–02 (2012) (criticizing); Cass Sunstein, *The Office of Information and Regulatory Affairs: Myths and Realities*, 126 HARV. L. REV. 1838, 1840–41 (2013) (supporting); Kathryn A. Watts, *Proposing a Place for Politics in Arbitrary and Capricious Review*, 119 YALE L.J. 2 (2009) (arguing for enhanced consideration of presidential control during judicial review). See also Cynthia Farina et al., *Knowledge in the People: Rethinking "Value" in Public Rulemaking Participation*, 47 WAKE FOREST L. REV. 1185, 1225–26 (2012) (stating that, in theory, centralized executive review can help "transcend[] disciplinary boundaries by involving different kinds of experts").

72. E.g., Letter from Cass R. Sunstein, Admin., Office of Information and Regulatory Affairs, to Lisa P. Jackson, Admin., EPA, (Sept. 2, 2011) (on file with authors) (returning rule on 2008 ozone primary and secondary ambient air quality standards); Nina A. Mendelson, *Disclosing "Political" Oversight of Agency Decision Making*, 108 MICH. L. REV. 1127 (2010) (documenting impact of Office of Information and Regulatory Affairs (OIRA) regulatory review and arguing for greater transparency). The history of the Forest Service's land use planning rule in the early twenty-first century provides a strong example of a course of agency action on remand that is strewn with policy reversals driven by the politics and policies of multiple administrations. See (in chronological order) National Forest System Land and Resource Management Planning, 44 Fed. Reg. 53,928 (Sept. 17, 1979) (initial set of plans); National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026 (Sept. 30, 1982) (revisions); National Forest System Land and Resource Management Planning, 65 Fed. Reg. 67,514 (Nov. 9, 2000) (overhaul by outgoing Clinton administration); National Forest System Land and Resource Management Planning; Extension of Compliance Deadline, 66 Fed. Reg. 27,552 (May 17, 2001) (delay with incoming George W. Bush Administration); National Forest System Land Management Planning, 70 Fed. Reg. 1023 (Jan. 5, 2005) (new rule under George W. Bush Administration); *Citizens for Better Forestry v. U.S. Dep't of Agric.*, 481 F. Supp. 2d 1059, 1100–01 (N.D. Cal. 2007) (invalidating Bush rule); National Forest System Land Management Planning, 73 Fed. Reg. 21,468 (Apr. 21, 2008) (essentially reviving 2005 rule); *Citizens for Better Forestry v. U.S. Dep't of Agric.*, 632 F. Supp. 2d 968 (N.D. Cal. 2009) (rejecting 2008 rule); National Forest System Land and Resource Management Planning, 74 Fed. Reg. 67,059 (Dec. 18, 2009) (under Obama Administration's first term, reviving 1982 rule under then-effective 2000 rule); National Forest

And even in the absence of direct presidential control, presidents set policy agendas through their constitutional powers.⁷³ The valence variables above are meant to capture policy preferences. By examining the presidential administration over time, we can test the prediction that agencies behave strategically in anticipation of administrative entrenchment or change. In the *Michigan v. EPA* case discussed in the Introduction, for example, the upcoming presidential election and accompanying Congressional Review Act deadline may have played a role in spurring EPA to remedy the cost flaw quickly, notwithstanding the lack of valence alignment between the agency and president on the one hand, and the winning litigants on the other. Even though the remand in that case was without vacatur, by issuing a rule quickly EPA could make it more difficult for a future (and then-uncertain) presidential administration to undo the rule.⁷⁴ By contrast, when a remand comes at the very beginning of a President's second term, the agency has less incentive to act quickly, especially when its and the administration's valences do not align with the winning litigants. Of course, presidential administration interacts with the other variables as well. For example, the less a judicial remand order micromanages the agency's response, the greater the room is for policy differences across administrations to affect the nature of the agency's response.

We can roughly account for these variations with several observations. First, we can identify the political party of the President at the time of the rule's finalization as well as at the time of remand. Relatedly, we can identify whether the presidential administration

System Land Management Planning, 77 Fed. Reg. 21,162 (Apr. 2012) (revamped rule at end of Obama's first term).

73. *E.g.*, U.S. CONST. art. II, § 1, cl. 1 (vesting clause); *id.* § 2, cl. 2 (appointments clause); see also *Sierra Club v. Costle*, 657 F.2d 298, 405–06 (D.C. Cir. 1981):

The court recognizes the basic need of the President and his White House staff to monitor the consistency of executive agency regulations with Administration policy. . . .

. . . Our form of government simply could not function effectively or rationally if key executive policymakers were isolated from each other and from the Chief Executive. Single mission agencies do not always have the answers to complex regulatory problems. An overworked administrator exposed on a 24-hour basis to a dedicated but zealous staff needs to know the arguments and ideas of policymakers in other agencies as well as in the White House.

74. This hypothesis is consistent with the phenomenon of midnight regulations, a term that "describes the dramatic spike of new regulations promulgated at the end of presidential terms, especially during transitions to an administration of the opposite party." Jerry Brito & Veronique de Rugy, *Midnight Regulations and Regulatory Review*, 61 ADMIN. L. REV. 163, 163–64 (2009). For an empirical survey of the issuance of midnight regulations at the end of the George H.W. Bush and Clinton Administrations, see Jason M. Loring & Liam R. Roth, *After Midnight: The Durability of the "Midnight" Regulations Passed by the Two Previous Outgoing Administrations*, 40 WAKE FOREST L. REV. 1441 (2005).

changed hands within that timeframe. Third, we can code the time remaining in a presidential term following a remand. Although a rough measure, we can also tie these observations to the regulatory or deregulatory valence of the presidential administration to enable comparisons between the explanatory power of variables coded here as opposed to the valence variables coded under Section C above.

III. CASE STUDIES: AGENCY BEHAVIOR ON REMAND

As is likely evident from our discussion of the variables related to agency behavior on remand, their interplay can become quite complicated. In this Part, we provide three case studies.⁷⁵ The case studies either help reinforce our predictions above, or suggest areas where one might find counter-intuitive results. Ultimately, this work sheds light on both the pragmatic workability of empirical analyses of agency behavior on remand, and on further research needs. In and of themselves, however, these case studies illuminate the richness of agency discretion and behavior on remand.

The three case studies consist of the following. First, the Clean Water Act and “waters of the United States” saga reveals how remand orders can leave significant substantive and procedural discretion to agencies, permitting them to maximize their flexibility over the course of multiple presidential administrations. Second, a story involving the Wild and Scenic Rivers Act and Yosemite National Park illustrates a long series of litigation, spanning presidential administrations and involving differing approaches to the judicial remedy. Finally, we use an Endangered Species Act decision to illustrate how an agency might persist in a policy valence notwithstanding an opposing valence alignment of both the reviewing court and presidential administration.

A. The Clean Water Act and “Waters of the United States”

Remand orders may afford agencies sufficient discretion to allow a range of substantive and procedural choices in their responses. Further, these choices may shift over time in response to factors such as changes in presidential administration and yet remain consistent with those orders. This dynamic is well illustrated by agency efforts to define the scope of the Clean Water Act (CWA)’s

75. There is no special distinction directing our choice of case studies. In fact, numerous examples reflect similar dynamics, some of which we highlight in the notes.

jurisdictional language, “waters of the United States.”⁷⁶ In the infamous decision *Rapanos v. United States*, the Supreme Court invalidated the Army Corps of Engineers’ (Corps) determination that development of private property (which begun during the George H.W. Bush Administration in 1989) that allegedly contained jurisdictional wetlands violated the statute’s prohibition on the unpermitted discharge of dredged or fill material.⁷⁷

The Court splintered 4-1-4, producing no majority opinion. Five justices agreed that the Corps had misconstrued the scope of the “waters of the United States” to which the permit requirement applied, but Justice Kennedy, the fifth vote for remand of the challenged agency decisions, disagreed with the plurality on the proper approach to addressing that mistake. The plurality vacated the judgments of the appellate court, which had upheld the federal government’s enforcement actions against two sets of property owners, and remanded “for further proceedings.”⁷⁸ Chief Justice Roberts, who joined the plurality opinion, wrote separately. He chastised the Corps and EPA, which jointly administer the dredge-and-fill permit program, for failing to issue regulations clearly specifying the program’s jurisdictional bounds in the face of an earlier determination by the Court⁷⁹ that their approach was excessively broad.⁸⁰ But the Court provided little guidance on the substantive approach the agencies should take on remand and none on the procedural mechanism for doing so.⁸¹ Further, the district court’s mandate on remand was amorphous at best. The district court remanded to the Corps “for further proceedings consistent with the Supreme Court’s decision” in *Rapanos/Carabell*.⁸² Given the mass confusion generated by the Court’s splintered decision in *Rapanos*,⁸³ these

76. The CWA prohibits the unpermitted discharge of any pollutant, including dredged or fill material. 33 U.S.C. §§ 1311(a), 1344(a) (2012). It defines such a discharge as the addition of a pollutant by a point source to navigable waters. *Id.* § 1362(12). The Act defines “navigable waters” to mean “waters of the United States, including the territorial seas.” *Id.* § 1362(7).

77. *Rapanos v. United States*, 547 U.S. 715 (2006).

78. *Id.* at 757.

79. *Solid Waste Agency of N. Cook County v. U.S. Army Corps of Eng’rs*, 531 U.S. 159 (2001).

80. *Rapanos*, 547 U.S. at 757–58 (Roberts, C.J., concurring).

81. On remand, the Court of Appeals remanded “to the district court with instructions to remand to the Army Corps of Engineers for further proceedings consistent with the Supreme Court’s decision in *Rapanos*.” *Carabell v. U.S. Army Corps of Eng’rs*, 217 F. App’x 431, 431 (6th Cir. 2007).

82. *Carabell v. U.S. Army Corps of Eng’rs*, No. 01-CV-72797-PDB-WC (E.D. Mich. Mar. 6, 2007).

83. See, e.g., *United States v. Cundiff*, 555 F.3d 200, 207 (6th Cir. 2009) (“Parsing any one of *Rapanos*’s lengthy and technical statutory exegeses is taxing, but the real difficulty comes in determining which—if any—of the three main opinions lower courts should look to for guidance.”).

instructions were singularly unilluminating and appeared to leave considerable interpretive discretion to the Corps.

Ultimately, Rapanos reached a million-dollar settlement with the Corps.⁸⁴ Because the particular matters were resolved, the agency might have continued to develop its approach through adjudications, notwithstanding Justice Roberts's strong admonishment. Almost exactly a year after the Court's decision and during the second term of the George W. Bush Administration, however, EPA and the Corps issued a joint memorandum providing nonbinding guidance to EPA regions and Corps districts on how to respond to *Rapanos* in future permit proceedings.⁸⁵ A year and a half later, as the Bush Administration neared its end, the two agencies issued additional guidance, which superseded the earlier guidance.⁸⁶ The Obama Administration took a different approach, both substantively and procedurally. Choosing to clarify the definition of "waters of the United States" through a legislative rule rather than through a nonbinding guidance document, EPA and the Corps issued a notice of proposed rulemaking in 2014⁸⁷ and final regulations a little more than a year later.⁸⁸ Whether the final regulations expand the scope of regulatory coverage reflected in the earlier guidance documents is a matter of dispute. Many parties challenged the regulations in multiple courts.⁸⁹

84. EPA, Press Release, *John Rapanos Agrees to Pay for Clean Water Act Violations*, Dec. 29, 2008, <https://yosemite.epa.gov/opa/admpress.nsf/d0cef6618525a9efb85257359003fb69d/b029ab82bf92cd5f8525752e0072fc60!OpenDocument>. The outcome of *Carabell* is unknown to the authors, despite searches of the Corps' website, Westlaw, and even Wikipedia.

85. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States* & *United States v. Carabell* (June 2007), https://www.epa.gov/sites/production/files/2016-02/documents/cwa_jurisdiction_following_rapanos120208.pdf. The guidance provided:

The CWA provisions and regulations described in this document contain legally binding requirements. This guidance does not substitute for those provisions or regulations, nor is it a regulation itself. It does not impose legally binding requirements on EPA, the Corps, or the regulated community, and may not apply to a particular situation depending on the circumstances. Any decisions regarding a particular water will be based on the applicable statutes, regulations, and case law.

Id. at 4 n.17.

86. *Id.*

87. Proposed Rule, Definition of "Waters of the United States" Under the Clean Water Act, 79 Fed. Reg. 22,188 (Apr. 21, 2014).

88. Clean Water Act Rule: Definition of "Waters of the United States," 80 Fed. Reg. 37,054 (June 29, 2015) (codified at 33 C.F.R. pt. 328 (2017)).

89. *In re* U.S. Dep't of Defense and U.S. Envtl. Prot. Agency Final Rule: Clean Water Rule: Definition of "Waters of the United States," 817 F.3d 261, 264 (6th Cir. 2016), *cert. granted* sub nom. Nat'l Ass'n of Mfrs. v. Dep't of Def., 137 S.Ct. 811 (2017). The Supreme Court refused without explanation to hold the briefing in the case in abeyance to await likely revisions to or repeal of the rule by EPA under the newly ensconced Trump Administration. Nat'l Ass'n of Mfrs. v. Dep't of Def., 2017 WL 1199467, No. 16-299 (Apr. 3, 2017). *See also*

The interplay of variables in this example is complex. First, the decisions in *Rapanos* spoke broadly to the meaning of the term “waters of the United States” and suggested that rulemaking would be a preferable means of exercising agency discretion. But the decision did not mandate that procedural vehicle or even any particular response by the agency. Given that the case involved adjudications, only those discrete matters were left open for further action on remand. Were we to attempt to code the result, the dispositions of the adjudicatory appeals alone would have not provided this full picture.

The timing of agency response to the remand was short—about a year. If one is worried about remanded matters losing their place among agency priorities—especially when a concrete mandate is lacking—this quick response might be reassuring. It also runs counter to our predictions regarding agency behavior as a general matter when there are open-ended remedies. Here, the other variables may be useful. Prior to judicial review, the Corps’ initial valence was regulatory in the sense that it determined that a section 404 permit was required for *Rapanos*.⁹⁰ This valence differed from that predicted by the presidential administration (Republican), but given that the Corps’ action was adjudicatory (rather than a major rule), this lack of alignment is not particularly remarkable. The winning litigants’ valence was deregulatory in the sense that a majority of the Court would have cabined the jurisdictional reach of the CWA, though only slightly given the splintered opinions and reasoning. In other words, the remand’s valence was out of alignment with the Corps’ original adjudicatory valence.

Yet somewhat counter-intuitively, the agencies’ behavior on remand reinforced a deregulatory valence alignment consistent with that of both the President and the winning litigants.⁹¹ Although

Christopher D. Thomas, *Judicial challenges to the Clean Water Rule: A brief and relatively painless guide for the procrastinator*, 47 TRENDS No. 4 (Mar./Apr. 2016), http://www.americanbar.org/publications/trends/2015-2016/march-april-2016/judicial_challenges_to_the_clean_water_rule_a_brief_and_relatively_painless_guide_for_the_procrastinator.html.

90. Carabell was denied his permit, but the Corps determined his activity came within the jurisdictional reach of the CWA. *Rapanos v. United States*, 547 U.S. 715, 730 (2006).

91. The switch may have been due to the onset of the George W. Bush Administration, which was generally regarded as more anti-regulatory than either the George H.W. Bush or Clinton Administrations on environmental matters. Compare Richard Abel, *Civil Rights and Wrongs*, 38 LOY. L.A. L. REV. 1421, 1428 (2005) (characterizing President George W. Bush appointees to EPA as “anti-environmental”), with Richard N. L. Andrews, *The EPA at 40: An Historical Perspective*, 21 DUKE ENVTL. L. & POL’Y F. 223, 240 (2011), asserting that:

[O]ne suspects that [George H.W. Bush] sought for both personal and political reasons to try to reaffirm and reclaim a Republican version of the environmental policy agenda from the partisan polarization to which it had become hostage . . . [and noting that he] appointed William Reilly as his EPA administrator, a Republican moderate who was deeply knowledgeable about environmental science and

issuing a rule seems, on its face, to be a regulatory action, here the response was a non-legislative rule—a guidance document lacking the force of law. Moreover, the guidance itself retained the fact-specific nature of the jurisdictional waters inquiry, ensuring that policy may continue to develop through adjudication. Of course, the use of a guidance document carried a risk for the policy’s longevity—it left open the possibility that a later administration could reverse course.⁹² Years later, the Obama Administration took a more regulatory *procedural* approach by issuing a legislative rule.⁹³ That rule also entails fact-specific inquiries. The bottom line is that all of these events created an environment that allowed great discretion for the agency in crafting its response on remand. Notably, although the procedural mechanisms chosen by each administration differ in their valence, both administrations’ substantive rules maximize agency discretion by retaining fact-specific approaches.⁹⁴

B. Wild and Scenic Rivers Act and Yosemite National Park

policy, and widely respected by both Republicans and Democrats, as well as by businesses and environmental advocacy groups. Reilly also enjoyed with Bush the closest personal relationship that any EPA administrator has had with their president.

92. Had the Bush agencies issued a legislative rule, the later Obama Administration would have had to explain any shift in course. *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125–26 (2016) (citations omitted). Likewise, the Trump Administration, which has initiated a review of the Obama rule, will have to provide a substantive justification if it repeals or alters the Obama rule and is challenged in court. *See* Exec. Order No. 13,778, Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the “Waters of the United States” Rule, § 2, 82 Fed. Reg. 12,497, 12,497 (Feb. 28, 2017) (ordering EPA to “review [the Obama rule] for consistency with the policy set forth in section 1 of this order and publish for notice and comment a proposed rule rescinding or revising the rule, as appropriate and consistent with law”); Intention To Review and Rescind or Revise the Clean Water Rule, 82 Fed. Reg. 12,532 (Mar. 6, 2017) (emphasis added) (announcing EPA’s “intention to review *and rescind or revise* the [Obama rule],” thus apparently prejudging the issue and eliminating the option of retaining the rule before the mandated review has even been conducted).

93. *See supra* notes 87–88 and accompanying text.

94. For a similar chain of events following the Ninth Circuit’s invalidation of six biological opinions issued by the Fish and Wildlife Service (FWS) under the Endangered Species Act (ESA) on proposed timber harvests, see *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059 (9th Cir. 2004) (striking down biological opinions because they were based on an invalid regulatory definition; the regulation had not been challenged and so remained in place). *See also* FWS Acting Director Marshall Jones Memo to Regional Directors, Application of the “Destruction or Adverse Modification” Standard under Section 7(a)(2) of the Endangered Species Act (Dec. 9, 2004), <http://www.endangeredspecieslawandpolicy.com/files/2011/01/Adverse-Modification-Guidance.pdf> (guidance document); Inter-agency Cooperation—Endangered Species Act of 1973, as Amended; Definition of Destruction or Adverse Modification of Critical Habitat, 81 Fed. Reg. 7214 (Feb. 11, 2016) (codified at 50 C.F.R. § 402 (2017) (legislative rule revising regulation deemed invalid in *Gifford Pinchot*).

The fate of a land use plan issued by the National Park Service (NPS) for Yosemite National Park illustrates a variety of remand orders, agency reactions, and behaviors across administrations. Environmental groups brought suit to enjoin NPS from continuing a highway reconstruction project in Yosemite until the agency complied with the Wild and Scenic Rivers Act (WSRA).⁹⁵ The district court held that NPS's planning for the project was arbitrary and capricious because of its failure to develop a comprehensive management plan (CMP) for the area under the WSRA.⁹⁶ The court enjoined further work on one segment of the road and provided that NPS "SHALL prepare and adopt a valid Comprehensive Management Plan . . . in regard to the Merced River as designated under the Wild and Scenic Rivers Act no later than twelve months after the entry of this decision."⁹⁷

Here the winning policy valence—emphasizing the protective aspects of the WSRA—aligned with that of the Clinton Administration on remand. And the remand itself was strictly crafted, limiting NPS's discretion both in timing and in substance. NPS issued a record of decision quickly (little more than a year after the district court's decision), in late 2000 at the end of the Clinton Administration.⁹⁸ When the groups challenged that action as well, the district court rejected most of their challenges, suggesting that the agency action was at least partly more aligned with the administration's and winning litigants' valence. On the other hand, the court held that the agency failed to amend the general management plan for Yosemite to ensure its consistency with the WSRA.⁹⁹ On appeal, the Ninth Circuit found a wider range of violations than the district court had—suggesting a lack of valence alignment between the agency's action on remand and that of the winning litigants.¹⁰⁰ Although the court found no violation of the National Environmental Policy Act (NEPA), as the plaintiffs had alleged, it held that NPS violated the WSRA by failing to adequately assess user capacities on the Merced River, which runs through the Park, and by defining too narrowly the boundaries of one portion of the River protected by the WSRA. The court remanded to the district court to enter an appropriate order requiring NPS to remedy these deficiencies in the

95. 16 U.S.C. §§ 1271–1284 (2012).

96. *Sierra Club v. Babbitt*, 69 F. Supp. 2d 1202 (E.D. Cal. 1999).

97. *Id.* at 1263 (emphasis in original).

98. *Friends of Yosemite Valley v. Norton*, 194 F. Supp. 2d 1066, 1071 (E.D. Cal. 2002), *aff'd in part, rev'd in part*, 348 F.3d 789 (9th Cir. 2003), *opinion clarified*, 366 F.3d 731 (9th Cir. 2004).

99. *Id.* at 1113–14.

100. *Friends of Yosemite Valley v. Norton*, 348 F.3d 789 (9th Cir. 2003), *opinion clarified*, 366 F.3d 731 (9th Cir. 2004).

CMP in a timely manner. Inasmuch as NPS was supposed to have completed a CMP for the Merced River some twelve years before, we would also expect that NPS would implement, as soon as is practicable, temporary or provisional measures designed to avoid environmental degradation pending the completion of its task.¹⁰¹

On remand and now under a deregulatory presidential administration (George W. Bush's first term), NPS advised the court that it planned to proceed with several projects in the Yosemite Valley segment of the Merced River corridor, but the plaintiffs moved to enjoin it from doing so. The district court entered an order finding that the Ninth Circuit had not invalidated the plan as a whole and denied the injunction.¹⁰² On further appeal, the Ninth Circuit clarified that it had indeed invalidated the entire Merced River plan and enjoined NPS from implementing any projects developed in reliance on the plan.¹⁰³ The district court then issued an order requiring the NPS to "remedy[] in a timely manner the deficiencies found in the 2000 [plan]" and prepare a supplemental Environmental Impact Statement (EIS), and enjoining some of the projects pending completion of a revised plan.¹⁰⁴ A year later, in 2005, NPS issued a supplemental EIS and revised plan.¹⁰⁵ The environmental groups sued again. The district court found that the agency had remedied the problems with the River boundaries, but not the defective user analysis problem.¹⁰⁶ It also held that NPS violated NEPA by failing to consider an adequate range of alternatives.¹⁰⁷ This time, the district court did not specify a schedule for the agency's response. The Ninth Circuit affirmed on both grounds, additionally finding that NPS violated the WSRA by failing to adopt a single comprehensive plan for the Merced River.¹⁰⁸ It remanded back to the district court "for further action consistent with this opinion."¹⁰⁹

About fifteen months later, now during the first year of President Obama's first term, NPS issued a notice that it was reopening public scoping for planning and NEPA analysis for a new Merced

101. *Id.* at 803–04.

102. *Friends of Yosemite Valley v. Scarlett*, 439 F. Supp. 2d 1074, 1081 (E.D. Cal. 2006), *aff'd*, 520 F.3d 1024 (9th Cir. 2008).

103. *Friends of Yosemite Valley v. Norton*, 366 F.3d 731 (9th Cir. 2004). This confusion could easily have been avoided if the Ninth Circuit's initial remand order had been clearer.

104. *Scarlett*, 439 F. Supp. 2d at 1081.

105. *Id.* at 1082.

106. *Id.* at 1095–1100.

107. *Id.* at 1103–08.

108. *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1036–37 (9th Cir. 2008).

109. *Id.* at 1039.

River CMP and EIS in response to the Ninth Circuit's latest opinion.¹¹⁰ Early the next year, it announced that it was extending the comment period due to "continuing public interest."¹¹¹ Three years later, it announced the availability of a Draft EIS and proposed CMP.¹¹² A year later, it published a notice of the availability of a Final EIS on the proposed CMP and indicated that it would execute a Record on Decision (ROD) no sooner than thirty days after the date that EPA published its notice of the filing of a Final EIS for the CMP.¹¹³ Finally, in May 2014, fifteen years after adoption of the initial revisions to the Yosemite and Merced plans, and six years after the Ninth Circuit's final remand order, NPS published notice of the availability of a ROD and Final EIS and approval of the revised CMP.¹¹⁴

The extended back-and-forth between the courts and NPS included remand orders with and without deadlines for action. On one hand, the agency responded much more quickly when it was required or strongly urged to do so, as we predicted above.¹¹⁵ On the other hand, it persisted in its errors and made new ones when it acted quickly, although there is no way to know whether haste was responsible. After all, during much of this time period the objectives of the agency and the administration of which it was a part diverged from those of the winning litigants: Although NPS continued to make efforts toward regulatory compliance, its policy goals tracked the presidential administration's, not the winning litigants' interests. Two things changed by May 2014. Most obviously, the presidential and litigants' valences came into alignment, and—if meaning can be read into the lack of judicial challenge by

110. New Merced Wild and Scenic River Comprehensive Management Plan; Yosemite National Park; Mariposa and Madera Counties, CA; Notice of Intent To Prepare Environmental Impact Statement, 74 Fed. Reg. 31,305 (June 30, 2009).

111. Intent To Prepare an Environmental Impact Statement for the New Merced Wild and Scenic River Comprehensive Management Plan Yosemite National Park, Mariposa and Madera Counties, CA, 75 Fed. Reg. 5803 (Feb. 4, 2010).

112. Draft Environmental Impact Statement for Merced Wild and Scenic River Comprehensive Management Plan, Yosemite National Park, Madera and Mariposa Counties, CA, 78 Fed. Reg. 5492 (Jan. 25, 2013).

113. Final Environmental Impact Statement for the Merced Wild and Scenic River Comprehensive Management Plan, Yosemite National Park, Madera and Mariposa Counties, California, 79 Fed. Reg. 10,836 (Feb. 26, 2014).

114. Notice of Availability of Record of Decision for Merced River Comprehensive Management Plan, Yosemite National Park, California, 79 Fed. Reg. 25,889 (May 6, 2014).

115. For another case in which an agency provided a remarkably rapid response to a remand order with a short deadline, see *Black Warrior Riverkeeper, Inc. v. U.S. Army Corps of Eng'rs*, 833 F.3d 1274 (11th Cir. 2016) (suggesting a remand without vacatur and a one-year timeline). The agency reaffirmed its original position, albeit with updated analysis, within six weeks, and both reviewing courts upheld the action. *Black Warrior Riverkeeper, Inc. v. U.S. Army Corps of Eng'rs*, 2015 WL 6152898, at *2 (N.D. Ala. 2015), *aff'd*, 833 F.3d 1274 (11th Cir. 2016). The rapidity of the agency's response to the remand order was likely influenced by the fact that it responded by reaffirming its initial decision to issue the permit.

environmental groups¹¹⁶—the agency’s valence aligned with these institutional valences as well. But note in addition that NPS’s final action took place over a longer span of time than its earlier responses. The lesson here may be that courts should balance the desire to foster quick responses on remand in order to avoid delays that may frustrate statutory objectives with the recognition that it may take considerable time and care for agencies to respond conscientiously to remand orders.¹¹⁷

C. *The Endangered Species Act and Agency Persistence*

Despite the power of administrations’ and litigants’ valence alignments, agencies sometimes remain committed to their original

116. As mentioned in Part III, a litigant’s persistence is surely also a factor in cabining agency discretion on remand. The pesticide procedure discussed *supra* at notes 10–15 and accompanying text provides another example, in which the litigants challenging the agency refused to take no for an answer. *In re Pesticide Action Network N. Am.*, 840 F.3d 1014 (9th Cir. 2016); *In re Pesticide Action Network N. Am.*, 798 F.3d 809 (9th Cir. 2015); *In re Pesticide Action Network N. Am.*, 532 Fed. Appx. 649 (9th Cir. 2013). By contrast, an agency defeated a challenge to its long-delayed response to a judicial remand order in *Nat’l Envtl. Dev. Ass’n’s Clean Air Project v. EPA*, 686 F.3d 803 (D.C. Cir. 2012). There, we posit that the agency’s more than decade-long delay in responding to the court’s order may have been hastened by more persistence by the litigants—though administration changes were also likely to blame. See also *Env’tl. Def. Fund v. EPA*, 898 F.2d 183 (D.C. Cir. 1990) (invalidating EPA regulations under the CAA setting increments of permissible deterioration of clean air quality for oxides of nitrogen); *Env’tl. Def. Fund v. EPA*, 489 F.3d 1320 (D.C. Cir. 2007) (upholding EPA regulations issued on remand *fifteen years* after the D.C. Circuit’s initial decision). The environmental petitioners in the former *Env’tl. Def. Fund* case requested that the court order that EPA respond to its decision within two years, but the court refused to do so. 898 F.2d at 190.

117. For an example of a case in which the agency defeated a challenge to its long-delayed response to a judicial remand order, see *Clean Air Project*, 686 F.3d at 803. EPA decided that revisions to the primary national ambient air quality standard (NAAQS) for sulfur dioxide (SO₂) under the Clean Air Act (CAA) were not necessary to control exposure to high-level, short-term SO₂ bursts. The D.C. Circuit remanded for lack of an adequate explanation. It found that EPA did not justify its conclusion that short-term SO₂ exposures do not constitute a public health problem for asthmatics, noting that the agency had failed to explain the link between its finding that repeated short-term exposures were significant, and that there would be tens to hundreds of thousands of such exposures annually to a susceptible subpopulation. *Am. Lung Ass’n v. EPA*, 134 F.3d 388 (D.C. Cir. 1998). The court remanded “for further elucidation” without specifying a time limit for the agency’s response. *Id.* at 388, 394. Nearly twelve years later, EPA proposed revisions to its NAAQS for SO₂, Proposed Rule, Primary National Ambient Air Quality Standard for Sulfur Dioxide, 74 Fed. Reg. 64,810 (proposed Dec. 8, 2009), which it finalized six months later. Primary National Ambient Air Quality Standard for Sulfur Dioxide, 75 Fed. Reg. 35,520 (June 22, 2010) (codified at 40 C.F.R. pts. 50, 53, 58 (2017)). The final standards included a short-term (one-hour averaging time) standard for SO₂. *Id.* at 35,538. Seven months after that, EPA denied a petition for reconsideration filed by several states and industrial interests that was based on alleged procedural and substantive errors. Denial of the Petitions to Reconsider the Final Rule Promulgating the Primary National Ambient Air Quality Standard for Sulfur Dioxide, 76 Fed. Reg. 4780 (Jan. 26, 2011) (codified at 40 C.F.R. pts. 50, 53, 58 (2017)). The D.C. Circuit upheld the standards, rejecting the procedural and substantive claims raised by the states and industrial interests that had sought reconsideration. *Clean Air Project*, 686 F.3d 803.

course of action, persisting even across multiple presidential administrations. Although we have not identified agency persistence as a discrete variable, it is important to illustrate how that fact can produce outcomes that may be contrary to those hypothesized. Several Endangered Species Act (ESA) cases demonstrate this dynamic; we highlight one here involving efforts to delist the Greater Yellowstone grizzly bear.¹¹⁸

The U.S. Fish and Wildlife Service (FWS) listed the grizzly bear as threatened in the lower forty-eight states in 1975, three years after the ESA's adoption.¹¹⁹ FWS's efforts to spur growth in the Yellowstone grizzly population culminated in the agency's 2007 Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area.¹²⁰ Shortly thereafter, FWS, during the second term of the George W. Bush Administration, issued a final rule designating the Greater Yellowstone grizzly bear as a distinct population segment (DPS)¹²¹ and removing it from the list of threatened species.¹²² A local environmental group brought suit, alleging that the delisting decision violated the ESA on four grounds. The district court agreed with two of those arguments, and it vacated the delisting and remanded back to FWS for further consideration. It concluded that the agency failed to justify its finding that adequate regulatory mechanisms were in place to protect the bear after

118. See also Decision Not to Regulate Forest Road Discharges Under the Clean Water Act; Notice of Decision, 81 Fed. Reg. 43,492 (July 5, 2016) (deciding not to require CWA permits for stormwater discharges from forest roads, 13 years after a remand instructing EPA to reconsider the same decision, *Envtl. Def. Ctr., Inc. v. EPA*, 344 F.3d 832 (9th Cir. 2003), notwithstanding a change from a deregulatory to a regulatory presidential administration); the saga of the flat-tailed horned lizard, recounted in Hammond, *Dialogue*, *supra* note 15, at 1747–53. An update, showing a still-persistent agency, is provided at Endangered and Threatened Wildlife and Plants; Withdrawal of Proposed Rule to List the Flat-Tailed Horned Lizard as Threatened, 76 Fed. Reg. 14,210 (Mar. 15, 2011) (to be codified at 50 C.F.R. §17). For another example involving the polar bear, see *In re Polar Bear Endangered Species Act Listing and Section 4(d) Litig.*, 709 F.3d 1 (D.C. Cir. 2013) (upholding listing of polar bear following protracted persistence by agency).

119. *Greater Yellowstone Coal, Inc. v. Servheen*, 665 F.3d 1015, 1019 (9th Cir. 2011).

120. FINAL CONSERVATION STRATEGY FOR THE GRIZZLY BEAR IN THE GREATER YELLOWSTONE AREA, U.S. FISH & WILDLIFE SERV. (2007), https://www.fws.gov/mountain-prairie/es/species/mammals/grizzly/Final_Conservation_Strategy.pdf.

121. The ESA defines a species to include “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” 16 U.S.C. § 1532(16) (2012). For discussion of agency and judicial treatment of DPSs, see 3 GEORGE CAMERON COGGINS & ROBERT L. GLICKSMAN, PUBLIC NATURAL RESOURCES LAW § 29:4 (2d ed. 2007).

122. Endangered and Threatened Wildlife and Plants; Final Rule Designating the Greater Yellowstone Area Population of Grizzly Bears as a Distinct Population Segment; Removing the Yellowstone Distinct Population Segment of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List as Endangered the Yellowstone Distinct Population Segment of Grizzly Bears, 72 Fed. Reg. 14,866 (Mar. 29, 2007).

its delisting,¹²³ and that the science relied on by FWS did not support its conclusion that declines in the abundance of whitebark pines would not negatively affect grizzly bears.¹²⁴ It vacated the final rule and enjoined FWS from removing the Greater Yellowstone DPS from the list of threatened species.¹²⁵

The agency appealed, but the Ninth Circuit affirmed.¹²⁶ It disagreed with the district court regarding adequate regulatory mechanisms to protect the grizzly bear after delisting, but agreed that the agency failed to justify its finding that the decline in whitebark pines, which provide a significant food source for the grizzly bears, was not likely to threaten the grizzly bear.¹²⁷ The court affirmed the district court's judgment vacating and remanding the rule.¹²⁸

By the time of the remand, President Obama was in office and the agency's and litigants' valences might well have been considered to be in alignment and regulatory. But four-and-a-half years after remand, in the final full year of the Obama Administration's second term, the FWS issued a proposed rule to delist the Greater Yellowstone DPS.¹²⁹ The agency based that proposal on its determination that the Greater Yellowstone grizzly bear population "has increased in size and more than tripled its occupied range since being listed as threatened under the Act in 1975 and that threats to the population are sufficiently minimized."¹³⁰ It noted that if the delisting were finalized, grizzly bears would be classified by Wyoming, Montana, and Idaho as game animals throughout the DPS boundaries, a status which "provides legal protection to grizzly bears by prohibiting unlimited or unwarranted killing of grizzly bears by the public."¹³¹ It explained its expectation that wildlife commissions in the three states would adopt regulations with commitments to coordinate hunting limits consistent with annually calculated mortality limits, and that the regulations, which "would constitute legally enforceable regulatory mechanisms," had to be "adopted and in place before the [FWS] goes forward with a final delisting rule."¹³²

123. *Greater Yellowstone Coal, Inc. v. Servheen*, 672 F. Supp. 2d 1105, 1113–18 (D. Mont. 2009), *aff'd in part, rev'd in part, and remanded*, 665 F.3d 1015 (9th Cir. 2011).

124. *Id.* at 1118–20.

125. *Id.* at 1126–27.

126. *Greater Yellowstone Coal, Inc. v. Servheen*, 665 F.3d 1015, 1032 (9th Cir. 2011).

127. *Id.* at 1024–30.

128. *Id.* at 1032.

129. *Endangered and Threatened Wildlife and Plants; Removing the Greater Yellowstone Ecosystem Population of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife*, 81 Fed. Reg. 13,174 (Mar. 11, 2016).

130. *Id.* at 13,174.

131. *Id.* at 13,210.

132. *Id.* at 13,211.

In conversations with one of the authors, a former FWS official involved in decisions relating to the Yellowstone DPS offered the view that FWS had examined the science carefully before it delisted the grizzly bear in 2007 and determined that it solidly supported a finding that the Greater Yellowstone DPS was no longer threatened.¹³³ This official viewed the Ninth Circuit's decision as insufficiently deferential to the agency's expertise and based on a misunderstanding of the science. The official added that the agency responded to the court's remand order by diligently reexamining the science, and, after doing so, reached the same conclusion as it had done initially as to the grizzly bear's legal status. Hence, it proposed a second time to delist the grizzly bear. As of this writing, FWS still lists the grizzly bear as threatened, but has indicated that its proposal to delist the Greater Yellowstone DPS is under review.¹³⁴

IV. FUTURE RESEARCH QUESTIONS

The examples above reveal a nuanced picture of agency behavior on remand, involving not simply our four variables—the nature of the remand order, timing, valence alignment, and presidential administration—but certainly others as well (such as litigant and agency persistence). In this Part, we offer some preliminary observations about how our initial predictions are borne out in the case studies, and how future empirical work might be crafted to develop a more complete picture.

First, the specificity of the remand order matters significantly, as we predicted. The *Rapanos* decision's indeterminacy, for example, created significant discretion for the agencies involved to respond according to presidential preferences while retaining flexibility across those administrations. By contrast, the Ninth Circuit's persistent specificity in its remand orders for Yosemite National Park did not leave nearly so much discretion as to timing or substance; still, the overall time to a resolution of the matter was long, perhaps as a result of disagreement among agency, presidential, and judicial policy valences. And the grizzly bear example demonstrates that notwithstanding a presidential and judicial valence alignment, an agency may have other reasons to persist in adhering to its position even throughout numerous challenges.¹³⁵

133. Interview with Christopher Servheen, Adjunct Research Associate Professor of Wildlife Conservation, University of Montana, W.A. Franke College of Forestry & Conservation, and Robert Glicksman, Sept. 6, 2016.

134. *Grizzly Bear (Ursus arctos horribilis)*, U.S. FISH AND WILDLIFE SERV., <http://ecos.fws.gov/ecp0/profile/speciesProfile?sId=7642> (last visited Apr. 2, 2017).

135. This interplay involved competing institutional competencies regarding scientific uncertainty, which is likely a further variable and is discussed in Hammond, *Dialogue, supra* note 15, at 1753 n.191.

The Yosemite National Park example raises an important consideration for assessing remand orders as a normative matter. Although we generally appreciate swift agency corrections to flawed actions, it is important that courts be realistic in setting time limits. Too short a time—which is a strict cabining of discretion—may be to the detriment of the rule’s long-term success. Our case studies do not permit assessment of another of our timing predictions: that agencies may act quickly on remand to preserve the incumbent administration’s policy preferences. Other examples, however, may bear out that prediction.¹³⁶

The presidential administration’s policy preferences do seem to have strong predictive value—perhaps an obvious point.¹³⁷ By contrast, agency decisions that appear regulatory, but are remanded for not going far enough, introduce subtleties that may prove difficult to sort out in a large dataset. Moreover, the Yosemite National Park example—in which the agency persisted in its position despite presidential and winning litigants’ valence alignment—helps show the limits of our variables, which do not look deeply into the agency’s own culture, structure, or other “internal” means of decisionmaking. Although our variables help focus a critical examination of agency behavior on remand, the Yosemite National Park example demonstrates that other approaches would usefully complement this work and help show the full picture of agency discretion on remand.

V. CONCLUSION

In this Essay, we have characterized agency behavior on remand as a unique space for agency discretion, at least in some circumstances. How agencies behave in this space, we propose, might be predicted at least in part by four types of variables: the nature of the remand order; the timing of the agency’s action; the valence alignments as between the administration, agency, and winning litigants; and the timing of presidential administrations. These variables admittedly present some coding difficulties, but our case studies suggest their usefulness in understanding and explaining agency behavior. In addition, the richness of the case studies points once again to a need for better of understanding agency behavior from within.

136. For example, the Obama Administration responded quickly to the MACT remand in *Michigan v. EPA*, as discussed in the Introduction. *Supra* text accompanying note 8. The George W. Bush Administration hastily reissued its national forest planning rule (repeating the same mistakes that led to invalidation and remand of an earlier, virtually identical rule) less than a year before. *Supra* note 72.

137. On public choice generally, see George C. Stigler, *The Theory of Economic Regulation*, 2 *BELL J. ECON & MGMT. SCI.* 3 (1971).

