WATER LAW TRANSITIONS IN THE ERA OF CLIMATE CHANGE

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ABSTRACT

Legal transitions—that is, changes in legislation, regulations, or judicial decisions—are necessary to improve any legal system. This process, however, is fraught with obstacles and hard decisions mainly because, while society may gain, some individuals will suffer under a new rule. This raises a number of questions. Is the reform unfair to those who lose as a result of it? If so, should the new rule incorporate any form of transition relief to alleviate these concerns, such as compensation?

Legal transitions can be particularly difficult when a new rule affects vested property rights. This Article uses water law reform as a vehicle for examining how legal transitions prompted by climate change might match the urgency of this slow—but inexorable—process. Climate-change-driven water scarcity and Wall Street investment reveal shortcomings and inequities of current water law. But significant barriers to systemic reform require innovative transition design. Given that the most prevalent types of water rights are considered constitutionally protected property, holders of existing water rights will oppose reforms on fairness, economic, and constitutional grounds.

Building on the legal transitions literature, strategies used in other water-scarce countries, and historical transitions in water law, this Article is the first to provide an in-depth analysis of the policy and constitutional implications of addressing the current water crisis by employing one of the less theorized forms of transitional relief: delayed implementation. This Article concludes that delayed implementation, when compared to other

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more traditional alternatives, will make the adoption of these legal changes more politically viable, reduce their vulnerability to constitutional challenges, and lead to fairer and more efficient outcomes. Because many of the advantages of delayed implementation are not specific to water law, this analysis suggests that delayed implementation has many applications as transitional relief in other areas of regulation.

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INTRODUCTION

"Law must be stable and yet it cannot stand still."[1]

Although legal transitions—changes in legislation, regulations, or judicial decisions—are an inevitable part of legal progress,[2] there are certain areas of the law where reform is more urgent and pronounced: for example, those impacted by climate change.[3] It should therefore not be surprising to see that one of these areas, water law, has attracted significant attention from the United States Supreme Court and the federal government in recent times. During the past five years, the Court has decided six cases dealing with interstate water disputes, water quality, and Tribal water rights.[4] Moreover, in 2023, the Biden administration reached a number of agreements with states to address water scarcity in the West and, in particular, the Colorado River watershed.[5]

Meanwhile, the concern over how water is allocated in these and other states has been growing as the control of water resources has become very concentrated—about twenty families alone hold rights to an important share of Colorado River water[6]—and Wall Street investment is further

1. ROSCOE POUND, INTERPRETATIONS OF LEGAL HISTORY 1 (Harold Dexter Hazeltine, ed. 1923).

2. *See* Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 511 (1986).

3. J.B. Ruhl & James Salzman, *The Greens' Dilemma: Building Tomorrow's Climate Infrastructure Today*, 73 EMORY L.J. 1, 4 (2023) ("We need big changes to address the climate threat, and quickly."); J.B. Ruhl & Robin Kundis Craig, *4° C*, 53 ENV'T L. REP. 10641, 10641 (2023) (highlighting the multifaceted nature of climate change disruptions and the need to act both on the adaptation and mitigation fronts).

4. During the previous four terms, the Supreme Court has decided six water-related cases. *See* Arizona v. Navajo Nation, 599 U.S. 555 (2023); Sackett v. EPA, 598 U.S. 651 (2023); Mississippi v. Tennessee, 595 U.S. 15 (2021); Florida v. Georgia, 592 U.S. 433 (2021); Texas v. New Mexico, 592 U.S. 98 (2020); County of Maui v. Haw. Wildlife Fund, 590 U.S. 165 (2020). This term, the Court decided Texas v. New Mexico, No. 141, Orig. (U.S. June 21, 2024).

5. Joshua Partlow, *States Reach Deal with Biden to Protect Drought-Stricken Colorado River*, WASH. POST (May 22, 2023, 5:52 PM), https://www.washingtonpost.com/climate-environment/2023/05/22/colorado-river-water-conservation-deal-states/ [https://perma.cc/7K6F-EWU7]; Press Release, U.S. Dep't of the Interior, Biden-Harris Administration Announces Historic Consensus System Conservation Proposal to Protect the Colorado River Basin (May 24, 2023), https://www.doi.gov/pressreleases/biden-harris-administration-announces-historic-consensus-system-conservation-proposal [https://perma.cc/SD9Q-MYTT]; Press Release, U.S. Dep't of the Interior, Biden-Harris Administration Announces Several New Water Conservation Agreements in California to Protect the Colorado River System (Dec. 13, 2023), https://www.doi.gov/pressreleases/biden-harris-administration-announces-several-new-water-conservation-agreements/ [https://perma.cc/NZ69-LPMY].

6. Roughly fourteen percent of the Colorado River water allocated to the states of Arizona, Nevada, and California is controlled by about twenty farming families. Nat Lash & Janet Wilson, *The 20 Farming Families Who Use More Water From the Colorado River Than Some Western States*, PROPUBLICA (Nov. 9, 2023), https://projects.propublica.org/california-farmers-colorado-river/ [https://perma.cc/WX8F-FR5A].

contributing to this trend.[7] How farmers use this resource is also subject to criticism.[8] The argument that less water should be used in agriculture, which is the sector that consumes the highest share of freshwater,[9] often clashes with the inescapable reality that this water is being used to generate the food that is necessary to feed the American population.[10] However, this does not mean that this sector of the economy is using water as efficiently and rationally as it should. For example, critics have highlighted that copious amounts of alfalfa, a particularly thirsty crop, are being exported to East Asian and Middle Eastern countries that can no longer purchase it from their traditional suppliers due to measures put in place to restrict the production of water-inefficient forage crops.[11] Is this akin to exporting water overseas? There is a reasonable argument to be made to that effect.[12] To make matters worse, in many instances, such as when alfalfa is produced using groundwater, growers are essentially obtaining the water to irrigate it free of charge.[13]

A possible response to this and other water availability issues is for states to modify their water allocation and use rules so that less of it will be used

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7. Evan Bush, *Wall Street Spends Millions to Buy Up Washington State Water*, SEATTLE TIMES, (Nov. 1, 2019, 6:48 PM), https://www.seattletimes.com/seattle-news/environment/wall-street-spends-millions-to-buy-up-washington-state-water/ [https://perma.cc/ZBM2-RQ9E]; Mia DiFelice & Ben Murray, *Drought Profiteers: How Wall Street Plans to Cash In on Crisis*, FOOD & WATER WATCH (Sept. 14, 2023), https://www.foodandwaterwatch.org/2023/09/14/wall-street-water-grab/ [https://perma.cc/8Z72-GZY2].

8. Danielle Wolfson, *Come Hell or No Water: The Need to Reform the Farm Bill's Water Conservation Subsidies*, 45 TEX. ENV'T L.J. 245, 246 (2015); Ashley Wagner, *The Failure of Corporate Social Responsibility Provisions Within International Trade Agreements and Export Credit Agencies as a Solution*, 35 B.U. INT'L L.J. 195, 209 (2017); HTT Experts, *Water Usage in the Agricultural Industry*, HIGH TIDE TECHS. (Sept. 28, 2020), https://htt.io/water-usage-in-the-agricultural-industry/ [https://perma.cc/HH2V-8ZUT] (explaining that 70% of the world's water is used by farmers, yet 40% of that water is wasted).

9. Brian D. Richter et al., *Water Scarcity and Fish Imperilment Driven by Beef Production*, 3 NATURE SUSTAINABILITY 319, 320 (2020) ("[I]rrigation of cattle-feed crops . . . is the single largest consumptive user at both regional and national scales, accounting for 23% of all water consumption nationally, 32% in the western US and 55% in the Colorado River basin.").

10. *Fast Facts About Agriculture & Food*, AM. FARM BUREAU FED'N, https://www.fb.org/newsroom/fast-facts [https://perma.cc/L5BB-DZHE]; Sarah Rehkamp & Patrick Canning, *U.S. Food-Related Water Use Varies by Food Category, Supply Chain Stage, and Dietary Pattern*, USDA ECON. RSCH. SERV. (Aug. 9, 2021), https://www.ers.usda.gov/amber-waves/2021/august/u-s-food-related-water-use-varies-by-food-category-supply-chain-stage-and-dietary-pattern/ [https://perma.cc/Z44R-J3QN].

11. Ibrahima Sall, Russell Tronstad & Chia YI Chin, *Alfalfa Export and Water Use Estimates for Individual States*, 21 W. ECON. F. 5, 5 (2023); Ian James, *Saudi Firm that Grows Hay in California and Arizona to Lose Farm Leases over Water Issue*, L.A. TIMES (Oct. 5, 2023), https://www.latimes.com/environment/story/2023-10-05/arizona-ends-saudi-fondomonte-water-farmland-leases [https://perma.cc/JJQ3-6PEA].

12. Sall et al., *supra* note 11, at 5.

13. Hiroko Tabuchi, *Water-Stressed Arizona Says State Will End Leases to Saudi-Owned Farm*, N.Y. TIMES (Oct. 3, 2023), https://www.nytimes.com/2023/10/03/climate/arizona-saudi-arabia-alfalfa-groundwater.html [https://perma.cc/R5EC-PW3B].

for purposes that are now viewed as less socially important.[14] States can adopt many different strategies to achieve that goal, including adding time limitations to perpetual water rights, modifying or eliminating the time-priority rule in prior appropriation jurisdictions, or introducing water pricing systems.[15] This would be desirable not only because the water supply is decreasing but also because demand is increasingly fueled by, among other things, the emergence of water-intensive green technologies such as electric car batteries or solar panels.[16]

Although the goal of the reform—optimizing water use in an era of climate-change-induced scarcity—is undoubtedly laudable, this legal transition can harm the interests of a number of parties. This is so because this strategy would likely require modifying or even terminating certain existing water rights, many of which are considered perpetual.[17] A fictional character, Shelley, can help illustrate this point. Shelley is a farmer who retired last year. After selling most of her assets, she decided to lease her water rights so that she could receive a steady income that would allow her to cover her basic living expenses. If the state terminates or significantly curtails her water rights as part of a broader reform, she will lose an important part of her retirement income. Shelley and others in her position—it is common for farmers to use water rights to fund their retirement[18]—will become so-called *transition losers*.[19]

This example demonstrates that water or climate change reform raises the same types of issues as legal transitions in many other areas of the law. These questions include: (i) Is the reform unfair to those who lose as a result of it? (ii) If so, should the new rule incorporate any form of transition relief to alleviate these concerns, such as adding legacy clauses (also known as "grandfathering")[20] or providing compensation? and, (iii) If any transition relief is adopted, how does that affect the overall fairness and efficiency of the legal change? These and other similar issues have been discussed

14. *See infra* Section II.B.2.

15. *See infra* Section II.B.2.

16. Julia Simon, *The U.S. Needs Minerals for Green Tech. Will Western Mines Have Enough Water?*, NPR (Sept. 26, 2023, 6:01 AM), https://www.npr.org/2023/09/26/1192735149/us-needs-copper-lithium-minerals-green-tech-climate-western-mines-enough-water [https://perma.cc/GQ78-GH3H].

17. *See infra* Section II.B.2.

18. Jennifer Oldham, *As Drought Hits Farms, Investors Lay Claim to Colorado Water*, CIV. EATS (Aug. 10, 2022), https://civileats.com/2022/08/10/as-drought-hits-farms-investors-lay-claim-to-colorado-water/ [https://perma.cc/R9Q2-8CAJ] ("Many farmers and ranchers consider water rights their retirement fund . . . .").

19. *See infra* note 47 and accompanying text.

20. This Article will use the phrases "legacy clauses" and "legacying" instead of "grandfathering." *See* Will Kenton, *Grandfather Clause: History and Types of Legacy Clauses*, INVESTOPEDIA (Aug. 21, 2023), https://www.investopedia.com/terms/g/grandfatherclause.asp [https://perma.cc/6WPB-97YJ].

extensively in scholarship on a wide range of legal topics, including energy, environmental, intellectual property, land use, and tax.[21]

Water law reform provides a particularly useful lens to explore climate-related transitional challenges. First, climate change is creating an urgent need to undertake extensive modifications of current water allocation and management frameworks.[22] Second, there have been myriad changes in this area of the law that provide valuable information about some of the transitional issues that have arisen in the water context over the years and how courts have addressed them.[23] Third, water rights are typically viewed as property for takings purposes, which adds a layer of complexity to the analysis by effectively constraining policymakers' choices with respect to the scope of the reform and the transitional relief provided.[24]

To facilitate the adoption of the reform, policymakers could be tempted to favor new rules that are prospective in nature, meaning those that will only apply to rights that are created after the regulatory change takes effect.[25] While this would certainly eliminate many of the transitional issues associated with this type of legal change—existing users would no longer be harmed—it would also significantly limit the reform's effectiveness.[26] This is so because the replacement rate of old rights by new rights is extremely slow, and the new rules would therefore apply to a very limited number of rights for an extended period of time, blunting the reform's overall impact.[27]

At the other end of the spectrum, making the legal change fully retroactive so that existing rights fall within its scope also presents important obstacles. A retroactive new rule, by its very nature, would cause a sudden curtailment or termination of water rights.[28] Individuals and corporations who hold existing rights would view this approach as unfair, especially because policymakers would be very unlikely to provide

21. *See, e.g.*, Christopher Serkin & Michael P. Vandenbergh, *Prospective Grandfathering: Anticipating the Energy Transition Problem*, 102 MINN. L. REV. 1019, 1019–20 (2018) (energy); Bruce R. Huber, *Transition Policy in Environmental Law*, 35 HARV. ENV'T L. REV. 91, 92 (2011) (environmental law); Jonathan S. Masur & Adam K. Mortara, *Patents, Property, and Prospectivity*, 71 STAN. L. REV. 963, 965 (2019) (intellectual property); Christopher Serkin, *Existing Uses and the Limits of Land Use Regulations*, 84 N.Y.U. L. REV. 1222, 1223–24 (2009) [hereinafter Serkin, *Existing Uses*] (land use); Michael J. Graetz, *Legal Transitions: The Case of Retroactivity in Income Tax Revision*, 126 U. PA. L. REV. 47, 47–48 (1977) (tax law).

22. *See infra* Section II.B.

23. *See infra* Section II.A.

24. Luis Inaraja Vera, Takings Property *and Appropriative Water Rights*, 44 CARDOZO L. REV. 271, 276 (2022).

25. *See infra* notes 57–58 and accompanying text.

26. Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transitional Relief*, 105 NW. U. L. REV. 1581, 1626 (2011) (addressing the same issue in the context of air pollution).

27. *See infra* notes 191–92 and accompanying text.

28. *See infra* Section I.A.

transition losers with compensation because doing so would be both administratively and economically infeasible.[29] This, in turn, should be expected to elicit at least two types of responses. First, those affected by the reform may try to prevent it or reverse it by exerting pressure on state legislatures.[30] Second, if these efforts fail, water users who are negatively impacted by the new rule would have a strong incentive to challenge it and argue that it is unconstitutional because it took their property rights without the payment of just compensation.[31]

The solution to this conundrum lies in an often-overlooked form of transitional relief, delayed implementation, which defers the effects of the reform to allow transition losers to adapt and minimize their losses.[32] The duration of the transitional period would, of course, depend on the extent of the reform. The Environmental Protection Agency's rule to reduce greenhouse gas emissions from power plants, for example, relies on this approach and requires significant reductions within the next decade and a half, depending on the category of the source.[33] Returning to the water context, if a state simply would like to limit existing water rights to provide additional instream flows or to incentivize efficient use of water, five years may suffice.[34] If, on the other hand, what the state wants to accomplish is a total overhaul of the water allocation system, and that requires the termination of existing rights, a transitional period of ten or twenty years, or even longer, may be more appropriate.[35]

Using delayed implementation has significant advantages over the main alternatives. The reform is fairer than it would be without any transitional

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29. *See infra* Section III.B.2.

30. *See* Joseph L. Sax, *The Fate of Wetlands in the Face of Rising Sea Levels: A Strategic Proposal*, 9 UCLA J. ENV'T L. & POL'Y 143, 147–48 (1991) (addressing this risk in the context of prohibitions on building sea walls to protect property from sea level rise); Saul Levmore, *Changes, Anticipations, and Reparations*, 99 COLUM. L. REV. 1657, 1662 (1999) ("Parties who find the content of proposed laws disadvantageous are at present likely to oppose and delay change."); Huber, *supra* note 21, at 112 (explaining that policymakers receive pressure from those who are "affected by regulation of existing business"); Kaplow, *supra* note 2, at 571 ("[A] desirable change in policy may be opposed by those who will lose from it."); *see also infra* Section III.B.2.

31. This argument has been made in numerous cases involving the regulation of water rights. *See, e.g.*, Tulare Lake Basin Water Storage Dist. v. United States, 49 Fed. Cl. 313, 314 (2001) (arguing that the restrictions on plaintiffs' water right derived from the application of the Endangered Species Act was a taking); Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1282 (Fed. Cir. 2008) (making a similar claim); State *ex rel.* Emery v. Knapp, 207 P.2d 440, 443 (Kan. 1949) (alleging that a state statute that required water users to obtain a permit to divert water was effectively taking their riparian rights); Knight v. Grimes, 127 N.W.2d 708, 708 (S.D. 1964) (claiming that a state statute regulating groundwater violated the 5th and 14th amendments to the Constitution).

32. *See infra* Section III.A.

33. Lisa Friedman & Coral Davenport, *E.P.A. Severely Limits Pollution from Coal-Burning Power Plants*, N.Y. TIMES (Apr. 25, 2024), https://www.nytimes.com/2024/04/25/climate/biden-power-plants-pollution.html [https://perma.cc/6E7F-LUMM].

34. *See infra* Section III.A.

35. *See infra* Section III.A.

relief as it will provide those harmed by it with time to adapt to the change.[36] Moreover, the outcomes achieved with delayed implementation are more efficient than with the use of legacy clauses or compensation,[37] with the added advantage of also increasing the political viability of the reform compared to a scenario in which no transitional period is provided.[38] This form of relief also makes the legal change far less likely to lead to takings liability than a new rule that is fully retroactive and provides no compensation.[39]

This Article is the first to provide a comprehensive analysis of delayed implementation in the water resources context.[40] It does so not only by examining how it affects the fairness, efficiency, and political viability of legal transitions, but also by scrutinizing the role that constitutional protections of property rights play in legal changes.[41] Based on this examination of delayed implementation, this Article makes several contributions to the general literature on legal transitions. First, it shows that delayed implementation can effectively balance the interests of transition winners and losers, especially when a new rule affects property rights acquired under a prior legal regime.[42] This is particularly relevant when the holders of such rights should suspect that a legal reform that could impact their rights is forthcoming—as with most climate transitions—but, at the same time, would still greatly benefit from the reasonable time to adapt to the change that delayed implementation provides.[43] Second, delayed implementation is often more efficient than compensation and legacy clauses.[44] In fact, in instances where the reform affects existing property rights in ways that could lead to successful takings claims, delayed implementation is even more efficient than what the literature has regarded

36. *See infra* Section III.B.1.
37. *See infra* Section III.B.2.
38. *See infra* Section III.B.3.
39. *See infra* Part IV.
40. Literature on delayed implementation and similar transition relief mechanisms in the environmental and natural resources context is scant. *But see* Serkin and Vandenbergh, *supra* note 21, at 1023. A lot of scholarly attention has been paid to the two most common forms of transition relief, legacy clauses and compensation. *See, e.g.*, Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1166 (1967); Christopher T. Wonnell, *The Noncompensation Thesis and Its Critics: A Review of This Symposium's Challenges to the Argument for Not Compensating Victims of Legal Transitions*, 13 J. CONTEMP. LEGAL ISSUES 293, 294 (2003); John Quinn & Michael J. Trebilcock, *Compensation, Transition Costs, and Regulatory Change*, 32 U. TORONTO L.J. 117, 118 (1982); Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 NW. U. L. REV. 1677, 1722 (2007); Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUD. 37, 37–39 (2008) (addressing the circumstances in which legacying is advisable on efficiency grounds).
41. *See infra* Section III.B, Part IV.
42. *See infra* Section III.B.1.
43. *See infra* Section III.B.1.
44. *See infra* Section III.B.2.

as the most efficient option—that is, not providing any form of transitional relief.[45] Third, delayed implementation should make the adoption of the reform more politically viable because, by decreasing the harm inflicted on transition losers, their incentive to oppose the reform would also decrease.[46]

This Article proceeds in four parts. Part I lays out the central policy questions that are relevant to legal transitions in general and explains how and why climate transitions are different from other forms of legal change. Part II examines one of the main types of climate-related legal changes—that is, water transitions. It provides an analysis of the transitional issues that have arisen in the water realm, including how courts have addressed them, and then outlines some of the reforms that scholars have proposed to improve the current water allocation and use frameworks as well as the barriers that have complicated their adoption. Part III suggests the adoption of delayed implementation to overcome the obstacles to water reform identified in Part II and justifies why this mechanism leads to optimal outcomes from fairness, efficiency, and political viability standpoints. Part IV concludes the analysis of delayed implementation by explaining that this transition relief tool should not lead to takings liability in the vast majority of cases.

I. LEGAL TRANSITIONS AND CLIMATE CHANGE

With legal transitions, there are often winners and losers.[47] For example, a legislative act that imposes a new, substantial tax on the use of plastic bags is likely to negatively affect those who manufacture these types of bags. However, producers of paper or textile bags will benefit from this measure. Moreover, a decrease in the amount of plastic that needs to be disposed of in landfills also arguably benefits the public at large.

The legal change literature has often paid close attention to the harm that is caused as a byproduct of the transition.[48] The three questions that this part will address are: (i) What is the relationship between transition injuries and retroactivity? (ii) What forms of transition relief may help alleviate this harm? and (iii) How is climate change triggering modifications in existing legal frameworks?

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45. *See infra* Section III.B.2.

46. *See infra* Section III.B.3.

47. DANIEL SHAVIRO, WHEN RULES CHANGE: AN ECONOMIC AND POLITICAL ANALYSIS OF TRANSITION RELIEF AND RETROACTIVITY 26 (2000); Kyle D. Logue, *Legal Transitions, Rational Expectations, and Legal Progress*, 13 J. CONTEMP. LEGAL ISSUES 211, 218 (2003).

48. *See, e.g.*, Richard A. Epstein, *Beware of Legal Transitions: A Presumptive Vote for the Reliance Interest*, 13 J. CONTEMP. LEGAL ISSUES 69, 69 (2003); Kaplow, *supra* note 2, at 515–19; Huber, *supra* note 21, at 92–94 (focusing on the transition relief as a way to address transition costs or harms).

A. Legal Change and Retroactive Harm

Retroactive statutes or regulations are typically viewed with skepticism primarily because legal changes that operate retrospectively may be unfair to those whose position is worsened by the new rule.[49] Although it is common for lawyers and laypeople alike to have intuitions about whether a rule is retroactive, there is no single and clear definition of, or test for, retroactivity.[50]

The Supreme Court has addressed this question on a number of occasions and has concluded that a rule is retroactive when it "attaches new legal consequences to events completed before its enactment."[51] This approach has been criticized on a variety of grounds, including the vagueness of the word "event."[52] This term can clearly mean "action," as one of the main concerns with retroactive rules is the enactment of a law allowing the imposition of liability for an act that, when performed, was legal.[53] As the examples below show, however, determining what the relevant "event" is for the purposes of assessing whether a particular rule is retroactive or not can be challenging.

By the time the Supreme Court enunciated its test, Professor Stephen Munzer had already provided a more nuanced definition of this same concept, namely, "[a] law is retroactive if it alters the legal status of acts that were performed before it came into existence."[54] While this definition would seem vulnerable to the same objection noted in the preceding paragraph—that is, that the word "acts" is not more explicit than "events"—Professor Munzer added two critical clarifications. First, the term "act"

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49. Stephen R. Munzer, *A Theory of Retroactive Legislation*, 61 TEX. L. REV. 425, 426 (1982) ("Retroactive laws frustrate the central purpose of law by disrupting expectations and actions taken in reliance on them."); Masur & Mortara, *supra* note 21, at 963 (arguing that retroactive legal changes can undermine reliance interests); Graetz, *supra* note 21, at 49 (noting that "[r]etroactivity in tax legislation has been widely criticized"); Comm. on Tax Pol'y, Tax Section, N.Y. State Bar Ass'n, *Retroactivity of Tax Legislation*, 29 TAX LAW. 21, 28 (1975) ("Retroactive legislation may provide short-run revenue protection at too high a price in generating among taxpayers a sense of the unfairness of, and disrespect for, the tax system.").

50. Jeffrey Omar Usman, *Constitutional Constraints on Retroactive Civil Legislation: The Hollow Promises of the Federal Constitution and Unrealized Potential of State Constitutions*, 14 NEV. L.J. 63, 63–64 (2013) (noting how children develop a sense of the fairness of changing rules); Jill E. Fisch, *Retroactivity and Legal Change: An Equilibrium Approach*, 110 HARV. L. REV. 1055, 1067 (1997) (highlighting the "[i]ndeterminate [n]ature of [r]etroactivity").

51. Landgraf v. USI Film Prods., 511 U.S. 244, 269–70 (1994) (concluding that a new statute authorizing recovery of compensatory and punitive damages could not be applied retroactively to cases pending on appeal when the new provision was enacted); *see also* E. Enters. v. Apfel, 524 U.S. 498, 532, 538 (1998) (holding that a statute imposing retroactive liability violated the Takings Clause); Martin v. Hadix, 527 U.S. 343, 343–44, 357–58 (1999) (clarifying that, where a new statute does not specify its temporal reach, it should not be interpreted retroactively).

52. *See, e.g.*, Fisch, *supra* note 50, at 1072.

53. Munzer, *supra* note 49, at 426.

54. Stephen R. Munzer, *Retroactive Law*, 6 J. LEGAL STUD. 373, 373 (1977).

should be interpreted broadly to also include activities, omissions, processes, events, and relations.[55] Second, the right question to ask when examining the retrospective effect of a rule is whether it is retroactive, not in general, but with respect to a specific act.[56]

The following example shows why identifying the relevant "act" is essential. Suppose that the legislature passes a statute that imposes new standards for facilities in the pulp and paper industry to reduce emissions of greenhouse gases. The new rule will apply both to facilities that were built after the passage of the statute and those that were already in operation at that time. If we consider the relevant act or event to be the construction of the facility, then we should conclude—as is typically the case—that the rule is retroactive because it applies to existing pulp and paper plants, meaning their operators will have to retrofit these facilities to meet the new standard.[57] If, however, we view each individual instance in which specific units of pollution are released to the environment as the relevant act, then one could argue that the new rule does not affect the status of acts that have been already performed by, for example, deeming these past emissions illegal; it instead regulates future acts and, therefore, should not be viewed as retroactive.

This begs the question: Could pollution regulations ever be unquestionably prospective or unquestionably retroactive? Two additional environmental law examples suggest that this question should be answered in the affirmative. First, the same regulation setting standards for greenhouse gas emissions from the pulp and paper industry could apply to facilities built after the regulation comes into effect, which is a very common approach in federal environmental legislation.[58] In that case, regardless of whether the relevant event is the release of pollution or the construction of a particular plant, we should conclude that the rule operates prospectively. Second, a new rule imposing liability for past contamination—for instance, pollution that was discharged to the soil below a manufacturing plant decades before the new rule became effective—would be undoubtedly retroactive. The so-called Superfund Law is a notable example of this type of retroactivity; owners and operators of

55. *Id.* at 381.

56. *Id.* at 382 (explaining that "[i]t may not invariably be possible to say whether a law is retroactive *with respect to an act*" (emphasis added)).

57. Masur & Mortara, *supra* note 21, at 997–98 (arguing that the rule in a similar example is "fully retroactive").

58. RICHARD L. REVESZ, MICHAEL A. LIVERMORE, CAROLINE CECOT & JAYNI FOLEY HEIN, ENVIRONMENTAL LAW AND POLICY 356 (4th ed. 2019) (explaining that, in general, existing facilities "are grandfathered into the system without federal emissions regulation"); *see, e.g.*, 42 U.S.C. § 7475(a)(3) (imposing emissions limitations only on facilities whose construction started after the 1977 amendments to the Clean Air Act went into effect).

sites that were already contaminated became, upon the passage of the act, liable for their cleanup.[59]

The following table summarizes the three different examples described above, each reflecting a different degree of retroactivity. A rule that has a stronger retrospective effect is retroactive with respect to a wider variety of events.

TABLE 1: DEGREES OF RETROACTIVITY OF LEGAL TRANSITIONS

Rule	Applies to Existing Facilities?	Applies to Pollution Already Released?	Retroactivity
Rule 1: New Air Emission Standards on Newly Constructed Pulp and Paper Plants	No	No	Not Retroactive
Rule 2: New Air Emission Standards on All Pulp and Paper Plants	Yes	No	Less Retroactive (nominally prospective)
Rule 3: Liability for Existing and Future Releases of Soil Pollution	Yes	Yes	More Retroactive (nominally retroactive)

Another framework that is consistent with this model is the one proposed by Professor Michael Graetz in the tax context. Professor Graetz starts by differentiating between two types of situations in which a rule has retroactive effects.[60] The first, which he calls "nominal retroactivity," is the

59. 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. §§ 9601–9675). Section 107 of the statute imposed retroactive liability on a variety of parties, including owners and operators of contaminated sites, transporters of hazardous substances, and those who arranged for disposal or treatment of these types of substances. 42 U.S.C. § 9607(a)(1)–(4); United States v. Alcan Aluminum Corp., 315 F.3d 179, 188 (2d Cir. 2003) ("[A] number of courts held that CERCLA applies retroactively . . . .") (citing, among other decisions, United States v. Olin Corp., 107 F.3d 1506, 1511–15 (11th Cir. 1997); O'Neil v. Picillo, 883 F.2d 176, 183 n.12 (1st Cir. 1989); United States v. Monsanto Co., 858 F.2d 160, 173 (4th Cir. 1988); United States v. Ne. Pharm. & Chem. Co., 810 F.2d 726 (8th Cir. 1986)).

60. Graetz, *supra* note 21, at 49–50.

already familiar scenario where a new rule applies to transactions that took place before its enactment, as with *Rule 3* in the above table.[61] More noteworthy is the second category, "nominal prospectivity," which, according to that same author, is present when the new rule, while only applying to events that occur after its adoption, still has retrospective effects because it affects the value of existing investments.[62] Upon closer examination, this category of retroactivity matches that of *Rule 2* above—for example, a new emission standard that applies to future pollution but that applies to existing facilities—which I characterize as *less retroactive*.[63]

As the foregoing analysis shows, whether a particular rule should be viewed as retroactive or not depends, among other things, on which event or act one decides to focus on. As will be discussed in more detail below, the specific event used to determine whether a rule is retroactive can be of great significance for the purposes of assessing whether the legal change may effect a taking of private property.[64]

B. Transition Relief

Once a policymaker determines the extent to which the retroactive application of a new rule may be causing harm, the next logical question is: How could this harm be minimized or eliminated? In other words, what forms of transitional relief may be appropriate? A number of options are potentially available, including legacy clauses, delayed implementation, and compensation.

A common approach is to legacy (also known as to "grandfather") those who are already exercising a right or performing an activity that would be negatively affected by the new rule.[65] The rule may provide full legacying

61. *See id.* at 49.

62. Professor Graetz uses the example of a rule repealing a tax exemption for the interest generated by state and local bonds. The effect of the rule is to reduce the income that those who hold these bonds will be able to earn—as the interest will now be taxable. Therefore, while the new rule does not reduce the income generated by these bonds in prior tax years, it will decrease their value as they will generate a lower income in the future as a result of the repeal of the tax exemption. *See id.* at 57–60.

63. In the bond scenario, the event Professor Graetz identified as relevant was the interest the bond was generating. Thus, under that approach, the new rule was not affecting events—i.e., interest paid—from previous tax years. *See id.* This is the same conclusion that was reached earlier with respect to *Rule 2* when focusing on pollution as the relevant event. If, however, one were to instead focus on the initial purchase of the bond, the conclusion would change, as that act took place before the tax exemption repeal went into effect, making that new rule retroactive. This outcome mirrors that identified above for *Rule 2* when the construction of the facility (and not the emission of pollutants) was used as the key event to determine retroactivity.

64. *See infra* note 346–49 and accompanying text.

65. *Grandfather Clause*, BLACK'S LAW DICTIONARY (11th ed. 2019) ("A provision that creates an exemption from the law's effect for something that existed before the law's effective date . . . ."); *see* Shavell, *supra* note 40, at 37–39 (addressing the circumstances in which legacying is advisable on efficiency grounds).

as, for example, when Congress decided to allow for the continuation of previously established grazing activities in fifteen areas that were being added to the National Wilderness Preservation System.[66] Policymakers may instead choose a milder form of transitional relief—that is, partial legacying.[67] The Clean Air Act used this approach in nonattainment areas.[68] The Act requires a permit for the construction and operation of *new* and *modified* major facilities located in these highly polluted locations.[69] As a result, when an existing facility undergoes changes that meet the threshold to qualify it as *modified*, its operator will be subject to the new rule requiring it to obtain a new permit which in turn will incorporate a host of new environmental standards.[70]

Delayed implementation is another form of transitional relief that, as its name suggests, postpones the implementation of the new rule to a future date.[71] Amortization—a tool sometimes used in the land use context to discontinue non-conforming uses—is a good example of delayed implementation.[72] This mechanism allows the non-conforming use, that is, a use that is no longer permissible under the new rule, to remain in place for a number of years before it must be discontinued.[73] This gives the landowner or operator an opportunity to recover any investments that were made while the activity could be legally conducted in that location.[74]

This discussion of transitional relief would not be complete without a reference to compensation. Under this approach, the legislature simply provides a payment to reduce or eliminate the costs that the new rule imposes on existing rights or activities.[75] In some cases, the duty to pay

66. Omnibus Public Land Management Act of 2009 § 1972(a), (b), 16 U.S.C. § 1132; *see also* Bruce R. Huber, *The Durability of Private Claims to Public Property*, 102 GEO. L.J. 991, 1002 n.47 (2014) (citing the following other provisions from this same bill legacying existing grazing rights: §§ 1405(c)(3), 1503(b)(3)(A), 1602(c)(3), 1702(c)(3), 1752(b)(3), 1803(h)).

67. Nash & Revesz, *supra* note 40, at 1724–25.

68. *Id.* at 1720–23.

69. *Id.* This is required for major stationary sources. 42 U.S.C. § 7502(c)(5) (explaining that state plans must "require permits for the construction and operation of new or modified major stationary sources").

70. This can occur when there is a "physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted." 42 U.S.C. § 7411(a)(4); *see also id* § 7501(4).

71. Louis Kaplow, *Transition Policy: A Conceptual Framework*, 13 J. CONTEMP. LEGAL ISSUES 161, 186–87 (2003).

72. Joshua P. Borden, Note, *Derailing* Penn Central*: A Post-*Lingle*, Cost-Basis Approach to Regulatory Takings*, 78 GEO. WASH. L. REV. 870, 871 n.6 (2010).

73. *See* Serkin, *Existing Uses*, *supra* note 21, at 1235–36.

74. *See id.*

75. *See* Edan Rotenberg, *Ending Both Forms of Grandfathering in Environmental Law*, 37 ENV'T L. REP. 10717, 10720 (2007) (defining compensation as "the payment of a lump sum of money to a party that loses from a legal transition); Abraham Bell, *Not Just Compensation*, 13 J. CONTEMP.

compensation can be traced back to the obligations imposed by the Takings Clause of the Fifth Amendment.[76] In other cases, the government may decide to pay compensation even though such a payment is not constitutionally required, or it may choose to pay an amount that exceeds what is constitutionally mandated.[77]

It is important to conclude this discussion by emphasizing that, while policymakers have a wide variety of tools to minimize or eliminate transition costs, not every injury that a new rule imposes on those who are subject to it should be addressed. In some instances, there will be public policy justifications not to use any form of transitional relief. As proponents of the so-called "new view" on transition relief have argued, if these mechanisms become the norm, the incentive for those who will be subject to the rule to try to anticipate it and adapt to it in advance—which, in some cases, can maximize the benefits of the rule and reduce its transition costs—is eliminated.[78]

C. Climate Change and Legal Transitions

Climate change is exacerbating the need for legal transitions in various areas. These *climate transitions*—a term that, for the purposes of this Article, refers to legal transitions whose goal is to address either the causes or the effects of climate change—are necessary to deal with the net harm that climate change will likely continue to cause.[79] Climate transitions have occurred in the context of mitigation—that is, measures to reduce the

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LEGAL ISSUES 29, 31 (2003); Lawrence Blume & Daniel L. Rubinfeld, *Compensation for Takings: An Economic Analysis*, 72 CALIF. L. REV. 569, 582–99 (1984); Jonathan S. Masur & Jonathan Remy Nash, *The Institutional Dynamics of Transition Relief*, 85 N.Y.U. L. REV. 391, 400 (2010).

76. U.S. CONST. amend. V. The Fourteenth Amendment makes requirements of the Takings Clause applicable to states. *See* Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 536 (2005).

77. The River and Harbor Act of 1970 provides an example of this outside the legal transition context. The act recognized compensation for those landowners who saw their lands flooded as a result of river-improvement activities carried out by the United States in an amount greater than, under prior Supreme Court precedent, these landowners would have been able to receive. 33 U.S.C. § 595a (1970); BARTON H. THOMPSON, JR., JOHN D. LESHY, ROBERT H. ABRAMS & SANDRA B. ZELLMER, LEGAL CONTROL OF WATER RESOURCES: CASES AND MATERIALS 612 (6th ed. 2018).

78. Kaplow, *supra* note 2, at 615; Wonnell, *supra* note 40, at 294 (examining these arguments in the compensation context); Revesz & Kong, *supra* note 26, at 1587 (noting that "[p]roponents of the new view contend that transition relief is generally undesirable primarily because it removes the incentives to anticipate legal change").

79. J.B. Ruhl, *The Political Economy of Climate Change Winners*, 97 MINN. L. REV. 206, 208 (2012) (noting that it "most likely is the case that at global scales the net aggregate economic impacts of climate change will be negative over time"); Shelley Ross Saxer, *Paying for Disasters*, 68 KAN. L. REV. 413, 415 (2020) (explaining that, as a result of climate change, some areas will enjoy longer growing seasons and more pleasant weather while others will have to deal with droughts, violent storms, and sea level rise).

concentration of greenhouse gases in the atmosphere—and adaptation—that is, actions to reduce the negative effects of climate change.[80]

On the mitigation front, cap-and-trade programs, for example, set a cap on the total emissions of greenhouse gases in the jurisdiction.[81] Regulated parties must be in possession of sufficient allowances—such as a right to release a specific amount of greenhouse gases—to cover their actual emissions.[82] Regulators then progressively reduce the cap, which decreases the number of available allowances, leading to a decrease in emissions.[83] To the extent that these measures apply to activities that were already operating when the new rules were implemented, they can be considered retroactive.[84] The harm that these parties would suffer would be the cost of purchasing pollution allowances in the cap-and-trade context and the discontinuance of natural gas plants in the energy transition context.[85]

Several types of climate adaptation measures have also created transition losses for certain parties.[86] Many coastal states have issued regulations to restrict coastal landowners' ability to build residences or barriers to protect their land from sea level rise or storms.[87] Both of these types of measures can interfere with existing vested rights. A total ban on development can render a coastal property virtually valueless.[88] Similarly, prohibitions on armoring, by preventing landowners from being able to protect their land against erosion, are likely to reduce property values.[89]

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80. *See* J.B. Ruhl, *Climate Adaptation Law*, *in* GLOBAL CLIMATE CHANGE AND U.S. LAW 677, 679 (Michael B. Gerrard & Jody Freeman eds., 2d ed. 2014). *See generally* Stephanie M. Stern, *Climate Transition Relief: Federal Buyouts for Underwater Homes*, 72 DUKE L.J. 161 (2022) (addressing the issue of climate-change-induced flooding and the different regulatory responses).

81. *See, e.g.*, *Washington's Cap-and-Invest Program*, DEP'T OF ECOLOGY STATE OF WASH., https://ecology.wa.gov/air-climate/climate-commitment-act/cap-and-invest [https://perma.cc/35SY-EKZR].

82. *See id.*

83. *See id.*

84. *See supra* Table 1 (describing this type of situation as "less retroactive").

85. *See* Serkin & Vandenbergh, *supra* note 21, at 1032.

86. *See generally* David A. Dana, *Climate Change Adaptation as a Problem of Inequality and Possible Legal Reforms*, 117 NW. U. L. REV. 71 (2022).

87. As of 2013, coastal armoring was "banned or severely restricted in Maine, Massachusetts, North Carolina, Oregon, Rhode Island, South Carolina, and Texas." Megan M. Herzog & Sean B. Hecht, *Combatting Sea Level Rise in Southern California: How Local Governments Can Seize Adaptation Opportunities While Minimizing Legal Risk*, 19 HASTINGS W.-NW. J. ENV'T L. & POL'Y 463, 474 (2013).

88. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1007 (1992) (noting that the trial court had concluded that a regulation that did not allow a landowner to build "any permanent habitable structures" on his properties rendered them valueless).

89. Christopher Serkin, *Passive Takings: The State's Affirmative Duty to Protect Property*, 113 MICH. L. REV. 345, 395 (2014) (noting that there is a difference in value between a costal property on which a seawall can be erected and an equivalent parcel where other alternatives must be used for the protection of the buildings erected thereon); *see id.* n.226 (citing Warren Kriesel & Robert Friedman, *Coping with Coastal Erosion: Evidence for Community-Wide Impacts*, 71 SHORE & BEACH 19, 21

The preceding discussion has illustrated both the polycentric nature of climate change—which is the result of various human activities and has a wide range of impacts—as well as why legal transition theory, by paying attention to harms associated with new climate mitigation and adaptation rules and the possible forms of transitional relief available, provides a particularly useful analytical framework to analyze these types of legal changes.[90] Despite their similarities, however, not all climate transitions are created equal. For this reason, the rest of the Article will focus on a more discrete yet vitally important climate-related issue, namely, the need for a profound reform of water allocation systems.

II. WATER TRANSITIONS

Legal transitions are of special interest in domains that are highly dynamic, such as water law and policy.[91] It is therefore not surprising to see that there have been a significant number of legal changes in water law, or *water law transitions*, in the United States during the past two centuries.[92] As is the case in other areas of the law, water law transitions raise complicated policy and constitutional questions, such as the extent to which the new rule should have retroactive effect, whether transitional relief should be made available to those already holding water rights at the time of the reform, or whether the implementation of the new rule triggers a constitutional requirement to pay compensation.[93]

This section will examine how courts have answered these questions in the past by analyzing some of the most important water law transitions in the United States. After this survey of past water law transitions, the focus will shift to future water law reform and, more specifically, the need for change, the types of modifications of water allocation and use frameworks that have been suggested in the literature, and the barriers complicating their implementation.[94]

A. Past Water Law Transitions

While there have been countless modifications of water law doctrines and water rights, the following analysis will focus on the main changes in

(2003)) (explaining that a prohibition against armoring, due to the threat of erosion, reduces property values by twenty-five percent).

90. *See* Elizabeth Fisher, Eloise Scotford & Emily Barritt, *The Legally Disruptive Nature of Climate Change*, 80 MOD. L. REV. 173, 178 (2017).

91. *See* Robert H. Abrams, *Water Law Transitions*, 66 S.C. L. REV. 597, 597 (2015).

92. *See infra* Section II.A.

93. THOMPSON, JR. ET AL., *supra* note 77, at 387.

94. *See infra* Section II.B.

water allocation frameworks that have taken place in the United States.[95] The first is the transition from riparianism to prior appropriation in the West and the second is the advent of permit systems as a way of managing water resources in the East.

1. The Transition from Riparianism to Prior Appropriation

Riparianism was the surface water allocation doctrine initially adopted in the eastern United States.[96] This doctrine confers water rights to owners of riparian land, that is, land that abuts a body of water.[97] Under the first version of this doctrine, riparian owners were not permitted to noticeably reduce the quality or quantity of water carried by the water course in order to carry out so-called artificial uses, that is, non-domestic uses such as "irrigation, manufacturing, power generation, mining operations, and large-scale stock watering."[98] This placed an important limitation on a number of uses, primarily, consumptive uses, that is, those that do not return to the water course the same amount of water that was originally diverted.[99] Another important constraint that was later relaxed to some extent is the on-tract limitation, which disallowed the use of water resources on non-riparian lands.[100]

Given its rigidity, the natural flow version of riparianism was replaced by *reasonable use* riparianism, which allowed riparian owners to divert water in amounts that noticeably reduced the available water to other users downstream, as long as that use was reasonable, especially considering the

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95. Other important changes that are more limited in their geographic scope include, for example, the elimination of pueblo rights in some states, *see* Martha E. Mulvany, State ex rel. Martinez v. City of Las Vegas*: The Misuse of History and Precedent in the Abolition of the Pueblo Water Rights Doctrine in New Mexico*, 45 NAT. RES. J. 1089, 1089 (2005), and the water transition that took place in Hawaii during the second half of the twentieth century, *see* Douglas W. MacDougal, *Testing the Current: The Water Code and the Regulation of Hawaii's Water Resources*, 10 U. HAW. L. REV. 205, 210 (1988).

96. *See, e.g.*, Robert H. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 WAYNE L. REV. 1381, 1381 (1989); Robert W. Adler & Michele Straube, *Watersheds and the Integration of U.S. Water Law and Policy: Bridging the Great Divides*, 25 WM. & MARY ENV'T L. & POL'Y REV. 1, 1 (2000).

97. Joseph W. Dellapenna, *The Evolution of Riparianism in the United States*, 95 MARQ. L. REV. 53, 55 (2011).

98. Richard C. Ausness, *Water Use Permits in a Riparian State: Problems and Proposals*, 66 KY. L.J. 191, 198 (1977); *see* Joseph W. Dellapenna, *Riparian Rights in the West*, 43 OKLA. L. REV. 51, 53 (1990); Ludwik A. Teclaff, *What You Have Always Wanted to Know About Riparian Rights, but Were Afraid to Ask*, 12 NAT. RES. J. 30, 44 (1972) (explaining that domestic uses were nevertheless protected).

99. *See* Martin v. Bigelow, 2 Aik. 184, 187 (Vt. 1827) (explaining the undesirable effects of following the natural flow version of riparianism); HEDIA ADELSMAN, CONSUMPTIVE AND NONCONSUMPTIVE WATER USE 1 (1991), https://appswr.ecology.wa.gov/docs/WaterRights/wrwebpdf/pol1020.pdf [https://perma.cc/BYX4-DZ9Q].

100. T.E. Lauer, *Reflections on Riparianism*, 35 MO. L. REV. 1, 5–6 (1970).

needs of other riparian owners in the area.[101] The success of this approach can be explained, to a great degree, by the abundance of water that existed at the time it was developed in the parts of the country where it was adopted, that is, eastern states.[102]

In the West, however, riparianism was not viewed as a suitable water allocation doctrine given the more limited availability of water and the need for development.[103] As a result, prior appropriation was adopted starting in the mid-1800s as the prevailing way of allocating water.[104] Unlike riparianism, ownership of land was no longer required in order to acquire a right to use water.[105] All a prospective appropriator had to do was to divert water from a natural stream and put it to beneficial use.[106] The water had to be unappropriated, meaning it was physically available and had not been previously claimed by any other user.[107]

There are two features of prior appropriation that are worth highlighting. First, water under this system is based on time priority. In other words, those who secure a water right earlier (i.e., senior users) will be able to divert water with preference over others who acquire their right later (i.e., junior users).[108] As a result, water rights with an earlier priority date tend to be more valuable.[109] Second, appropriative rights may be lost if they are not used.[110] The two doctrines that could lead to that result are forfeiture and abandonment,[111] even though not all states recognize both of them[112] and, in some instances, the law in some states uses other terms to refer to these mechanisms.[113] The main difference between these two approaches is that, unlike with forfeiture, abandonment typically requires the plaintiff—that is, the person claiming that the right has been lost—to prove that the water user

101. Stanley V. Kinyon, *What Can a Riparian Proprietor Do?*, 21 MINN. L. REV. 512, 522 (1937).

102. *See* Abrams, *supra* note 96, at 1396.

103. Reed D. Benson, *Alive but Irrelevant: The Prior Appropriation Doctrine in Today's Western Water Law*, 83 U. COLO. L. REV. 675, 680 (2012).

104. *See id.* at 676.

105. *See* Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 246–47 (2015) (explaining how the court in *Irwin v. Phillips*, 5 Cal. 140 (1855), disregarded this riparian principle and then proceeded to recognize an appropriative right to water).

106. A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881, 882 (2000).

107. THOMPSON, JR. ET AL., *supra* note 77, at 219.

108. Reed D. Benson, *Maintaining the Status Quo: Protecting Established Water Uses in the Pacific Northwest, Despite the Rules of Prior Appropriation*, 28 ENV'T L. 881, 886 (1998).

109. *See* Benson, *supra* note 103, at 677.

110. Mark A. McGinnis & R. Jeffrey Heilman, United States v. Gila Valley Irrigation District*: The Application of Statutory Forfeiture to Pre-1919 Water Rights in Arizona, and Its Potential Ramifications*, 8 ARIZ. J. ENV'T L. & POL'Y 69, 75 (2018).

111. *See* Janet C. Neuman & Keith Hirokawa, *How Good Is an Old Water Right? The Application of Statutory Forfeiture Provisions to Pre-Code Water Rights*, 4 U. DENV. WATER L. REV. 1, 23 (2000).

112. *See, e.g.*, Peter R. Anderson & Aaron J. Kraft, *Why Does Idaho's Water Law Regime Provide for Forfeiture of Water Rights?*, 48 IDAHO L. REV. 419, 420 (2012).

113. Cornelius v. Wash. Dep't of Ecology, 344 P.3d 199, 209 (Wash. 2015) (relinquishment).

intended to abandon the right,[114] although a presumption that such intent was present can be created in some cases.[115]

When looking at the transition from riparianism to prior appropriation in the West, two main scenarios stand out. Some states adopted prior appropriation under the theory that riparian rights had not been previously recognized in that jurisdiction.[116] These so-called *Colorado Doctrine* states include Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming.[117] Other states, in contrast, recognized existing riparian rights even as they imposed the new prior appropriation regime.[118]

The states that underwent that transition can be divided into three categories. The first follows the so-called *California Doctrine*, where riparian rights were maintained to a significant extent even after the adoption of prior appropriation,[119] including not only those that had already been exercised but, more importantly, the right to initiate a water use in the future, typically referred to as "unexercised rights."[120] The second group of states are those that eliminated most or all exercised and unexercised riparian rights. This group includes Nevada and perhaps Alaska. Nevada seemed to recognize riparian rights for a very limited time before these decisions were overruled in 1885.[121] As for Alaska, while the cases initially adopting riparian rights were overruled, there is some lingering uncertainty as to whether some of these earlier riparian rights may have survived.[122] The third and most important category, that is, *Oregon Doctrine* states, comprise states that maintained exercised rights but eliminated—or attempted to cut off[123]—those that had not been exercised by a certain date.[124] This has been the most common approach judging by the number of states that have taken

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114. Nicole C. Nachtigal, *To Abandon or Not to Abandon: What Constitutes Voluntary Abandonment in the Wake of* Scott v. McTiernan*?*, 5 GREAT PLAINS NAT. RES. J. 247, 250 (2001).

115. *See* John C. Peck & Constance Crittenden Owen, *Loss of Kansas Water Rights for Non-Use*, 43 KAN. L. REV. 801, 820 (1995).

116. ROBERT W. ADLER, ROBIN K. CRAIG & NOAH D. HALL, MODERN WATER LAW 92 (2013).

117. *See id.* The Montana Supreme Court has stated that prior appropriation had always been the water allocation doctrine in that state, even though some earlier decisions in the state had seemingly recognized riparian rights. 1 WATERS AND WATER RIGHTS § 8.02 (Amy K. Kelley & Jesse J. Richardson, Jr. eds., 3d ed. 2024).

118. *See* ADLER ET AL., *supra* note 116, at 102.

119. Rowland v. Ramelli (*In re* Waters of Long Valley Creek Stream Sys.), 599 P.2d 656, 669 (Cal. 1979) ("[W]e interpret the Water Code as not authorizing the Board to extinguish altogether a future riparian right . . . .").

120. *See id.*; 1 WATERS, *supra* note 117, at § 8.02(a) ("Perhaps even more central to the California doctrine . . . is the notion . . . that there is no cutoff of unused riparian rights."). While California is the prime example of this category, Nebraska also shares this feature to some extent. *See* Dellapenna, *supra* note 98, at 59 ("In Nebraska, however, the state supreme court seems to have held against any cutoff of unused riparian rights . . . .").

121. *See* Dellapenna, *supra* note 98, at 55.

122. *See id.* at 60.

123. *See infra* notes 135–38 and accompanying text.

124. ADLER ET AL., *supra* note 116, at 106.

this route, including Kansas, North Dakota, Oklahoma, Oregon, South Dakota, Texas, and Washington.[125]

The constitutional challenges brought in the context of these transitions have primarily focused on Oregon Doctrine states' cutoff of unexercised rights, in part due to the fact no state has taken the more extreme approach of eliminating all riparian rights after they had been recognized for a substantial period of time.[126] Most of the state courts that examined this narrow constitutional challenge concluded that no taking had occurred. In Kansas, the highest court in the state upheld a statute that effectively eliminated unexercised riparian rights by excluding them from the definition of vested right.[127] In North Dakota, the abolition of unexercised rights was deemed constitutional at least in the groundwater context.[128] Oregon's abrogation of the riparian right to initiate new water users in a way that harmed appropriators also survived constitutional challenge.[129] The Supreme Court of South Dakota dismissed similar claims.[130] In Texas, the highest court of the state concluded that a statute abrogating unused water rights of riparians did not effect a taking.[131]

The Washington State Legislature passed a statute in 1917 that presumably terminated unexercised riparian rights.[132] Interestingly, the Supreme Court of Washington concluded years later that the elimination of these rights had not taken place immediately but rather after a "reasonable

125. *See id.*

126. As noted above, even assuming that Nevada initially adopted riparianism, the rejection of this doctrine occurred very shortly thereafter and some of the riparian rights previously recognized were maintained. *See* Dellapenna, *supra* note 98, at 55.

127. *See* State *ex rel.* Emery v. Knapp, 207 P.2d 440, 443, 445, 447 (Kan. 1949) (explaining, in response to the constitutional challenge brought by the plaintiffs against the statute defining "vested right" as "the right to continue the use of water having *actually been applied* to any beneficial use" (emphasis added), that "[u]nused or unusable rights predicated alone upon theory become of little if any importance").

128. 1 WATERS, *supra* note 117, at § 8.02(c).

129. Cal.-Or. Power Co. v. Beaver Portland Cement Co., 73 F.2d 555, 568–69 (9th Cir. 1934) ("The modification of riparian rights which the act of 1909 has effectuated is not so drastic a change as to amount to taking of property . . . ."), *aff'd*, 295 U.S. 142 (1935); Wells A. Hutchins, *The Common-Law Riparian Doctrine in Oregon: Legislative and Judicial Modification*, 36 OR. L. REV. 193, 210 (1957).

130. *See* Belle Fourche Irrigation Dist. v. Smiley, 176 N.W.2d 239, 244–45 (S.D. 1970) (explaining that Chapter 430 of the 1955 laws had limited riparian rights by treating as vested only those which were exercised by a particular date); Knight v. Grimes, 127 N.W.2d 708, 708–14 (S.D. 1964) (upholding the constitutionality of Chapter 430 of the 1955 laws).

131. *In re* Adjudication of Water Rts. of the Guadalupe River Basin, 642 S.W.2d 438, 444 (Tex. 1982).

132. WASH. REV. CODE § 90.03.010 (1917) ("Nothing contained in this chapter shall be construed to lessen, enlarge, or modify the *existing rights* of any riparian owner . . . ." (emphasis added)); State v. Abbott (*In re* Determination of Deadman Creek Drainage Basin), 694 P.2d 1071, 1075 (Wash. 1985) ("Whether unused riparian rights survived adoption of the use-oriented 1917 water code has been much discussed.").

time," which was interpreted to mean fifteen years.[133] This can reasonably be viewed as an example of what one may refer to as ex-post delayed implementation. Because the statute did not eliminate riparian rights that had been used by that cutoff date but, instead, limited the initiation of new water uses, the court found that no unconstitutional taking had occurred.[134]

In Oklahoma, the transition was far more eventful than in other states. In 1963, the legislature eliminated unexercised rights for non-domestic uses.[135] The subsequent challenge led to an unusual situation, in which the Oklahoma Supreme Court struggled for years before issuing an opinion that it did not publish, later withdrawing it, and replacing it with another one that remained unpublished for three years.[136] The opinion in question concluded that the 1963 water law amendments were unconstitutional because they barred riparians from initiating non-domestic uses in the future.[137] The legislature then proceeded to reaffirm the termination of riparian rights, creating significant uncertainty about the subsequent status of this type of right.[138]

2. The Transition from Common Law Riparianism to Regulated Riparianism

Although the reasonable use version of riparianism addressed many of the problems that had arisen with the natural flow doctrine, there were still a number of lingering issues awaiting to be tackled.[139] As Professor Robert Abrams explained, the main arguments justifying the replacement of these common law approaches were that managing a common pool resource such as water using property rules—as was the case with common law riparianism—led to inefficient results, that a precise quantification of the rights—lacking under the common law—would be desirable, and that disputes over water use were being handled in a reactive, rather than proactive, manner.[140]

A common response by state legislatures was to adopt a permit system in which an administrative agency plays a central role in managing water

133. *Abbott*, 694 P.2d at 1076.
134. *See id.* at 1077.
135. 1 WATERS, *supra* note 117, at § 8.02(c).
136. *See id.*
137. Franco-Am. Charolaise, Ltd. v. Okla. Water Res. Bd., 855 P.2d 568, 577 (Okla. 1990) ("We, therefore, hold that the 1963 water law amendments are fraught with a constitutional infirmity in that they abolish the right of riparian owners . . . in the prospective reasonable use of the stream.").
138. Gary D. Allison, *Oklahoma Water Rights: What Good Are They?*, 64 OKLA. L. REV. 469, 489 (2012).
139. *See supra* notes 101–03 and accompanying text.
140. Robert H. Abrams, *Water Allocation by Comprehensive Permit Systems in the East: Considering a Move Away from Orthodoxy*, 9 VA. ENV'T L.J. 255, 261–65 (1990).

resources.[141] In these regulated riparianism states, the main—and often only—way to acquire a water right is to file an application for a permit with the water allocation agency, as opposed to through the acquisition of riparian land.[142] The resulting permit may or may not be time-limited and will include basic information about the water use that is being authorized and the conditions to which it is subject.[143] State statutes in permit systems typically provide a set of criteria to guide the agency's decision in the event that it receives competing applications that require a determination of which use should be favored.[144] Roughly half of riparian eastern states—that is, close to twenty—have adopted a permit system.[145]

It is worth noting that the transition has been very favorable to existing rights for a number of reasons. First, roughly a third of regulated riparianism states have chosen to exempt existing rights users from the obligation to obtain a permit.[146] In some cases, in order to take advantage of this option, water users are required to register their use by a certain date.[147] Second, a number of other states have protected preexisting uses by guaranteeing that they would receive an initial permit.[148] Iowa's statute, for example, provides that the relevant agency "shall grant a permit" for these previous uses.[149] Third, some states that ensured that prior uses would enjoy a first permit indirectly protected these uses further in light of their provisions favoring the renewal of existing over new permits in case of competing

141. 1 WATERS, *supra* note 117, at § 9.03; A. Dan Tarlock, *Water Law Reform in West Virginia: The Broader Context*, 106 W. VA. L. REV. 495, 517 (2004).

142. Jeremy Nathan Jungreis, *"Permit" Me Another Drink: A Proposal for Safeguarding the Water Rights of Federal Lands in the Regulated Riparian East*, 29 HARV. ENV'T L. REV. 369, 371 (2005); Joseph W. Dellapenna, *The Law of Water Allocation in the Southeastern States at the Opening of the Twenty-First Century*, 25 U. ARK. LITTLE ROCK L. REV. 9, 31–32 (2002).

143. 1 WATERS, *supra* note 117, at § 9.03; *see, e.g.*, WIS. STAT. § 30.206 (2024).

144. *See, e.g.*, ARIZ. REV. STAT. § 45-157 (LexisNexis 2024); WASH. ADMIN. CODE § 173-152-050 (2024).

145. 1 WATERS, *supra* note 117, at § 9.01; DAVID H. GETCHES, SANDRA B. ZELLMER & ADELL L. AMOS, WATER LAW IN A NUTSHELL 61 (2015) (explaining that nineteen out of thirty-one riparian states have made this transition).

146. 1 WATERS, *supra* note 117, at § 9.03(b)(3) (noting that "several legislatures dealt with their fear of an uncompensated taking by exempting all uses in place before the effective date of the regulated riparian statute").

147. *See, e.g.*, CONN. GEN. STAT. § 22a-368 (2024).

148. 1 WATERS, *supra* note 117, at § 9.03(a)(3) (explaining that this approach has been followed by six states and then pointing out that New Jersey, Arkansas, North Carolina, and Alabama took a similar route).

149. IOWA CODE § 455B.265(2) (2024).

applications.[150] This approach has been adopted in Florida and Georgia and is probably implemented in other states as a matter of practice.[151]

Likely due to the lenient treatment of existing rights during this transition from common law to regulated riparianism, the number of challenges to these newer statutes on the grounds that, by requiring a permit to divert water, common law riparian rights were taken has been extremely low.[152] A Wisconsin case, *Omernik v. State*,[153] and the decision ruling on its appeal[154] are regarded as the only example of this type of challenge.[155] Omernik was convicted of diverting water without a permit for irrigation.[156] Although the defendant owned riparian land, a state statute provided that no water could be diverted without a permit, thereby effectively abrogating Omernik's riparian rights.[157] On the question of whether the statute had taken the defendant's water rights without compensation, the court concluded that the state had merely exercised its police power to prevent the harm that the unsupervised diversion of water would cause to the public.[158] The court also noted that there was no reason to assume that the defendant would not have been able to obtain a permit to divert water.[159]

This transition shows that, when necessary, state legislatures are willing to modify water allocation regimes in order to face the shortcomings of the previous system. Unfortunately, the conservative approach these states took when determining the extent to which existing rights should be affected by the reform leaves important questions unanswered, mainly, those relating to whether a more aggressive strategy would have led to takings liability.

150. 1 WATERS, *supra* note 117, at § 9.03(a)(4) ("The drafters of the two model codes explicitly accepted the probability that the administering agency will be reluctant to refuse to renew a permit for an established use . . . .").

151. *See id.* (highlighting that the absence of these provisions "from the other regulated riparian statutes should not be taken as a prohibition of such a preference in the practice of the permitting agencies").

152. 1 WATERS, *supra* note 117, at § 9.04.

153. 218 N.W.2d 734 (Wis. 1974).

154. Omernick v. Dep't of Nat. Res., 238 N.W.2d 114 (Wis. 1976).

155. 1 WATERS, *supra* note 117, at § 9.04. A South Carolina regulated riparianism statute was challenged on slightly different grounds, namely, that agricultural users were afforded more beneficial treatment in the statute compared to other types of water users. Jowers v. S.C. Dep't of Health & Env't Control, 815 S.E.2d 446, 453–54 (S.C. 2018). This was portrayed by the plaintiffs as a taking of their non-agricultural water rights, a claim that the court ultimately rejected by interpreting the statute in a way that preserved many of the rights that non-agricultural users had held under the common law. *Id.* at 455.

156. *Omernik*, 218 N.W.2d at 737.

157. *See id.*; *Omernick*, 238 N.W.2d at 116.

158. *Omernik*, 218 N.W.2d at 743.

159. *See id.*

B. Future Water Law Transitions

Approximately 50% of the world's population is experiencing significant water scarcity every year, as reported by the Intergovernmental Panel on Climate Change.[160] In the United States, the projections show that freshwater availability will continue to decrease, affecting ecosystems and a wide range of human activities such as agriculture, hunting, and aquaculture.[161] Lake Mead, the largest reservoir in the United States and the main source of water in the dry Southwest,[162] despite the recent modest increase, is expected to drop throughout 2024 and reach historically low levels in 2025.[163]

1. The Limitations of Current Strategies to Combat Water Scarcity

Because water scarcity is far from a recent occurrence, there are a number of initiatives that are already being implemented to address it. However, all of them have important shortcomings. For example, states and local governments have adopted, over the past decades, an array of measures to incentivize or require water conservation in the residential context (e.g., lawn bans, limiting yard watering, etc.)[164] These types of initiatives, however, often face intense resistance to the point where

160. HOESUNG LEE ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT 6 (The Core Writing Team, Hoesung Lee & José Romero eds., 2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf [https://perma.cc/9CRX-PZZL].

161. *See id.* at 76.

162. *Overview of Lake Mead*, NAT'L PARK SERV. (Dec. 13, 2022), https://www.nps.gov/lake/learn/nature/overview-of-lake-mead.htm [https://perma.cc/J8H9-WSFY].

163. Greg Haas, *Lake Mead Level Rising, but a Big Drop Is Coming, Projections Show*, 8NEWSNOW (Jan. 17, 2024), https://www.8newsnow.com/news/local-news/lake-mead-level-rising-but-a-big-drop-is-coming-projections-show/ [https://perma.cc/A4UG-HS8C].

164. Henry Fountain, *Where Lawns Are Outlawed (and Dug up, and Carted Away)*, N.Y. TIMES (May 3, 2022), https://www.nytimes.com/2022/05/03/climate/las-vegas-lawn-grass-ban.html [https://perma.cc/P6VU-5SEJ] (explaining that the earliest efforts to limit the water used to water lawns started in 1999); Brandon Gray, *Phoenix Water Services Department Offers Incentives for Water Conservation*, KTAR NEWS (Oct. 3, 2023, 9:59 AM), https://ktar.com/story/5542271/pho enix-water-services-department-offers-incentives-for-water-conservation/ [https://perma.cc/P3GM-JHGQ] (outlining financial incentives for the installation of efficient appliances in Phoenix, AZ by residents); Eric Frandsen, *Hyde Park Residents Can Receive Rebates for Eliminating Grass with Water-Efficient Alternatives*, CACHE VALLEY DAILY (Mar. 28, 2024), https://www.cachevalleydaily.com/news/archive/2023/05/03/hyde-park-residents-can-receive-rebates-for-eliminating-grass-with-water-efficient-alternatives/ [https://perma.cc/E7XM-KZDY] (detailing rebate program for Hyde Park, UT residents aimed at reducing water usage in residential landscaping); *Beginning Dec. 1, Hillsborough County Residents Can Only Water Their Lawns Once a Week*, HILLSBOROUGH CNTY. FLA. (Nov. 16, 2023, 2:25 PM), https://www.hillsboroughcounty.org/en/newsroom/2023/11/16/prolonged-drought-forces-water-use-restrictions [https://perma.cc/6KU8-JQLS] (describing the new restriction of weekly lawn irrigation in three FL counties).

policymakers have to reverse course.[165] More importantly, restricting domestic water use only focuses on a small part of the problem as it only represents a small fraction of the total water consumed by human activities.[166] Desalination can also help increase the supply of fresh water for domestic and industrial uses.[167] Despite these benefits, the costs of some of these desalination projects—especially those where the water has to be transported for long distances—as well as its high energy consumption and environmental impacts make desalination a less-than-ideal solution.[168] Wastewater recycling, a process that allows water from showers and toilets to be reused after it is purified, can also help deal with water scarcity.[169] Not surprisingly, however, this approach has faced opposition from those who are concerned about the origin of that water, often referring to this process as "toilet-to-tap."[170]

Water markets have also been portrayed as the solution to water scarcity based on the idea that they can help reallocate water from less to more economically-valuable uses and incentivize the efficient use of this resource.[171] This approach, however, allows those already holding water rights to maximize their returns while other potential water users are excluded from the system.[172] This includes both disadvantaged

165. Alek Lewis, *After Public Opposition at Hearing, Proposed Water Conservation Code Will Be Revised*, RIVERHEAD LOC. (Feb. 8, 2023, 7:07 AM), https://riverheadlocal.com/2 023/02/08/after -public-opposition-at-hearing-proposed-water-conservation-code-will-be-revised/ [https://perma.cc /LZ2R-M79L] (explaining public outcry that led to revision of proposed conservation plan in Riverhead, NY); Brian Maffly, *Republican Lawmakers Flush Bill Requiring Low-Flow Plumbing Fixtures*, SALT LAKE TRIB. (Oct. 21, 2021, 12:49 PM), https://www.sltrib.com/news/environment/2021/10/21 /republican-lawmakers/ [https://perma.cc/5ZH7-W2Z8] (outlining party line opposition to and support of a bill that would require efficient toilets, faucets, and shower heads).

166. *See* Richter et al., *supra* note 9, at 321 (showing that the share of water consumption attributable to domestic uses is lower than 10% both for the coterminous United States and 17 western states).

167. Autumn Spanne, *What Is Desalination? How Does It Impact the Environment?* TREEHUGGER (Aug. 15, 2021), https://www.treehugger.com/what-is-desalination-overview-and-impact -5193070 [https://perma.cc/2V6M-79LS].

168. James Leggate, *Arizona Advances $5.5B Mexico Desalination Plant Proposal*, ENR SOUTHWEST (Dec. 23, 2022), https://www.enr.com/articles/55659-arizona-advances-55b-mexico -desalination-plant-proposal [https://perma.cc/6UP2-HL8G]; Edward Jones, Manzoor Qadir, Michelle T.H. van Vliet, Vladimir Smakhtin & Seong-mu Kang, *The State of Desalination and Brine Production: A Global Outlook*, 657 SCI. TOTAL ENV'T 1343, 1354 (2019); OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, U.S. DEP'T OF ENERGY, POWERING THE BLUE ECONOMY: EXPLORING OPPORTUNITIES FOR MARINE RENEWABLE ENERGY IN MARITIME MARKETS 86 (2019).

169. Shawn Hubler, *California Allows Wastewater to Be Recycled into Drinking Water*, N.Y. TIMES (Dec. 19, 2023), https://www.nytimes.com/2023/12/19/us/california-wastewater-drinking-water .html [https://perma.cc/U4EX-6BJH].

170. John Schwartz, *Water Flowing from Toilet to Tap May Be Hard to Swallow*, N.Y. TIMES (May 8, 2015), https://www.nytimes.com/2015/05/12/science/recycled-drinking-water-getting-past-the -yuck-factor.html [https://perma.cc/H88Z-ZD9P].

171. Karrigan Börk & Sonya Ziaja, *Amoral Water Markets?*, 111 GEO. L.J. 1335, 1360–61 (2023).

172. *See id.* at 1342.

communities and ecosystems.[173] A similar strategy, which consists of states buying water rights from private parties to make that water available for more socially-beneficial uses, has emerged in recent years.[174] The main drawback of this course of action is its limited overall impact given the high cost of water rights in dry areas.[175]

The need that climate change has created to adapt to a reduced supply of fresh water has also reinvigorated efforts to implement and improve instream flow regulations, that is, those aimed at maintaining a minimum flow of water in rivers and streams in order to protect the ecosystem and certain recreational uses.[176] Two key questions in these types of transitions are the extent to which these flows will be preserved by limiting the amount of this resource that existing water users may use and whether they will only restrict future water rights or contracts. In some western states, such as Washington and Oregon, newly created minimum flows may not impair already established, that is, more senior, rights, which has the effect of significantly blunting the impact of the reform.[177]

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173. *See id.*; Holly Doremus, *Climate Change and the Evolution of Property Rights*, 1 U.C. IRVINE L. REV. 1091, 1119 (2011).

174. Reggie Ellis, *State Budget Proposes to Buy Water Rights from Farmers*, SUN GAZETTE (June 14, 2022, 10:39 AM), https://thesungazette.com/article/news/2022/06/14/state-budget-proposes-to-buy-water-rights-from-farmers/ [https://perma.cc/6QXV-8Y85] (detailing the $2 billion proposition to buy water rights from farmers in California); Shannon Mullane, *Western Slope Coalition Strikes Historic Deal for Colorado River Water Rights*, COLO. SUN (Dec. 20, 2023, 4:06 AM), https://coloradosun.com/2023/12/20/colorado-river-district-historic-shoshone-water-rights-deal/ [https://perma.cc/MC7K-WFBK] (explaining Colorado River Water Conservation District's $98.5 million deal to buy water rights from a private company).

175. *See* Ellis, *supra* note 174.

176. Mark Squillace, *Restoring the Public Interest in Western Water Law*, 2020 UTAH L. REV. 627, 646–47; Cynthia F. Covell, Whitney Phillips & Alyson Scott, *Update to a Survey of State Instream Flow Programs in the Western United States*, 20 U. DENV. WATER L. REV. 355, 355 (2017); Allison E. Connell, Comment, *Left in the Dust: Wyoming's Instream Flow Laws from a Mountain West Perspective*, 19 WYO. L. REV. 197, 205 (2019) ("Colorado recently took steps to keep water in streams to protect recreational rights . . . .").

177. WASH. REV. CODE § 90.03.345 (2024) ("[M]inimum flows . . . shall constitute appropriations within the meaning of this chapter with priority dates as of the effective dates of their establishment."); *id.* at § 90.22.030 (2024) ("[minimum flows] shall in no way affect existing water . . . rights"); Swinomish Indian Tribal Cmty. v. Wash. State Dep't of Ecology, 311 P.3d 6, 17 (Wash. 2013) ("[T]he legislature reiterated the principle set out in the Minimum Water Flows and Levels Act of 1969 . . . that minimum flows or levels set by rule would be treated like other water rights. . . . Accordingly, minimum flows or levels, once established, have priority over later acquired appropriative water rights."); Jennifer J. Seely, *Water Banks in Washington State: A Tool for Climate Resilience*, 96 WASH. L. REV. 729, 739 (2021); OR. REV. STAT. § 537.334 (2024) ("The establishment of an in-stream water right under the provisions of ORS 537.332 to 537.360 shall not take away or impair any permitted, certificated or decreed right to any waters or to the use of any waters vested prior to the date the in-stream water right is established pursuant to the provisions of ORS 537.332 to 537.360.").

2. Water Law Structural Reform and Its Main Obstacles

In light of the fact that these different initiatives have substantial downsides and a very limited potential to effectively tackle climate-change-related water scarcity, more profound changes to the current water allocation and use laws are required.[178] While this Article does not argue for the adoption of any particular measure, its premise is that structural water law reform of the kind illustrated as follows is necessary. To be sure, this list is far from exhaustive, but it provides a basic notion of the types of legal change that are relevant to the discussion in Parts III and IV.

Some scholars have explained that perpetual water rights, which are prevalent in the West and fairly common in the East, should be made time-limited.[179] The main argument offered in support of that claim is that, with time-limited water rights, the state will have more flexibility to reallocate water resources and will be able to ensure that they are used for the most socially beneficial uses at any given time.[180]

Other commentators have highlighted the downsides of the priority rule in prior appropriation jurisdictions. First, any reasons that may have justified allowing those holding senior rights to divert the maximum amount of water covered by their right before more junior users could use any water—such as incentivizing settlement or investment—are no longer applicable.[181] Second, completely cutting off the diversions of junior water users in times of scarcity can be viewed as unnecessarily harsh.[182] Third, from a policy standpoint, there is no reason why earlier uses should be viewed as more desirable and therefore be favored over more recent ones.[183]

Elwood Mead, over a century ago, highlighted another important flaw in American water law, namely, that water users are not required to pay a fee to the state either when they obtain a water right or when they divert or withdraw that resource.[184] The opposite approach, that is, having pricing systems for water, has important advantages. It can be used to create an incentive to use water more efficiently.[185] Moreover, these systems can be

178. *See* Doremus, *supra* note 173, at 1094 (noting that in order to adapt to climate change, "[c]hanges in law will be necessary").

179. *See* A. Dan Tarlock, *The Future of Prior Appropriation in the New West*, 41 NAT. RES. J. 769, 772 (2001); MacDonnell, *supra* note 105, at 240; Karrigan Börk, *Time Limits for Western Water Rights*, 37 NAT. RES. & ENV'T 17, 17 (2022).

180. *See* Tarlock, *supra* note 179, at 772; Börk, *supra* note 179, at 18.

181. *See* MacDonnell, *supra* note 105, at 286.

182. *See* Benson, *supra* note 103, at 682.

183. *See* Frank J. Trelease, *Alternatives to Appropriation Law*, 6 DENV. J. INT'L L. & POL'Y 283, 292 (1976).

184. ELWOOD MEAD, IRRIGATION INSTITUTIONS 264, 365–66 (1903); *see also* THOMPSON, JR. ET AL., *supra* note 77, at 305 (citing MEAD, *supra*).

185. *See* Ludwik A. Teclaff, *An International Comparison of Trends in Water Resources Management*, 7 ECOLOGY L.Q. 881, 899 (1979).

designed to subsidize some uses that may be less economically valuable but that are highly desirable from a social standpoint, such as certain types of crops or domestic uses.

If these and many other proposals for reform have existed for a long time, why then have they not been implemented? A number of barriers have contributed to the lack of adoption of aggressive legal change in this area of the law for decades, but two of them stand out and have one feature in common: the resistance comes from those who would become transition losers if these proposals were implemented. The first obstacle results from the fact that water reform that harms existing water users is typically faced with fierce opposition, which often makes it politically inviable.[186] The second complicating factor is a consequence of the constitutional protections afforded to water rights. Whenever water users see their rights affected by regulation, they have a strong incentive to file a claim arguing that their property has been taken without just compensation.[187] As explained below, some of these claims have succeeded.[188] It is worth noting that this problem is not limited to water law alone. As Professor Holly Doremus has put it, "[t]he chief legal impediment to climate adaptation at the moment is federal court resistance to changes in property rules."[189] However, as explained below, how the transition is structured, including its treatment of existing rights, can have a profound effect on its ultimate success.

III. THE DELAYED IMPLEMENTATION PROPOSAL AND POLICY CONSIDERATIONS

A. The Proposal

In order to achieve the goals that changes in water allocation systems pursue, it is critical that these modifications apply not only to new water rights but also, and primarily, to those that already exist at the time of the enactment of the reform. Stated differently, the new rule should not provide

186. Teclaff, *supra* note 185, at 888; *see, e.g.*, Mark Olalde, *Why the Second-Driest State Rejects Water Conservation*, PROPUBLICA (Dec. 16, 2021, 6:00 AM), https://www.propublica.org/article/why-the-second-driest-state-rejects-water-conservation [https://perma.cc/5SB6-BSEW] (explaining political strife over water in Utah).

187. *See generally* William J. Shapiro, *Fifth Amendment Taking Claims Arising from Restriction on the Use and Diversion of Surface Water*, 39 VT. L. REV. 753 (2015) (explaining takings claims in the water context, recent landmark decisions, and an analysis); *see also* Jeremy P. Jacobs, *Court Tosses Farmers' Takings Claim in Klamath Battle*, E&E NEWS (Nov. 14, 2019, 1:25 PM), https://www.eenews.net/articles/court-tosses-farmers-takings-claim-in-klamath-battle/ [https://perma.cc/HF5Y-CV8J].

188. *See infra* note 289 and accompanying text.

189. Doremus, *supra* note 173, at 1094.

for full legacying of existing uses.[190] Otherwise, as has been described in the legal transitions literature, the reform will be less effective because existing rights—which are exempt from the reform—become more valuable and their holders will be incentivized to maintain them for as long as possible.[191] Water law reform is particularly vulnerable to this problem because the number of existing rights—to which the legal change does not apply—far outweighs those that will be created rights for the foreseeable future even in the absence of a new rule tied to legacying.[192]

However, a reform that applies to existing rights will inevitably have retroactive effects. Consistently with the discussion on retroactivity in Part I, these are situations in which the new rule would be characterized as being *less retroactive* or *nominally prospective* because it affects rights created before the reform went into effect.[193] For example, if water right holders are obligated to pay a new fee or tax for their use of that resource, while they will only have to do so prospectively, the value of their right will likely decrease.[194] This raises the question of which form of transitional relief, if any, would be appropriate to address these retroactive effects.[195]

This Article proposes a form of delayed implementation. More specifically, the suggested approach is to give existing users an extended period of time to adapt to the reform. For instance, if the legislature of one of the many states in which water rights are perpetual would like to limit their duration to a five- or ten-year period, existing rights could be initially modified to expire in twenty or thirty years, leaving all other aspects of the right in their current form. Once that time has been reached, and if the state water allocation agency renews these rights, they would become subject to

190. As Professor Graetz noted, full legacying tends to delay or obstruct the achievement of the goals that motivate the reform. *See* Graetz, *supra* note 21, at 82.

191. Revesz & Kong, *supra* note 26, at 1626.

192. Due to the fact that a significant part of available flows has already been appropriated, it has become very challenging to obtain new water rights. *See* TROUT UNLIMITED, LANDOWNER'S GUIDE TO WASHINGTON WATER RIGHTS 28 (3d ed. 2019) (explaining the difficulty of obtaining new rights). A simple and very general search of water rights in Washington State illustrates this point. As of August 2024, there were 97,910 active water rights granted between January 1st, 1900, and December 31st, 2023. Of these active water rights, only 459 had been granted in 2023, suggesting that, to the extent that some new rights may be replacing older ones, the rate at which this process occurs is glacial. *Water Rights Search*, DEP'T OF ECOLOGY, https://appswr.ecology.wa.gov/waterrighttrackingsystem/WaterRights/WaterRightSearch.aspx [https://perma.cc/ZV7D-JM3S]. One of the main reasons that explains this situation is the priority rule in prior appropriation jurisdictions, which makes older rights more valuable. Neuman & Hirokawa, *supra* note 111, at 21; Douglas S. Kenney, *Prior Appropriation and Water Rights Reform in the Western United States*, *in* WATER RIGHTS REFORM: LESSONS FOR INSTITUTIONAL DESIGN 167, 172 (Bryan Randolph Bruns, Claudia Ringler & Ruth Meinzen-Dick eds., 2005) ("In the marketplace, senior rights are much more valuable than junior rights, since senior rights can be relied on in dry years when junior rights prove worthless.").

193. *See supra* note 62 and accompanying text.

194. *See id.*

195. *See* Teclaff, *supra* note 185, at 888–90 (listing some of the approaches that have been used to introduce water reforms in a variety of countries).

the standard five- or ten-year term. In contrast, new rights would not be affected by this transitional measure and would therefore be granted for five or ten years from the outset. Other types of changes, due to their more limited impact on existing uses, may require a shorter transitional period; for example, the imposition of an obligation on existing water users to stop diverting water from a stream at certain times of the year to allow for the maintenance of a minimum flow.

Regardless of the particular change and the timeframe provided to adapt to it, the suggested approach entails a present modification of the right—affecting the duration or other aspects of the use—that will likely have an immediate effect on its value.[196] The practical effects of the change, however, such as the obligation to discontinue the use or to conform to certain new requirements, will be delayed in time. In this respect, the proposal advanced in this Article shares many commonalities with the notion of amortization in the land use context or so-called "prospective grandfathering" of energy generation plants.[197] Unlike with the latter, however, where the prohibition on operating natural-gas-fired power plants would take effect thirty years into the future, thus allowing the construction and operation of new generation plants of this sort during the transitional period,[198] the mechanism this Article advocates for would apply to newly created rights immediately.

For the reasons outlined below, this strategy has the advantage that it may be used regardless of the particular change or changes the legislature would like to adopt. This may include, among others, modifications in how water allocation decisions are made, the introduction of priorities among water uses that did not exist before, limitations to withdrawals for environmental reasons, or the incorporation of duration requirements to theretofore perpetual rights.

A little-known transition in the regulation of water rights that took place in Spain in the 1980s provides an illustration of how this mechanism can operate in practice. A few years after the end of Franco's dictatorship and the adoption of a new constitution, the Spanish Congress passed a new statute transforming many of the critical features of existing water rights.[199] Two of these modifications are worthy of note. First, the legislature imposed time limitations on water rights, and, second, the statute created a

196. Kaplow, *supra* note 2, at 590.

197. Serkin & Vandenbergh, *supra* note 21, at 1061.

198. *See id.* at 1061–62, 1061 n.171.

199. Water Act (B.O.E. 1985, 189) (Spain). In addition to the changes noted in note 198 and its accompanying text, the statute also integrated surface water and groundwater management. *See id.* Preamble ("[I]t is no longer appropriate to distinguish between surface water and groundwater. Both are intrinsically related."); Luis Inaraja Vera, *Instream Flows in California and Spain: The Thorny Issue of Compensation*, 27 GEO. INT'L ENV'T L. REV. 199, 206 (2015).

framework to convert groundwater rights that had been considered private into more modern public rights—that is, a system in which water resources are owned by the government and water users acquire a right to use water subject to a myriad of conditions and requirements.[200]

Focusing on the first modification, the Spanish Water Act sets the maximum duration for water rights at seventy-five years.[201] In practice, however, water rights are granted for periods that are significantly shorter, such as twenty years.[202] The transitional section of the statute addressing this change provided that those holding water rights granted under prior legislation or acquired through adverse possession—which, in many cases, were perpetual—would be able to enjoy their rights for a maximum period of seventy-five years, unless the right was conferred for a shorter period.[203] As for the second key modification—that is, transforming private groundwater rights into rights of use of a public resource—the approach taken by the Spanish legislature was to offer water users the possibility of having their rights converted into public use rights.[204] Because the transition from full ownership to a right to use water was not necessarily an appealing one, the legislature incentivized water right holders to undergo that modification by granting additional protections against interference by other users compared to the original right.[205] The downside, however, was that this new right would be subject to a fifty-year time limitation.[206]

Although this model provides some valuable insights, this Article does not propose a wholesale adoption of this particular strategy.[207] While this delayed implementation approach has been largely successful—for

200. Water Act art. 57.4 (B.O.E. 1985, 189) (Spain) (setting the maximum duration for water rights); *id.* at Preamble ("[T]his approach imposes, therefore, as a development, the inclusion of groundwater within the public domain, extinguishing the right to appropriate them granted by the 1879 Act.").

201. *See id.* art. 57.4 (also explaining that more specific duration requirements may be provided in the hydrologic plans for particular watersheds).

202. While the Spanish Water Act sets a maximum of 75 years, watershed authorities decide the specific duration of water rights granted within their territory. The Cantábrico Oriental Watershed Hydrologic Plan, for example, provides that water rights will typically be granted for 20 years. Regulation Amending Watershed Hydrologic Plans art. 23.1 (B.O.E. 2023, 35) (Spain) ("[A]s a general rule, water rights will be granted for a term of 20 years.")

203. Water Act (B.O.E. 1985, 189) (Spain) at Transitional Provision 1.1.

204. *Id.* at Transitional Provision 3.1 (highlighting the optional nature of the choice); S.T.C., Nov. 29, 1988 (B.O.E., No. 307) (Spain).

205. Water Act (B.O.E. 1985, 189) (Spain) at Transitional Provision 3.2 (referencing the rule contemplated in the Transitional Provision 2.2 that provides that those water users who do not take advantage of this option will not be able to enjoy the protection conferred by the inclusion of the right in the Water Register); S.T.C., Nov. 29, 1988 (B.O.E., No. 307) (Spain) (explaining this same mechanism in section 6—i.e., *fundamento jurídico 6*—of the opinion).

206. Water Act (B.O.E. 1985, 189) (Spain) at Transitional Provision 3.1.

207. As noted earlier, the elimination of unexercised riparian rights in Washington State can also be viewed as a highly unusual example of delayed implementation. *See supra* notes 132–34 and accompanying text.

example, by allowing this transition to occur without triggering constitutional protections of property rights[208]—some of the choices made by the Spanish legislature would not be appropriate for other types of water allocation reforms. For example, a transition period of seventy-five years may delay the benefits of the new system to the point of rendering it worthless. Moreover, a model that makes the necessary modifications of certain water rights optional or voluntary is likely to be ineffective.

When redesigning water allocation systems and choosing the appropriate features of a transitional approach, there are a number of decisions that states would have to make, including whether the changes should apply to all existing rights and the length of the transitional period. While this Article does not suggest that a single model would be optimal for every water issue in every state—as with other aspects of water law, states may decide to tackle this process in different ways that reflect differing needs and values[209]—this Article argues in favor of using delayed implementation when states are planning to undertake a substantial transformation of their water rights system. Because a significant alteration of how the resource is managed will very often require including existing rights within the scope of the reform—which in turn raises the question of how to optimally deal with retroactive effects and transitional losses—delayed implementation is a particularly well-suited strategy in this context for the reasons explained in detail in the remainder of this Article.[210]

B. Policy Justifications: Fairness, Efficiency, and Political Viability

To justify that a particular form of transition relief—in this case, delayed implementation—is appropriate for a particular type of legal change, it is crucial to examine the following three main factors: fairness, efficiency, and political viability.[211] It is important to note at the outset that this analysis will often require balancing, as the fairest option may not also be the most efficient or politically viable.

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208. *See* Inaraja Vera, *supra* note 199, at 218–19.

209. For example, rainwater harvesting is virtually illegal in some states and allowed or even encouraged to different degrees in other states. Fed. Energy Mgmt. Program, Dept of Energy, *Rainwater Harvesting Tool*, FED. ENERGY MGMT. PROGRAM, https://www.energy.gov/femp/rainwater-harvesting-regulations-map [https://perma.cc/LZM8-RECQ].

210. *See supra* note 62 and accompanying text.

211. Masur & Nash, *supra* note 75, at 398 (mentioning, among potential factors, "concerns of efficiency," "political necessity," and "concerns of fairness"); Kaplow, *supra* note 2, at 550, 566, 571, 576 (noting factors that should be considered when formulating transition policy, which include efficiency, political feasibility, and fairness considerations); Nicholas S. Bryner, *The Green New Deal and Green Transitions*, 44 VT. L. REV. 723, 748 (2020) (listing very similar factors).

1. Fairness

While there is no universal notion of fairness, legal transitions may be criticized as unfair when, after people modify their behavior to conform to a set of rules, these rules change.[212] With legal transitions, it is critical to distinguish between the fairness of the legal reform itself and the fairness of the particular form of transition relief adopted, if any.

When focusing on the fairness of the *reform*, the first question to tackle is: Fairness to whom?[213] While the legal change may affect those whose legal rights are negatively impacted by the new rule, the new rule may also be addressing a situation that was unfair to other individuals to begin with. For example, a regulation requiring manufacturers of home appliances to provide information about energy efficiency is imposing a burden on that industry, but it is also solving the problem of consumers having insufficient information on this relevant feature of these products before they make a purchase. Therefore, it is worth noting that not changing that rule may result in sacrificing certain fairness concerns. In the water context, an initiative aimed at reallocating water so that this resource is used more efficiently and for more socially important uses will have winners and losers. Winners, of course, are all the parties who will be allowed to use more water, plus all the members of the public who will benefit directly or indirectly from a more rational management of water resources. Not moving forward with the reform will result in unfairness to those who would become winners under this more equitable model. Those who currently hold water rights that will be eliminated or transformed, on the other hand, may become the losers of the transition. This is only the case, however, if, after the change is implemented, they will be entitled to use less water than under the previous system. This will be the case for some existing water users but not for others.

More importantly, the extent to which this last category of individuals or corporations will be treated unfairly will also depend on whether the reform incorporates some form of transitional relief. To justify that delayed implementation comports with basic notions of fairness in the water context, it is necessary to employ a more detailed framework. As multiple authors have highlighted, in order for transition relief to be fair, it must

212. *See* Louis Kaplow & Steven Shavell, *Fairness Versus Welfare*, 114 HARV. L. REV. 961, 1000 (2001) (explaining that "it does not seem possible to adduce a general definition of notions of fairness because they are so many and varied"); Holly Doremus, *Takings and Transitions*, 19 J. LAND USE & ENV'T L. 1, 14 (2003).

213. Bryner, *supra* note 211, at 751.

address the reliance interests of those who, but for this relief, would lose with the transition.[214]

Reliance, in turn, includes a variety of considerations, mainly, the foreseeability of the change and the ability to adapt to it. The less foreseeable a particular change is, the stronger the argument to provide transition relief becomes.[215] Similarly, if affected parties are not in a position that allows them to adapt to change—either it is not possible for them to do so or there is insufficient time to adapt—transition relief is more necessary to avoid unfairness.[216] Starting with foreseeability, the relevant question is whether those who would be negatively affected by substantial changes to water use or allocation would foresee these modifications. Of course, the answer does not depend on whether specific water users actually anticipated—or claimed to have anticipated—the change. Because it is not uncommon for individuals to underestimate the risk of legal change, it is more appropriate to focus on whether water users *should have reasonably* expected a legal reform.[217] It is worth noting that it seems too harsh to require that those who lose with the transition anticipate the exact rule change that was ultimately adopted.[218] A more appropriate approach would be one that asks whether water users should have predicted some type of significant legal change that could result in the cancelation or modification of their rights.

One way to answer this question is to look at the frequency with which this has happened in the past. There have been numerous changes in water allocation systems affecting surface and groundwater rights in the past two centuries in the United States. Some of the most notorious examples include the transitions from common law riparianism to regulated riparianism in some states,[219] and to prior appropriation in others;[220] from common law

214. Huber, *supra* note 21, at 108 (highlighting the importance of reliance when analyzing the fairness of transition policy); Graetz, *supra* note 21, at 73, 74–83 (explaining that "[t]he predominant notion of fairness invoked by proponents of grandfathered effective dates is one of 'fairness as reliance'").

215. Shi-Ling Hsu, *Fairness Versus Efficiency in Environmental Law*, 31 ECOLOGY L.Q. 303, 316 (2004) (noting the American instinct that it is "unfair to impose regulatory burdens that could not have been reasonably foreseen"); Doremus, *supra* note 212, at 31 (noting that one of the factors affecting the fairness of a transaction is "the extent to which change was foreseeable in advance").

216. Doremus, *supra* note 212, at 31 (including "the ability of the landowner to adapt to [a] change" as one of the factors bearing on the fairness of a transition).

217. Fisch, *supra* note 50, at 1086 (highlighting that "the degree to which . . . expectations were reasonable" plays a crucial role in determining whether reliance interests are at stake); Graetz, *supra* note 21, at 75 (arguing that "an evaluation of the fairness argument . . . requires a determination of what kinds of expectations are to be considered reasonable" and that "fairness arguments based upon an individual's expectations that ignore the probability that the law will be altered are not persuasive").

218. Even legislators who are working on a new bill may be unable to predict the content of the final rule with accuracy, or even be sure of whether the initiative will be passed into law.

219. *See supra* Section II.A.2.

220. *See supra* Section II.A.1.

prior appropriation to a permit system based on that same doctrine;[221] and changes in groundwater allocation, including the implementation of managerial systems that displaced common law rules.[222] These changes, however, have consistently protected existing exercised rights. This is true for the vast majority of surface and groundwater transitions.[223]

A different strategy to determine if a particular type of legal change is foreseeable is based on whether there was a substantial amount of information available to the public suggesting the need for such a change. When one applies this standard to water resources, the answer is that the prospect of water reform started becoming apparent, at the latest, close to two decades ago, when multiple news outlets warned about how climate change would lead to reduced freshwater availability.[224] Thus, it would be hard to argue today that legal change consistent with this reality was unforeseeable. Moreover, the awareness that water has become scarcer has often resulted from direct observation by water users. For example, farmers who rely on groundwater for irrigation have had to dig increasingly deeper wells to reach the water table.[225]

Regardless of which of the two methods outlined above one decides to use to tackle the foreseeability question, the answer is that it is reasonable to expect some water use reform in the near future; the type and extent of such change is more uncertain. Taking this into account, the form of transitional relief that would be most appropriate is one that attenuates the

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221. Benson, *supra* note 103, at 682 (explaining that most Western states started, after 1890, to adopt statutory permit systems).

222. 2 WATERS AND WATER RIGHTS, *supra* note 117, § 23.01.

223. *See supra* notes 126–33 and accompanying text (transition from riparianism to prior appropriation); *see supra* notes 146–51 and accompanying text (transition from common law riparianism to regulated riparianism); *see, e.g.*, WASH. REV. CODE § 90.03.010 (2024) (providing that, in Washington State, the adoption of the code that created a permit system in that state, did not "lessen, enlarge, or modify . . . any existing right acquired by appropriation"); CAL. WATER CODE § 10720.5(b) (West 2024) (clarifying that the transition to a managerial groundwater system in California did not "alter[] surface water rights or groundwater rights under common law"); Mojave Pistachios, LLC v. Indian Wells Valley Groundwater Auth., No. 30-2021-01187589, 2022 Cal. Super. LEXIS 83471, at *8 (Cal. Super. Ct. Dec. 21, 2022) (confirming this natural reading of the California statute).

224. *See, e.g.*, Mark Townsend & Paul Harris, *Now the Pentagon Tells Bush: Climate Change Will Destroy Us*, THE GUARDIAN (Feb. 21, 2004, 8:33 PM), https://www.theguardian.com/environment/2004/feb/22/usnews.theobserver [https://perma.cc/NN2N-6996] (discussing the likelihood of megadroughts and dwindling water supplies); Ker Than, *The 100-Year Forecast: More Extreme Weather*, LIVESCIENCE (Oct. 19, 2006), https://www.livescience.com/4231-100-year-forecast-extreme-weather.html [https://perma.cc/Y7T3-GYA6] (noting that droughts were to be expected in the in the West); Shaila Dewan & Brenda Goodman, *New to Being Dry, the South Struggles to Adapt*, N.Y. TIMES (Oct. 24, 2007), https://www.nytimes.com/2007/10/23/us/23drought.html [https://perma.cc/WFE2-2L7J].

225. *With Climate Change, Farmers Dig Deeper for Water*, EPIC (July 30, 2019), https://epic.uchicago.edu/insights/with-climate-change-farmers-dig-deeper-for-water/ [https://perma.cc/VXG7-YQQ5]; David Pierson, *Farmers Drilling Deeper for Water as Drought Drags On*, L.A. TIMES (July 26, 2014, 5:00 AM), https://www.latimes.com/business/la-fi-drought-drilling-20140726-story.html [https://perma.cc/6DMT-9MD3].

harm caused by the legal change, while not necessarily insulating the affected parties from the full extent of such harm. Delayed implementation provides a good compromise between these two competing interests.

The other aspect of reliance—providing a reasonable opportunity to adapt to change—is also fully consistent with the decision to adopt delayed implementation. This holds true despite the fact that there can be a wide range of interests affected by the reform, which may include a water user's decision to invest in a new irrigation system, a company's hope to speculate and profit from the purchase of water rights in an area where the resource is scarce, or even a senior irrigator's hope that she will be able to lease her water rights in the future as a way to finance her plans to retire.[226] In all these cases, a carefully designed delayed implementation framework—which would postpone some of the economic effects of the transition—would, by definition, provide time to adapt.[227] It is worth restating that the goal is not to hold those who lose as a result of the reform completely harmless.[228] Thus, while a long delay—for example, 100 years—may be highly appealing to existing users whose rights will be curtailed, a postponement period that is excessively long will inhibit the benefits of the new rule, which goes against the primary goal of the reform.[229]

2. Efficiency

While efficiency is a key factor in determining the desirability of a transition or a specific form of transition relief, it is not uncommon for this concept to remain undefined during these types of discussions.[230] Professor Graetz suggested two definitions that would be helpful in this context, namely, Pareto superiority and the Kaldor-Hicks model, which provide the basis for cost-benefit analysis.[231]

A new rule would be Pareto superior, compared to the existing legal framework, if at least one person gains from the change and no person's

226. *See supra* note 18 and accompanying text.

227. States may even decide to provide a different timeline of implementation depending on the category of water user. For example, senior individuals whose main source of income results from—or is projected to result from in the near future—from the lease of water rights could enjoy a more lenient treatment.

228. *See supra* notes 193–95 and accompanying text.

229. *See id.* Full compensation would create similar issues, as taxpayers would have to bear the cost of ending a system that has unfairly allocated water resources to begin with. *See* Graetz, *supra* note 21, at 82 (raising a similar concern in the tax context).

230. Graetz, *supra* note 21, at 64 ("Although it has become rather common for scholars to utilize efficiency as one normative test of law and legal processes, analysts often leave unsaid exactly what they mean by efficiency.").

231. *See id.* at 67–69, 68 n.67.

position is made worse.[232] This approach is too restrictive to be useful for the types of legal change that this Article focuses on,[233] as there will always be transition losers when water allocation systems are modified. The Kaldor-Hicks model of efficiency instead relies on the idea that a new rule is superior if those who gain as a result of it would be able to compensate those who are harmed by it and still be better off after such payment.[234] For example, when a new airport is being built, there will be winners and losers, but if the benefits of the project would be greater than the harm it causes and, in theory, the former would be able to compensate the latter, the project would be consistent with the Kaldor-Hicks efficiency model.[235] It is not necessary for compensation to actually be paid.[236] In the airport example, determining who should compensate whom would be very challenging to do in practice.[237]

When examining the new rule, the goal should be to comply with the latter notion of efficiency and, therefore, at least generate more gains than losses.[238] It is far less obvious which type of transition relief, if any, would lead to the most efficient outcome. The following discussion addresses the relative efficiency of various strategies and compares each of them with delayed implementation.

Full compensation is a highly inefficient approach to dealing with transition losses that has been criticized on efficiency grounds for numerous reasons. First, it can inflate the value of investments. When it becomes the expectation that the government will provide this particular form of transitional relief—which can occur, for example, when compensation is frequently offered to address the harm caused by similar types of legal changes—investment in these domains tends to become more secure and therefore more valuable, leading to higher compensation payments.[239]

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232. Matthew D. Adler, *Cost-Benefit Analysis*, *in* ENCYCLOPEDIA OF LAW & SOCIETY: AMERICAN AND GLOBAL PERSPECTIVES 305, 305 (David S. Clark ed. 2007).

233. *See supra* Section II.B.2.

234. *See* Adler, *supra* note 232, at 305; Richard S. Markovits, *A Constructive Critique of the Traditional Definition and Use of the Concept of "The Effect of a Choice on Allocative (Economic) Efficiency": Why the Kaldor-Hicks Test, the Coase Theorem, and Virtually All Law-and-Economics Welfare Arguments Are Wrong*, 1993 U. ILL. L. REV. 485, 494; THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 417 (Peter Newman ed., 1st ed. 1998) (defining *Kalder-Hicks Compensation*).

235. Yusuf Sertaç Serter, *A Brief Survey on Law and Economics of Contract Law*, 9 JURID. TRIB. 126, 128 (2019).

236. *See id.*

237. *See id.*

238. *See* Fisch, *supra* note 50, at 1088 (explaining that efficiency arguments in the transition context tend to operate under the premise that "legal change has occurred because of a determination that the new rule is an improvement").

239. Barbara H. Fried, *Ex Ante/Ex Post*, 13 J. CONTEMP. LEGAL ISSUES 123, 127–28 (2003) ("If the government *precommits* to a policy of ex post compensation for transitions losses . . . [this] increases

There is no reason why this criticism would not apply to water resources. If potential buyers of such rights believe that they will be compensated whenever the government substantially interferes with their investment, water rights will be regarded as more valuable than they would otherwise be.[240] While it could be argued that delayed implementation may also increase the value of investments in water rights, there are reasons to doubt that it would do so to the same extent. Water right holders would not be receiving payments but merely time to adapt to change. Moreover, since the government would not have to pay compensation, the effect of this mechanism on the price of water rights would be far less problematic from the perspective of the efficiency of the transition, as this would not raise government costs in the same manner.

Another common criticism of the full compensation approach is that it reduces the overall gains of the reform and, in some cases, this may dissuade legislators and other policymakers from making efficient legal changes.[241] This is undoubtedly an issue when it comes to water law reform. However, a more complete analysis must take into account not only one side of the equation—that is, the cost to the government—but also the other side—that is, how the payment of compensation is reducing the cost borne by those who lose as a result of the transition. Even factoring this in, compensation is inefficient due to the administrative costs that it generates. In states with tens of thousands of water rights,[242] a reform that affects a significant share of existing water rights would require, at a minimum, the identification of affected rights and the determination of the compensation that should be paid to each user, which is likely to be a complicated and contentious process.[243] Moreover, in basins that have not been adjudicated—that is, those where there is still substantial uncertainty surrounding which water rights exist in the area, their legal status, and the amounts of water each user

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the expected private return to investment, since private investors anticipate being able to externalize some of the costs of their bet on the government.").

240. One of the reasons that explains why this happens is that, in these situations, the promise or expectation of compensation would be operating as free insurances. *See* William A. Fischel & Perry Shapiro, *Takings, Insurance, and Michelman: Comments on Economic Interpretations of "Just Compensation" Law*, 17 J. LEGAL STUD. 269, 270 (1988) (explaining that compensation can be viewed, according to some scholars, as an insurance substitute).

241. *See* Michelman, *supra* note 40, at 1222–23; Revesz & Kong, *supra* note 26, at 1586–87 (acknowledging this argument without endorsing it).

242. *See supra* note 192 (explaining that there are tens of thousands of water rights in Washington State).

243. Glynn S. Lunney, Jr., *A Critical Reexamination of the Takings Jurisprudence*, 90 MICH. L. REV. 1892, 1955 (1992) (noting that widespread provision of compensation can be burdensome due to the need to "identify[] the members of the concentrated group, determin[e] the appropriate amount of compensation, and collect[] and distribut[e] the compensation").

is entitled to—the process required before even determining the appropriate compensation would be long and resource-intensive.[244]

On the other hand, if state legislatures opt for a relatively uniform period of delayed implementation, the administrative burdens associated with the reform decrease sharply. It would no longer be necessary to determine how to compensate each user, thus eliminating the need—or, at the very least, removing the urgency—for state agencies or water courts to identify all the relevant water rights in their jurisdiction. If certain water users believe that they are entitled to compensation, they would have the burden of coming forward with the necessary information supporting their claims. As explained below, however, the vast majority of these claims should be ultimately unsuccessful.[245]

Moving on to full legacying, the main issue with this form of transitional relief is that, if the new rule is superior to the existing one, the expectation is that it would also be more efficient, so it is highly desirable to apply it as broadly as possible. With full legacying, the new rule's application is extremely limited.[246] In the water law reform context, we see an extreme application of this principle. As explained earlier, due to the fact that existing rights far outnumber those that are created every year after the reform becomes effective, a new rule that adopts full legacying would only apply, in the foreseeable future, to a small fraction of water rights and, therefore, would not generate significant net benefits.[247] A well-designed delayed implementation approach, on the other hand, is a far more desirable option. The new rule will apply to newly created rights under either model. However, unlike with full legacying, a delayed implementation approach would make the new rule applicable to existing rights. Even if this does not occur immediately, the total transition gains will eventually be much greater with delayed implementation than with full legacying.[248]

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244. Merely identifying the water rights that exist in a particular area—which is often done as part of so-called "adjudications"—can take a significant amount of time and resources. *See, e.g.*, John E. Thorson, Ramsey L. Kropf, Andrea K. Gerlak & Dar Crammond, *Dividing Western Waters: A Century of Adjudicating Rivers and Streams, Part II*, 9 U. DENV. WATER L. REV. 299, 343 (2006) (highlighting how long-lasting and resource-intensive this process is); State v. Acquavella (*In re* Determination of Surface Waters of the Yakima River Drainage Basin), 498 P.3d 911, 914 (Wash. 2021) (ending forty-four years of adjudication that began in 1977).

245. *See infra* Part IV.

246. Michael J. Graetz, *Retroactivity Revisited*, 98 HARV. L. REV. 1820, 1825 (1985) (pointing out that legacying sometimes reduces the benefits of the reform permanently).

247. *See supra* note 192 and accompanying text.

248. *See* Graetz, *supra* note 246, at 1826 (making a similar argument on efficiency grounds in favor of delayed implementation and partial implementation in the tax context). It is worth noting, however, that partial implementation—i.e., applying the new rule to a more limited number of parties—presents a similar problem as full legacying, that is, the positive effect of the new rule is not as great as it might have been if its retroactive effect, and, therefore, its scope, had been greater.

An additional downside of legacy clauses is the incentive they can create to overexploit the resource under certain circumstances.[249] A classic example of this is a new rule that attempts to improve the management of groundwater, while at the same time maintaining existing uses. A common way to preserve pre-reform rights is to allow those who were using the resource to continue doing so at their historic level, that is, if they were using X number of cubic feet per year, that will be the extent of their right under the new system.[250] As with any system where full legacying is based on previous use, users of the resource are incentivized to increase their use before the new rule goes into effect in order to maximize the baseline and, in turn, the scope of their rights.[251] To be sure, this incentive to overuse the resource would not exist if the new rule included a historic period that ended before the time when the proposal for the new legislation was initially discussed or made public. In these instances, resource users would not be able to change their consumption for the purposes of increasing the baseline as, by the time they learn about the new rule, they would no longer be able to affect that baseline.[252]

Another option to consider is providing no transition relief at all. This approach to transition relief has been widely regarded as optimal from an efficiency standpoint.[253] There are, however, two important reasons why this conclusion is not accurate at least in the water law context. First, given

249. Other forms of transition relief may create similar incentives. For example, delayed implementation may incentivize an increase in the use of the resource to maximize their gains before the right expires. However, the disruptive effect of this behavior is time-limited in the case of delayed implementation—given that these existing rights have an expiration date—whereas, with legacying, the increased use will be protected and, therefore, will continue to burden the new system long after the new rule goes into effect.

250. The Edwards Aquifer Authority Act provides an illustration of this approach. The Act allowed preexisting users to continue withdrawing water after the reform went into effect, and their withdrawal rate was to be calculated based on use during the historic period (i.e., from June 1, 1972 to May 31, 1993). Edwards Aquifer Authority Act, 1993 Tex. Gen. Laws 2350, § 1.16(a), (e); Edwards Aquifer Auth. v. Day, 369 S.W.3d 814, 819 (Tex. 2012); Amy Hardberger, *New Strategies for Groundwater Litigation in Texas*, 46 WM. & MARY ENV'T L. & POL'Y REV. 355, 361–62 (2022).

251. Maria Damon, Daniel H. Cole, Elinor Ostrom & Thomas Sterner, *Grandfathering: Environmental Uses and Impacts*, 13 REV. ENV'T ECON. & POL'Y 23, 29 (2019).

252. In the case of the Edwards Aquifer, the bill was introduced in the Senate in early May 1993, *see Bill: SB 1477*, TEX. LEGISLATURE ONLINE HIST., https://capitol.texas.gov/billlookup/History.aspx?LegSess=73R&Bill=SB1477 [https://perma.cc/P6F7-SZSG] (noting that the bill was received by the Secretary of the Senate on May 5, 1993), and the historic period ended on May 31, 1993, Edwards Aquifer Authority Act, 1993 Tex. Gen. Laws 2350, § 1.16(a). However, the push to regulate withdrawals in the area had started decades before the passage of this legislation. *See* William Gene Adams, Jr., The Protracted Dispute Over the Edwards Aquifer: Revisiting and Reframing Multiparty Stakeholder Conflicts in Management, Regulation, Allocation, and Property Rights 35–40 (Dec. 2016) (Ph.D dissertation, Texas State University) (on file with author).

253. Revesz & Kong, *supra* note 26, at 1587–91 (explaining that various scholars consider transition relief undesirable); SHAVIRO, *supra* note 47, at 88–91 (arguing that common forms of transition relief present an asymmetry in gains and losses); Kaplow, *supra* note 2, at 550–51 ("Subsection I states the conclusion that transitional relief is generally inefficient . . . .").

that water rights are considered property for the purposes of the Takings Clause, a significant legal reform that affects existing water rights but does not provide any form of transition relief is very likely to lead to takings liability.[254] The two likely outcomes after the courts make this determination are highly inefficient. If the reform remains in place, the issues described above with respect to the compensation scenario would apply.[255] If the legal change is reversed, some of the transition costs would have already been incurred while the benefits of the reform would be forgone. If, however, delayed implementation were incorporated into the new rule, the change would be less abrupt and, as a result, the likelihood that courts would find that taking has occurred would be significantly reduced.[256]

The second reason why adopting this type of reform without any form of transition relief is undesirable from an efficiency standpoint is that, as some scholars have noted, unlike with delayed implementation, the lack of transition relief can lead to underinvestment in socially desirable projects, especially if change becomes frequent.[257] This argument applies with full force to water allocation. For example, if states reallocate water very frequently without providing any form of transition relief, it is reasonable to expect that incentives to invest in technologies that increase water efficiency—which require a certain period of time to pay for themselves—would be significantly weaker.

3. Political Viability

When policymakers are considering the appropriateness of legal change to address the shortcomings of an existing framework, they are often subjected to pressure by two types of groups. Those who favor the change will advocate for its adoption while parties who will be made worse off by the reform will oppose it.[258] Transition relief can be used to alleviate some of the concerns that parties who are attempting to resist the change have,

254. Inaraja Vera, *supra* note 24, at 303, 307 (concluding that appropriative surface water rights are property for takings purposes and suggesting that a similar conclusion may be warranted for riparian water rights). This explains why constitutional protections against uncompensated takings can be viewed as transition policy. *See* Kaplow, *supra* note 2, at 563.

255. *See supra* notes 238–41 and accompanying text.

256. *See infra* Part IV.

257. Masur & Nash, *supra* note 75, at 399–400 (explaining that "the availability of transition relief may induce actors to undertake voluntary projects" (citing Jonathan Masur, *Judicial Deference and the Credibility of Agency Commitments*, 60 VAND. L. REV. 1021, 1041–47 (2007)) and concluding that "time-limited transition relief might be necessary in some situations to encourage welfare-enhancing investments"); Doremus, *supra* note 212, at 16 ("Another efficiency concern is the worry that an unstable regulatory climate will inhibit investment, particularly investment that takes a long period of time to mature.").

258. *See* Huber, *supra* note 21, at 111–12; *supra* note 31 and accompanying text.

thereby decreasing their opposition and making the reform more politically viable.[259]

By this same logic, the likelihood that many of the desirable changes to water law outlined in Part II will be adopted should be expected to increase if transition relief is provided.[260] However, depending on the specific approach chosen, the outcome may vary. Legacying is widely regarded as a particularly effective strategy to facilitate the adoption of a reform, and it is one that reduces wasteful lobbying expenses.[261] Professors Richard Revesz and Allison Westfahl Kong, however, explain that legacy clauses incentivize those who know they will be shielded from the new rule to increase their lobbying efforts—and therefore, their expenditure of economic resources—to advocate for its adoption because the new framework will typically treat new players more harshly, providing existing players, who are not subject to it, with a competitive advantage.[262] In the water context, legacying should significantly facilitate the adoption of the legal change, as evidenced by the fact that past water law transitions that have been successful—mainly that from common law to regulated riparianism—have relied to a substantial degree on this form of transition relief.[263] The undesirable outcomes described by Revesz and Kong could also be relevant to some types of water reform, for example, if the rule were to adopt more stringent and costly water efficiency requirements or if the obligation to maintain instream flows applied to new water users only.[264] With delayed implementation, however, the incentive to increase lobbying expenses to support a more stringent rule would be diminished given that even existing water users would eventually be subject to the new framework once the transitional period ends.

Compensation would also have the effect of appeasing those who would otherwise be inclined to oppose the change.[265] However, this approach also has downsides. As Professors David Dana and Susan P. Koniak have noted, if compensation is to be provided to transition losers, these economic resources will have to come from other programs, ultimately making this decision politically costly and potentially jeopardizing the adoption of the reform.[266] This issue could easily arise with changes to water allocation systems as, in addition to the extremely high transaction costs it would

259. David Dana & Susan P. Koniak, *Bargaining in the Shadow of Democracy*, 148 U. PA. L. REV. 473, 483 n.24 (1999); Levmore, *supra* note 30, at 1665–66; Kaplow, *supra* note 2, at 604–05.

260. *See supra* Section II.B.

261. Dana & Koniak, *supra* note 259, at 483 n.24 ("Grandfather clauses . . . may well facilitate the passage of reform legislation.").

262. Revesz & Kong, *supra* note 26, at 1626.

263. *See supra* notes 146–51 and accompanying text.

264. Revesz & Kong, *supra* note 26, at 1626.

265. Lunney, *supra* note 243, at 1955.

266. Dana & Koniak, *supra* note 259, at 483 n.24.

entail,[267] the amount of compensation that would need to be paid would be significant enough to require a wide redistribution of public resources.[268]

Delayed implementation, as a form of transition relief, should be expected to increase the political viability of the legal change. Even though existing right holders are not completely insulated from the change, the effects of the reform they will experience will take place in the future and will therefore be attenuated, decreasing their incentive to oppose the reform as vigorously as they may otherwise do. This may be more noticeable in instances where, as discussed above, the legal change will put existing users at a competitive advantage during the transitional period.[269] A potential downside of delayed implementation, however, is that transition losers may try to lobby to reverse the reform or to extend this form of temporal relief when the transitional period is approaching its end.[270]

* * *

Based on this analysis of delayed implementation in the water reform context, it becomes clear that delayed implementation can adequately balance fairness concerns while also increasing the political viability of a reform whose adoption would be unlikely to occur in the absence of any transition relief.[271] While legacying and compensation may increase, to a greater degree, the likelihood that the reform would be implemented, they both have critical flaws that make them ill-suited to facilitate these legal transitions.[272] First, compensation is highly inefficient and burdensome to implement particularly with comprehensive legal change and, second, legacying, by excluding existing users from the new rule, would seriously compromise the achievement of the reform's goals within a reasonable timeframe.[273] This approach, however, would have a limited utility if it nevertheless required the payment of compensation, not as a form of transitional relief chosen by the policymaker, but as a result of the application of the Takings Clause. Part IV explains why that is unlikely to occur.

267. *See supra* notes 239–41 and accompanying text.
268. *See supra* notes 174–75 and accompanying text.
269. *See supra* note 262 and accompanying text.
270. *See* Revesz & Kong, *supra* note 26, at 1628.
271. *See supra* Sections III.B.1, 3.
272. *See supra* Section III.B.3.
273. *See supra* Section III.B.2.

IV. WHY DELAYED IMPLEMENTATION SHOULD NOT TRIGGER TAKINGS PROTECTIONS

As Professor Holly Doremus highlighted in an influential Article, legal transitions and the takings doctrine are closely connected.[274] Therefore, in order to take full advantage of the benefits that delayed implementation can offer, it is critical to address why constitutional protections of property rights would not frustrate the viability and efficiency of a new rule. While one may be tempted to argue that, given how courts have addressed challenges to water or even land use transitions in the past, future reform of the kind outlined in Section II.B.2 would simply survive constitutional scrutiny, there are several reasons that justify examining the takings issue in more depth.[275] First, successful changes to surface water allocation systems that have eliminated riparian rights have typically affected *unexercised* rights only, not riparian rights that were already being used.[276] Second, while the transition to regulated riparianism limited the duration of some rights that had been perpetual up to that point, many of the states that took this course of action have been careful enough to favor the successive renewal of these existing rights.[277] Third, existing cases on groundwater takings, while helpful, do not provide a definitive answer to this question.[278]

274. Doremus, *supra* note 212, at 3.

275. Börk, *supra* note 179, at 19 ("There is strong evidence that takings protections do not limit most water rights regulations. State legislatures across the U.S. have repeatedly acted to regulate water rights . . . . Courts have generally upheld the constitutionality of these acts, with very limited exceptions.").

276. *See supra* notes 126–28 and accompanying text; *supra* Section II.A.2.

277. *See, e.g.*, GA. CODE ANN. § 12-5-31(f) (2022) ("In the event [of] two or more competing applicants or users . . . the director shall give preference to an existing use over an initial application."); FLA. STAT. § 373.233(2) (2011) ("In the event that two or more competing applications qualify equally under the provisions of subsection (1), the governing board or the department shall give preference to a renewal application over an initial application."); MISS. CODE. ANN. § 51-3-9(1) (2020) ("The permit shall be reissued to the permit holder unless his continued use is found to be contrary to the public interest."); *see also supra* notes 150–51 and accompanying text (explaining that even states whose statutes do not grant this favorable treatment have nevertheless adopted this practice).

278. Some of these cases address very specific and relatively minor changes. *See, e.g.*, Jacobs Ranch, L.L.C. v. Smith, 148 P.3d 842, 846 (Okla. 2006) ("The challenged legislation imposes moratoria on 1) issuing temporary permits that would lead to any additional municipal or public use of water from a sensitive sole source groundwater basin at locations outside of the basin . . . ."). Other cases reveal that regulatory changes often give preference to existing water users, effectively legacying them. *See, e.g.*, Edwards Aquifer Auth. v. Day, 369 S.W.3d 814, 819 (Tex. 2012) ("The Act gives preference to 'existing user[s]'—defined as persons who 'withdr[ew] and beneficially used underground water from the aquifer on or before June 1, 1993'—and their successors and principals."). In some instances, the court implied that the new regulatory framework was consistent with the previous common law rule, which would, of course, preclude a finding that the plaintiff's right has been taken. *See, e.g.*, Bamford v. Upper Republican Nat. Res. Dist., 512 N.W.2d 642, 652 (Neb. 1994) (explaining that the common law rule in the state did not allow a landowner to "extract and appropriate them in excess of a reasonable and beneficial use upon the land which he owns," (quoting Olson v. City of Wahoo, 248 N.W. 304, 308 (Neb. 1933)), and that, therefore, it was not improper for the government to "plac[e] limitations upon

Lastly, analogizing this process to amortization to conclude that a new rule does not effect a taking[279] also overlooks the fact that this mechanism is viewed as unconstitutional in some states,[280] and, in states that allow it, courts often require that the new framework be examined under the Takings Clause.[281] The remainder of this section takes on that task.

A. The Hardest Question: Should Water Law Reform Be Analyzed as a Potential Physical Taking?

It is undoubtedly possible to portray the distinction between physical and regulatory takings as a relatively straightforward one, for instance, by relying on the following simple and clear-cut examples: a permanent physical invasion of someone's property by the government will be treated as a physical taking whereas a regulation that limits the activities that the owner or other possessor of a piece of land can carry out on it is more likely to be viewed as a *potential* regulatory taking.[282] However, given that the issue at hand—water rights and government interference therewith—is often viewed as a gray area falling within these two extremes, a more careful characterization of this distinction is in order.[283]

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withdrawals of ground water in times of shortage" (citing Sporhase v. Nebraska *ex rel.* Douglas, 458 U.S. 941, 956 (1982))).

279. *See* Ling-Yee Huang, *Fifth Amendment Takings & Transitions in Water Law: Compensation (Just) for the Environment*, 11 U. DENV. WATER L. REV. 49, 87 (2007) (claiming that amortization provides a "robust framework upon which to uphold" changes in water law to improve conservation); Abrams, *supra* note 91, at 613 (arguing that the use of amortization in water law transitions can be an effective way of weakening takings claims).

280. Joseph Michaels, *Amortization and the Constitutional Methodology for Terminating Nonconforming Uses*, 41 URB. LAW. 807, 814 (2009) ("On several occasions, the Supreme Court has refused to accept certiorari on questions of whether an amortization constituted a taking."); Julie R. Shank, Note, *A Taking Without Just Compensation? The Constitutionality of Amortization Provisions for Nonconforming Uses*, 109 W. VA. L. REV. 225, 235 (2006) ("[A] majority of state courts have held that amortization provisions are *per se* constitutional . . . . [But] some state courts have held that amortization provisions are *per se* unconstitutional.").

281. *See, e.g.*, Ga. Outdoor Advert., Inc. v. City of Waynesville, 900 F.2d 783, 786 (4th Cir. 1990) ("Not only does the presence of an amortization provision fail to validate automatically a land use ordinance, the absence of a provision for compensation does not invariably render such an ordinance an unconstitutional taking."); Michael Lewyn, *Twenty-First Century Planning and the Constitution*, 74 U. COLO. L. REV. 651, 703 (2003) ("[A]mortization . . . is subject to the case-by-case balancing test enunciated in *Penn Central*.").

282. Cedar Point Nursery v. Hassid, 594 U.S. 139, 147–48 (2021) ("[T]he government [commits a physical taking when it] physically takes possession of property without acquiring title to it. When the government . . . instead imposes regulations that restrict an owner's ability to use his own property, a [regulatory takings] standard applies." (citing United States v. Pewee Coal Co., 341 U.S. 114, 115–17 (1951) & Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 535 U.S. 302, 321–22 (2002))).

283. Some scholars view interference with water rights as physical takings while others have concluded that they should be examined under a regulatory takings rubric. *Compare* James L. Huffman, Hertha L. Lund & Christopher T. Scoones, *Constitutional Protections of Property Interests in Western Water*, 41 PUB. LAND & RES. L. REV. 27, 43 (2019) ("[A]ny government action that limits a water right

Professor John Echeverria has highlighted the importance of differentiating between two types of physical takings: occupations and appropriations.[284] Occupations can be defined as "physical invasions of private property (typically land) by government officials or private citizens acting with governmental authority."[285] Appropriations, on the other hand, occur when the government transfers someone's vested right to itself or to a third party.[286]

Water law reform would not constitute an occupation of a property right. Water rights are considered a right to use water rather than full ownership of that resource, which has led courts and scholars to repeatedly refer to them as "usufructuary."[287] While these rights are nevertheless considered property for takings purposes, their usufructuary nature essentially means that ownership and use rights are held by different parties. Ownership of the resource is typically vested in the people of the state—or the state for the benefit of its people—while water right holders are entitled to *use* the resource.[288] As a conceptual matter, it is highly questionable that a right to use could be physically invaded.[289] Consistently with this notion, the Supreme Court has held that the permanent government flooding of a property—the quintessential example of occupation[290]—that effectively terminated an easement held by a third party should be viewed as an

holder from using the water constitutes a per se, physical taking."), *and* Jesse W. Barton, Tulare Lake Basin Water Storage District v. United States*: Why It Was Correctly Decided and What This Means for Water Rights*, 25 ENVIRONS: ENV'T L. & POL'Y J. 109, 120 (2002) ("[T]here are very good reasons that restrictions on water rights are treated as *per se* or physical takings for Fifth Amendment purposes."), *with* John D. Echeverria, *Is Regulation of Water a Constitutional Taking?*, 11 VT. J. ENV'T L. 579, 589 (2010) (concluding that regulatory takings provide the appropriate analysis in these cases).

284. John D. Echeverria, *What Is a Physical Taking?*, 54 U.C. DAVIS L. REV. 731, 747 (2020) (explaining that "a careful reading of Supreme Court cases suggests the Court may perceive two distinct categories of physical takings," while acknowledging that the Court sometimes uses these terms interchangeably).

285. *Id.* at 748; *Tahoe-Sierra Pres. Council*, 535 U.S. at 322 (explaining that a per se taking occurs when "the government occupies the property for its own purposes").

286. *See* Echeverria, *supra* note 284, at 747; Lingle v. Chevron U.S.A. Inc., 544 U.S. 528, 537 (2005) ("The paradigmatic taking requiring just compensation is a direct government appropriation or physical invasion of private property." (citing *Pewee Coal*, 341 U.S. 114)); *Cedar Point*, 549 U.S. at 150–52 (describing the limitation of a real estate developer's right to exclude resulting from the creation of a public easement as an appropriation).

287. *See* Mineral Cnty. v. Lyon Cnty., 473 P.3d 418, 430 (Nev. 2020); Desert Irrigation, Ltd. v. State, 944 P.2d 835, 842 (Nev. 1997); Kobobel v. State Dep't of Nat. Res., 249 P.3d 1127, 1134 (Colo. 2011); Navajo Dev. Co. v. Sanderson, 655 P.2d 1374, 1377 (Colo. 1982); Sandra B. Zellmer & Jessica Harder, *Unbundling Property in Water*, 59 ALA. L. REV. 679, 735 (2008); Shelley Ross Saxer, *The Fluid Nature of Property Rights in Water*, 21 DUKE ENV'T L. & POL'Y F. 49, 53 (2010).

288. Inaraja Vera, *supra* note 24, at 310–11.

289. *See* Dave Owen, *The Realities of Takings Litigation*, 47 BYU L. REV. 577, 628 (2022).

290. *See Cedar Point*, 549 U.S. at 151 ("[W]here government action results in a 'permanent physical occupation of the property, our cases uniformly have found a taking to the extent of the occupation . . . .'" (quoting Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 434–35 (1982))).

appropriation of that right.[291] This shows that, even when the property held in fee is the subject of a physical invasion, the elimination of use rights that may accompany it is better regarded as a potential appropriation. Moreover, the courts that have analyzed restrictions on water rights as physical takings have also endorsed the approach that the relevant government interference had appropriated—and, thus, not occupied—such rights.[292]

If water law reforms should not be considered occupations of water rights, should they be viewed as appropriations instead? Based on Supreme Court precedent and other case law dealing with takings claims of water rights, the answer is "no." The regulation of water rights that would result from the types of water law reform outlined above—such as changing the priority, reducing the scope, or limiting the duration of the water right—would not constitute a transfer of water rights from their holders to the government or a third party, which is what the Supreme Court has typically required before finding that an appropriation has occurred.[293]

The following cases illustrate this distinction between appropriations of a right, which are subject to a per se physical takings rule, and regulation of that right, which should be examined under the regulatory takings rubrics outlined below. In *United States v. Pewee Coal Co.*, the government took possession of a coal mine, and the operator of the mine filed a claim alleging that it was entitled to compensation.[294] The Court viewed the federal government's action as an appropriation and concluded that it had taken the "property and [had become] engaged in the mining business."[295] A similar

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291. United States v. Welch, 217 U.S. 333, 339 (1910) ("We perceive no reason why [an easement] should not be held to be acquired by the United States as incident to the fee for which it admits that it must pay. But if it were only destroyed and ended, a destruction for public purposes may as well be a taking as would be an appropriation for the same end.").

292. *See, e.g.*, Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1289, 1294 (Fed. Cir. 2008) (explaining that in a similar case the Supreme Court had found that the government action that led to the taking of the plaintiff's water rights was an appropriation, and, later in the opinion, concluding that a physical taking of *Casitas*'s water rights had occurred as a result of a "physical appropriation by the government"); Klamath Irrigation v. United States, 129 Fed. Cl. 722, 734, 734 n.5 (2016) (insisting that the case before it was analogous to both *Casitas* and previous Supreme Court cases in which the Court had found a taking because the plaintiff's rights had been *appropriated* by the government); Tulare Lake Basin Water Storage Dist. v. United States, 49 Fed. Cl. 313, 319–20 (2001) (concluding that there was no basis for distinguishing a prior Supreme Court case that had ruled that the interference by the government with the plaintiff's water rights "constitute[d] an *appropriation* of property for which compensation should be made" (emphasis added)).

293. *Cedar Point*, 594 U.S. at 139 (distinguishing appropriation from regulation and describing the former as an appropriation by the government of "private property for itself or a third party" (citing Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 535 U.S. 302, 321–22 (2002))).

294. United States v. Pewee Coal Co., 341 U.S. 114, 115 (1951).

295. *See id.* at 116–17 (explaining the applicability of a prior case in which the Court had concluded that it "treated that seizure as making the mines governmental facilities 'in as complete a sense as if the Government held full title and ownership'" (quoting United States v. United Mine Workers, 330 U.S. 258, 284–85 (1947)) and then noting that it followed from that case that "the Government here 'took' Pewee's property and became engaged in the mining business").

analysis can be found in *United States v. Welch*, where the government's construction of a dam permanently flooded a plot of land.[296] The United States had condemned the fee simple, but the plaintiffs had not been compensated for the loss of an easement they held over that parcel.[297] The government was using that property after it was flooded, so the Court treated this situation as an appropriation of that right by the government as an incident to the acquisition of the fee simple and found that a taking had occurred.[298]

In contrast, in *Pennsylvania Coal Co. v. Mahon*, where a state statute forbade the mining of coal in situations in which this activity could lead to subsidence of the surface, the Court acknowledged that the statute had the effect of destroying property rights, but nevertheless examined its constitutionality under a regulatory takings rubric.[299] The same approach was followed in *Keystone Bituminous Coal Ass'n v. DeBenedictis*, which involved a very similar statute.[300] In that case, the Court noted that no appropriation of the plaintiffs' right had occurred, and examined the claim under a regulatory takings test.[301] Regulatory actions that get even closer to an appropriation than any of the suggested water law reforms have also not been viewed as such by the Court. In *Texaco, Inc. v. Short*, a statute that provided that, under certain circumstances, a mineral estate that remained unused for at least twenty years would be extinguished and transferred to a different party—that is, the owner of the surface rights—was not a taking.[302]

It could be argued, however, that imposing a time limitation on a perpetual right or otherwise reducing the diversions or withdrawals that water users can make is *akin to* an appropriation because the water will end up being used by someone else—for example, a water user who is able to

296. *Welch*, 217 U.S. at 338.

297. *See id.*

298. *Id.* at 339 ("We perceive no reason why [the easement] should not be held to be acquired by the United States as incident to the fee for which it admits that it must pay.").

299. Pa. Coal Co. v. Mahon, 260 U.S. 393, 413, 414, 415 (1922) (noting that the statute "is admitted to destroy previously existing rights of property" and "purports to abolish what is recognized in Pennsylvania as an estate in land—a very valuable estate," but ultimately analyzing it as a potential regulatory taking as evidenced, among other things, by the phrase "[t]he general rule at least is, that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking"); Melinda Harm Benson, *The* Tulare *Case: Water Rights, the Endangered Species Act, and the Fifth Amendment*, 32 ENV'T L. 551, 584 (2002).

300. 480 U.S. 470, 481–82 (1987).

301. *Id.* at 492–93, 499 n.27 (explaining that petitioners had failed to satisfy the requirements for a regulatory taking and that the government's action was not an appropriation).

302. *See* Texaco, Inc. v. Short, 454 U.S. 516, 518, 530 (1982) (concluding that this regulatory action was not a taking requiring compensation). Of course, the Court could only reach that conclusion if no appropriation of the right had occurred. Otherwise, the Court would have had to apply a per se takings rule and require the government to pay compensation. *See* Horne v. Dep't of Agric., 576 U.S. 351, 357–58 (2015) ("There is no dispute that the 'classic taking [is one] in which the government directly appropriates private property for its own use.' Nor is there any dispute that, in the case of real property, such an appropriation is a *per se* taking that requires just compensation." (citations omitted)).

secure a water right in the future or the public if that part of the resource is left in the stream.[303] As the Supreme Court has made clear, however, it is the character of the action, rather than its effect, that determines the framework through which a takings claim should be evaluated. In *Cedar Point Nursery v. Hassid*, a case in which the legislature had appropriated and transferred a right of access to the plaintiff's property, the Court commented on a case decided a few years earlier, *Horne v. Department of Agriculture*, and explained that "[t]he physical appropriation by the government of the raisins in that case was a *per se* taking, even if a regulatory limit with the same economic impact would not have been."[304] Moreover, in *Lucas v. South Carolina Coastal Council*, the court acknowledged that the action by the government effected a total deprivation of the beneficial use of the plaintiff's parcel in a way that could be viewed as "the equivalent of a physical appropriation," but nevertheless did not analyze the claim as such and instead famously adopted a very narrow per se regulatory takings rule.[305]

While this distinction between appropriation and regulation may seem overly formalistic, it prevents a potentially limitless expansion of the per se rule. In most instances in which someone's right to use is being limited by a regulation, an argument can be made that a specific person, group of people, or the public has acquired some type of benefit.[306] The three cases discussed earlier provide an illustration of this principle and explain why it is the nature of the government's action, not its effect, that governs the determination of whether an appropriation has occurred.[307] In *Pennsylvania Coal* and *Keystone*, the statutes that were impinging on the plaintiffs' right to extract coal to ensure the integrity of the surface estate were tantamount to a transfer of that right to use to the parties who would be benefitting from that coal remaining in place to prevent the subsidence of their estate, that is, the owners of the surface rights.[308] Even though the practical impact on the

303. Barton, *supra* note 283, at 130–31 ("A water right . . . enjoys different rights and among these different rights is the core right—the right to use. As is true with other property interests, an infringement or extinguishment of this core right renders any other subsidiary rights associated with the property useless and should result in a *per se* treatment of the taking . . . ."); *see* Huffman, Lund & Scoones, *supra* note 283, at 49 ("This 'appropriation' inquiry readily applies to appropriative water rights given that 'it is the character of the invasion, not the amount of damage which results from it[] that determines whether a taking occurred.'" (quoting Baird v. United States, 5 Cl. Ct. 324, 329 (1984))).

304. Cedar Point Nursery v. Hassid, 594 U.S. 139, 152 (2021).

305. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1017 (1992).

306. *See* Echeverria, *supra* note 283, at 601 ("[I]nterpreting the term appropriation in [a] broad sense . . . would . . . convert virtually every regulation into a per se taking.").

307. *See supra* notes 298–303 and accompanying text.

308. *See* Pa. Coal Co. v. Mahon, 260 U.S. 393, 412–13 (1922) (explaining that the statute prohibits mining to protect structures used as human habitation by the surface owners); Keystone Bituminous Coal Ass'n v. DeBenedictis, 480 U.S. 470, 476–77, 500 (1987) (noting that the goal of the statute is to

plaintiffs was akin to that of an appropriation, the Court focused on the character of the government action and did not find that it effected a physical taking.[309] Moreover, in *Texaco*, the goal of the statute was to extinguish certain unused mineral interests.[310] Its obvious practical effect, however, was to transfer that interest to the surface owner.[311] Although even the potential recipients of these mineral rights had been identified in the statute, the Court concluded that no taking—including, of course, a physical taking—had taken place.[312]

A final point on whether water rights restrictions or cancellation could potentially be a physical taking is in order. It may be argued that actions limiting water rights should be viewed as appropriations given that they affect the water user's right to exclude.[313] When analyzing this issue, it is essential to take into account that the right to exclude in the water context is markedly different from that which landowners have over their land. A water user's right to exclude has two separate dimensions.[314] First, the holder of the right can prevent others from taking the water that she has already diverted or withdrawn.[315] Second, she may exclude others from diverting, withdrawing, or otherwise intercepting water that she is entitled to use before it reaches her point of diversion.[316] Some courts have found

protect certain buildings from subsidence that may result from the removal of coal by the owner of the subsurface estate).

309. *See Pa. Coal*, 260 U.S. at 415 (analyzing the government action as a potential regulatory—not physical—taking); *Keystone*, 480 U.S. at 501–02 (concluding that no taking—of any kind—had taken place).

310. Texaco, Inc. v. Short, 454 U.S. 516, 518 (1982).

311. The dissent highlighted that the mineral interests were "effectively transferred to the surface owner." *Id.* at 550 (Brennan, J., dissenting). While this is unquestionably true, the majority did not consider that this justified concluding that the right had been taken by the government. *Id.* at 530.

312. *See id.*; *see also* United States v. Locke, 471 U.S. 84, 103–07 (1985) (applying a regulatory takings approach in a context very similar to that in *Texaco*).

313. Barton, *supra* note 283, at 132 ("Thus, the right to use, the chief characteristic of a water right, necessarily includes the right to exclude others from using the water . . . . [Therefore,] interference with it is more likely than any other right to result in a taking."); *see* Huffman, Lund & Scoones, *supra* note 283, at 48–49 (suggesting that the rationale that government interference with the right to exclude results in a physical taking should be applied to water).

314. *See* Josh Patashnik, *Physical Takings, Regulatory Takings, and Water Rights*, 51 SANTA CLARA L. REV. 365, 392 (2011) (differentiating between excluding others from "removing water from a river or stream, if their doing so would impede her ability to withdraw her full allotment of water," on the one hand, and, after water has been diverted, "exclud[ing] others from the use of any particular molecule of water"); *see also* Inaraja Vera, *supra* note 24, at 284–85 (explaining the two dimensions of water rights, i.e., "present" and "future" water).

315. *See* Patashnik, *supra* note 314, at 392. This is consistent with the "present" component of the water right. Inaraja Vera, *supra* note 24, at 284.

316. *See* Inaraja Vera, *supra* note 24, at 295. The robustness and specificity of that entitlement will, of course, vary depending on the applicable water allocation doctrine. For example, it will be more clearly defined in a prior appropriation jurisdiction than in one governed by riparianism. *See id.*

that government actions that interfere with a water user's right to exclude in these two narrow scenarios may constitute a taking.[317]

The *Casitas Municipal Water District v. United States* case is a good example of the first scenario. The Bureau of Reclamation required the Casitas Water District to release water that it had previously diverted and that it was storing in its reservoir to support steelhead trout populations in the Ventura River.[318] The court concluded that this requirement should be examined under a physical takings framework because "the government did not merely require some water to remain in stream, but instead actively caused the physical diversion of water away from" Casitas's infrastructure.[319] The same is true with respect to the second scenario, that is, instances in which the government prevents water from reaching the water user's point of diversion or use. In *Dugan v. Rank* and *United States v. Gerlach Live Stock Co.*, water users claimed that the United States took their water rights as a byproduct of the construction of a dam.[320] The plaintiffs in *Gerlach* were owners of riparian grasslands adjacent to the San Joaquin River, which were naturally irrigated as a result of seasonal flooding.[321] The construction of the dam upstream from the plaintiffs' lands eliminated this seasonal overflow and the court recognized the right of the plaintiffs to not have the flow of the river intercepted without compensation.[322] In *Dugan*, the plaintiffs were located downstream from the same dam, and their claim was that the United States, by storing and then diverting water from the San Joaquin to areas different from the ones that were theretofore enjoying the water of the river, caused a diminution in the flow of the river and effectively (partially) took their water rights.[323] The Court concluded that the plaintiffs' claims should be analyzed as an

317. *See infra* notes 318–25 and accompanying text.

318. Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1291–92 (Fed. Cir. 2008). The Supreme Court case *International Paper Co. v. United States* has been cited as an example of a case in which water that was already in the water user's canal was then required to be released. 282 U.S. 399 (1931); *see also, e.g.*, United Water Conservation Dist. v. United States, 164 Fed. Cl. 79, 90–91 (2023). Although the Supreme Court used language in its opinion that could be read to support that version of the events—i.e., "the water that it used was withdrawn from the petitioner's mill," *Int'l Paper*, 282 U.S. at 407,—the Court explains earlier in the opinion that the plaintiff was drawing water to its canal from a canal owned by a water company and that its diversion was eventually shut off. *Id.* at 405–07. The lower court's opinion provides additional confirmation of that fact. Int'l Paper Co. v. United States, 68 Ct. Cl. 414, 429–30 (1929) (noting that the plaintiff "was notified that the water which it was then taking from the power company's canal was to be shut off . . . soon").

319. *Casitas*, 543 F.3d at 1291, 1296. This view was already present in the literature. Joseph L. Sax, *The Constitution, Property Rights and the Future of Water Law*, 61 U. COLO. L. REV. 257, 263 (1990) ("Under these standards, the only new water law regulation that would *prima facie* raise a taking problem is a release requirement . . . .").

320. Dugan v. Rank, 372 U.S. 609, 610 (1963); United States v. Gerlach Live Stock Co., 339 U.S. 725, 727–28 (1950).

321. *Gerlach*, 339 U.S. at 729–30.

322. *See id.* at 730, 754–55.

323. *Dugan*, 372 U.S. at 623.

appropriation,[324] which has been later recognized as a type of physical taking.[325]

The Supreme Court case *International Paper v. United States* is often invoked to support the claim that other government actions that do not actively redirect flows—by either requiring a release of flows already diverted or intercepting water before it reaches a water user's land or point of diversion—have been viewed as categorical takings by the Court.[326] A close examination of the Court's reasoning, however, suggests that this opinion does not provide adequate support for that argument. In that case, the executive requisitioned, and agreed to pay for, the total power that the Niagara Falls Power Company was able to produce using all of its water diversion, even though part of that water was being redirected and sold to International Paper.[327] Because International Paper could no longer divert water from the power company's canal to operate its facility, it sued the United States and claimed that it was entitled to compensation.[328] While the Court agreed with the plaintiff, it also made clear that the main reason why the United States was obligated to compensate International Paper was that the government had relied on its eminent domain power to "take the use of all the water power in the canal . . . [and] it promised to pay the owners of that power."[329] In other words, the government, by condemning the water and power, implicitly conceded that it had the obligation to pay for the power that the water in the canal could generate, and, therefore, all parties holding rights to that power, including International Paper, should be compensated.[330] This reasoning, which the Supreme Court later referenced and endorsed, shows that the Court's conclusion that International Paper

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324. *Id.* at 625 (noting that the government action "would constitute an appropriation of property for which compensation should be made").

325. *See supra* notes 284–86 and accompanying text.

326. Int'l Paper Co. v. United States, 282 U.S. 399 (1931); Patashnik, *supra* note 314, at 396 (explaining that *International Paper* is an example in which a mere and passive restriction on the use of water was analyzed as a categorical taking); Barton, *supra* note 283, at 133–34 (arguing that this case did not involve a physical diversion by the government but rather a regulation of use and, despite that fact, the court found that a taking had taken place); Huffman, Lund & Scoones, *supra* note 283, at 49–50 ("Although the government did not physically take over the operations of either Niagara Power or International Paper, nor did it physically direct the flow of water, the Supreme Court still found that the government directly appropriated water that International Paper had a right to use."). Another case used to make that same point is *Tulare Lake Basin Water Storage District v. United States*. 49 Fed. Cl. 313, 319 (2001). A few years after *Tulare* was decided, however, the same judge who issued the opinion explained that, in light of recent Supreme Court precedent, the better view was that these types of cases should be analyzed under the regulatory takings rubric. *See* Casitas Mun. Water Dist. v. United States, 76 Fed. Cl. 100, 105 (2007).

327. *Int'l Paper*, 282 U.S. at 404–06.

328. *See id.* at 404.

329. *Id.* at 408.

330. *See id.* at 407.

was entitled to compensation did not necessarily result from a finding that a physical taking of its water right had occurred.[331]

In sum, in light of the Supreme Court precedent, the types of reforms that this Article focuses on should not be viewed as a physical taking given that they cannot be characterized as either an occupation—water rights are not susceptible of being occupied—or an appropriation—the suggested changes do not involve a formal transfer of rights. This interpretation is also consistent with the broader insights that can be extracted from the most recent case law addressing these same distinctions in the context of very specific water-related takings disputes.

B. Why Limitations and Elimination of Water Rights in the Context of Broader Water Law Reform Should Not Be Considered a Lucas-Type Regulatory Taking

The Supreme Court in *Lucas v. South Carolina Coastal Council* confirmed its per se rule that a taking occurs when the government sacrifices a landowner's economically beneficial uses of their property thereby "leav[ing] [it] economically idle."[332] In that particular case, the plaintiffs' properties were rendered valueless by a state statute adopting a construction ban in certain coastal areas.[333] Although this rule could be reasonably viewed as limited to ownership of real property, other courts have applied it to more limited property interests such as leaseholds.[334]

The relevant question for the purposes of this Article is: To what extent would water law reform measures be considered a *Lucas*-type taking? The answer, of course, depends on whether the government actions in question would render the water right valueless.[335] In many instances, it will be easy

331. In *Gerlach*, for example, the Court quoted language in *International Paper* providing that the government "proceeded on the footing of a full recognition of [riparians'] rights and of the Government's duty to pay for the taking that [it] purported to accomplish," United States v. Gerlach Live Stock Co., 339 U.S. 725, 739 (1950) (quoting *Int'l Paper*, 282 U.S. at 407), to support its conclusion that "*whether required to do so or not*, Congress elected to recognize any state-created rights and to take them under its power of eminent domain," *id.* at 739. (emphasis added). The structure of this argument strongly implies that the Court interpreted its ruling in *International Paper* as also relying on the government's promise to pay, regardless of whether it was actually obligated to do so under the Constitution.

332. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1019 (1992).

333. *Id.* at 1020.

334. *See, e.g.*, Love Terminal Partners v. United States, 126 Fed. Cl. 389, 418 (2016), *rev'd sub nom.* Love Terminal Partners, L.P. v. United States, 889 F.3d 1331, 1343 (Fed. Cir. 2018) (reversing the decision of the lower court not because a *Lucas* taking was inapplicable to leases, but because the plaintiffs never proved that the property was rendered valueless by the government action).

335. In the case of water rights in riparian states that do not allow the transfer of the water rights separate from the land, however, there is a good argument to treat the land—i.e., not the water right alone—as the relevant property, given that the right to use water is a strand of the rights associated with the ownership of riparian land. *See* 1 WATERS, *supra* note 117, at § 7.04 (noting that Wisconsin is one of these states where the water right is tied to riparian land).

to see that this is not the case, for instance, when the obligation to preserve minimum flows only reduces the amount of water the right holder will be able to divert or withdraw during certain times of the year, or if the state legislature starts charging a tax on the use of that resource that is lower than the market value of that water.

One particular type of reform merits a more careful analysis, that is, a decision that allows agencies or courts to terminate water rights that were believed to be perpetual. On its face, an action of that nature would seem to do exactly what the Supreme Court in *Lucas* concluded requires the payment of compensation, as it would destroy the right in question, which, of course, does even more than simply eliminate all its economic value.

The use of delayed implementation, however, suggests a different outcome. By allowing water users to continue using water for a certain period of time, the economic value of their right may be reduced, but it is far from destroyed. This is evidenced by the fact that water rights are frequently leased both on a short-term and on a long-term basis in exchange for payment.[336] If a temporary water right had no value, these transactions would not take place. This is also consistent with existing case law dealing with the elimination of uses of land after providing an amortization period, which courts have viewed as potential partial takings to be examined under the *Penn Central* balancing test, rather than under a per se approach.[337]

As the Supreme Court explained in *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, a property interest "is defined by the metes and bounds that describe its geographic dimensions and the term of years that describes the temporal aspect of the owner's interest."[338] Therefore, the elimination of a part of the temporal dimension of the right does not meet the threshold to be considered a per se *Lucas*-type taking, as the right retains a substantial part of its economic value for a number of years.[339] The opposite approach would be based on a conceptual severance of the interest—that is, dividing it into smaller parts and then arguing that a

336. *2019 Water Right Leasing Program*, SNOQUALMIE VALLEY WATERSHED IMPROVEMENT DIST. (2019), https://svwid.com/wp-content/uploads/2018/11/SVWID-2019-Leasing-Prog-FAQs-Nov-2018.pdf [https://perma.cc/6NMW-8X64] (noting the price to lease water in a particular area of Washington State); Ellen Hanak, Gokce Sencan & Andrew Ayres, *California's Water Market*, PUB. POL'Y INST. OF CAL. (Aug. 2021), https://www.ppic.org/publication/californias-water-market/ [https://perma.cc/Y9WR-4XPX] (providing an overview of the sales and leases of water rights in California during the past few decades).

337. Lewyn, *supra* note 281, at 703, 705.

338. Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 535 U.S. 302, 331–32 (2002).

339. *See* Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Plan. Agency, 216 F.3d 764, 774 (9th Cir. 2000) ("Property interests may have many different dimensions. For example, the dimensions of a property interest may include a physical dimension (which describes the size and shape of the property in question), a functional dimension (which describes the extent to which an owner may use or dispose of the property in question), and a temporal dimension (which describes the duration of the property interest)."), *aff'd*, 535 U.S. 302 (2002).

per se taking has occurred with respect to one of them—which is contrary to the accepted notion in the regulatory takings context that courts should instead focus on the entirety of the interest or "parcel as a whole."[340]

It is worth examining the possible argument that the appropriate moment in time to examine the extent to which the economically productive use of the right has been destroyed or not is after the transitional period. This argument has two main weaknesses. First, the modification of a perpetual right that is converted into one that has a limited duration—which is the only and most extreme measure that is relevant for the purposes of this discussion of *Lucas*-type takings—occurs when that change takes place.[341] The fact that the right will then expire after the set period is a mere consequence of the initial modification that does not require an independent government action. Second, and relatedly, a takings claim filed at the time the transitional period ends would very likely be barred by the statute of limitations. Under the Tucker Act, claims filed in the Court of Federal Claims must be filed "within six years after such claim first accrues."[342] To determine the date of accrual, it is crucial to make a key distinction. Under the approach suggested in this Article, while the reform targeted by the legislature would be implemented in the future, the modification of existing rights takes place at the time when the legislation that recognizes a transitional period goes into effect.[343] As a result, it is at this initial point in time that takings claim would accrue.[344]

In short, the use of a transitional period has a profound effect negating the predicate of a *Lucas* takings claim. Because the ability of a water right holder to use the resource is not immediately terminated, there is not a complete destruction of all economically beneficial uses of the water right.

340. *Tahoe-Sierra*, 535 U.S. at 331 (explaining that "[p]etitioners' 'conceptual severance' argument [was] unavailing because it ignore[d] *Penn Central*'s admonition that in regulatory takings cases we must focus on 'the parcel as a whole.'" (quoting Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 130–31 (1978))).

341. *See supra* Section III.A.

342. 28 U.S.C. § 2501.

343. *See supra* Section III.A.

344. Casitas Mun. Water Dist. v. United States, 708 F.3d 1340, 1359 (Fed. Cir. 2013) ("A claim under the Tucker Act, including takings claims, 'first accrues' 'only when all the events which fix the government's alleged liability have occurred *and* the plaintiff was or should have been aware of their existence.'" (citing Hopland Band of Pomo Indians v. United States, 855 F.2d 1573, 1577 (Fed. Cir. 1988))). Professors Christopher Serkin and Michael Vandenbergh reach a similar conclusion. Serkin & Vandenbergh, *supra* note 21, at 1066.

C. *Why Limitations and Elimination of Water Rights in the Context of Broader Water Law Reform Should Generally Survive Scrutiny under* Penn Central

The majority of regulatory takings cases are decided not based on categorical rules but using the so-called ad hoc balancing test whose modern formulation can be found in *Penn Central Transportation Co. v. City of New York*.[345] The three critical factors governing this inquiry are: (i) "the economic impact of the regulation," (ii) interference with investment-backed expectations, and (iii) "the character of the governmental action."[346] In the vast majority of cases, the following reasons justify concluding that water law reform does not effect a taking.

1. *The Diminution in Value Is Either Small from the Outset or Is Tempered by the Use of Delayed Implementation*

In some cases, water law reform will lead to rather modest reductions in the water that holders of rights in that resource may use. For example, the impact associated with the imposition of instream flows tends to be mild on most water users.[347] In these instances, there may not be a decrease in the value of the right or, if there is, it is likely to be a slight one.

The scenarios that should be analyzed more closely are those in which a water right could be terminated. As a point of reference for this analysis, the Supreme Court explained in *Penn Central* that even large diminutions in property value—such as 75% or 87.5%—do not immediately justify the conclusion that there has been a taking.[348] While the elimination of a right would definitely cause a complete destruction of the right, therefore exceeding the thresholds that the Supreme Court noted in *Penn Central*, the use of delayed implementation significantly affects that calculus. As explained earlier, the diminution in value of a property right caused by a regulation must be determined also by reference to the temporal dimension of the right.[349] This is also consistent with case law on amortization of non-conforming uses, which addresses the need to take into account the

345. 438 U.S. 104 (1978); *see also* DAVID A. DANA & THOMAS W. MERRILL, PROPERTY: TAKINGS 121 (2002).

346. *Penn Central*, 438 U.S. at 124.

347. DAVID M. GILLILAN & THOMAS C. BROWN, INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE 167 (1997) (explaining that a total loss of the use of water as a result from the obligation to preserve instream flows only occurs under a very specific set of circumstances).

348. *Penn Central*, 438 U.S. at 131.

349. *See supra* Section IV.B.

amortization period when determining the economic impact of the regulation.[350]

The relevant question becomes: How much does a transitional period soften the impact of the termination of the right? Although a precise calculation can only be done on a case-by-case basis, the general answer is that a thirty-year timeline for the implementation of the reform should reduce its economic impact substantially. A study of over two thousand water transactions found that, on average, the sales price of water rights was roughly equivalent to the price of leasing rights for the same amount of water for forty-three to fifty-two years.[351] Therefore, it is reasonable to conclude that allowing water users to maintain their right for thirty years will generally reduce the right's present value by less than 50% (and very likely substantially less than that figure), that is, well below the reference points mentioned in *Penn Central*.

2. The Interference with the Water Right User's Investment-Backed Expectations Should Be Relatively Low

The Supreme Court reformulated the second *Penn Central* factor as "interference with *reasonable* investment backed expectations," suggesting that not just any subjective expectation should be viewed as worthy of protection under this prong of the test.[352] This change also highlights this factor's relationship with notions of foreseeability and retroactivity discussed above.[353]

Courts have provided a very specific framework to determine whether a particular legal change should be viewed as foreseeable for the purposes of the investment-backed expectations analysis. As the Federal Circuit has explained, "three considerations" are:

> 'relevant to the determination of a party's reasonable expectations': (1) whether the plaintiff operated in a 'highly regulated industry;'

350. *See, e.g.*, Naegele Outdoor Advert., Inc. v. City of Durham, 803 F. Supp. 1068, 1078–79 (M.D.N.C. 1992) ("[T]he benefit conferred by the grant of an amortization period may be taken into account in considering the economic impact of the regulation." (citing *Penn Central*, 438 U.S. at 137)), *aff'd*, 19 F.3d 11 (4th Cir. 1994).

351. The mean price of a yearly lease was $69 per megaliter (ML) while that for sales was $2948 per ML and the median values were $38 and $1955, respectively. Thomas C. Brown, *Trends in Water Market Activity and Price in the Western United States*, WATER RES. RSCH., Sept. 2006, at 1, 7. Two potential limitations to consider are that these trends may have changed to some extent since the study was published. Moreover, the types of rights that water users tend to sell may be, in some respects, different from those that are typically leased.

352. Kaiser Aetna v. United States, 444 U.S. 164, 175 (1979) (emphasis added).

353. *See supra* Sections I.A., III.B.1; DANA & MERRILL, *supra* note 345, at 157–58 (highlighting the connection between this factor and retroactive lawmaking); John D. Echeverria, *Making Sense of* Penn Central, 23 UCLA J. ENV'T L. & POL'Y 171, 184 (2005) ("A second, somewhat more ambiguous version of the expectations factor focuses on whether the adoption of new regulations was foreseeable.").

> (2) whether the plaintiff was aware of the problem that spawned the regulation at the time it purchased the allegedly taken property; and (3) whether the plaintiff could have 'reasonably anticipated' the possibility of such regulation in light of the 'regulatory environment' at the time of purchase.'[354]

For the reasons addressed in detail in Section III.B.1—mainly the abundance of information in the news and physical evidence on the mounting demands on water as well as its increasing scarcity—it has been foreseeable for a long time that new regulation in the already pervasively regulated area of water law would likely be adopted to address water scarcity.[355]

The other component of this regulatory takings factor relates to the frustration of the reasonable expectations of water right holders, which, in turn, is tied to the question of retroactivity.[356] As explained above, the type of water law reform that this Article addresses should be viewed as "nominally prospective" or "less retroactive" given that, while affecting the value of existing investments, it does not attach legal consequences to actions that have already been performed.[357] Moreover, a transitional period of twenty or thirty years should provide water users, in the vast majority of cases, with a significant amount of time to recoup any ongoing investments that rely on the water right. In many jurisdictions in which water permits are time-limited, their duration is ten or twenty years, with limited exceptions.[358] The understanding behind this figure is that this is the period of time that is necessary for most water users to amortize their investments.[359] In short, a transitional period of twenty to thirty years should be sufficient in most cases to minimize the interference of the water law reform with the water users' investment-backed expectations.

354. Reoforce, Inc. v. United States, 853 F.3d 1249, 1270 (Fed. Cir. 2017) (quoting Appolo Fuels, Inc. v. United States, 381 F.3d 1338, 1349 (Fed. Cir. 2004)).

355. *See supra* Section III.B.1.

356. DANA & MERRILL, *supra* note 345, at 157–58.

357. *See supra* Section I.A.

358. *See, e.g.*, FLA. STAT. § 373.236(1) (2024) (setting the maximum duration of permits for private parties at twenty years); IOWA CODE § 455B.265(3) (2024) (permits for the withdrawal of water are granted for 10 years); MISS. CODE ANN. § 51-3-9(1) (West 2024) ("No permit for water use shall be issued for a period longer than ten (10) years."); N.C. GEN. STAT. § 143-215.16(a) (2024) (setting a ten-year maximum as the default, subject to exception).

359. *See, e.g.*, N.C. GEN. STAT. § 143-215.16(a) (2024) (recognizing that, in some cases, it may be warranted to grant a permit for a longer duration if the default term of ten years is insufficient for the applicant to amortize water-related structures).

3. The Regulation Would Not Authorize a Physical Invasion

Courts have examined a wide variety of considerations under the third *Penn Central* factor, including whether the regulation authorizes a physical invasion, addresses a nuisance, confers reciprocity of advantage, or is retroactive.[360] Despite the breadth of this factor, the question of whether the government action authorizes a physical invasion has been regarded as the most important consideration.[361] As Professors David Dana, John Echeverria, and Thomas Merrill have explained, however, after the decision in *Loretto v. Teleprompter Manhattan CATV Corp.*,[362] the focus of this inquiry should be on whether a *temporary* physical invasion has occurred given that invasions of a permanent nature are governed by the *Loretto* per se test.[363]

Returning to water law reform specifically, the analysis under this factor is very similar to what has already been discussed when addressing why government regulation of existing water rights should not be viewed as a physical taking. As explained earlier, virtually all the regulations that should be included within the notion of water law reform—as this term is used for the purposes of this Article—do not entail a physical invasion of the water right, permanent or temporary, given that they are neither occupations nor appropriations of the right.[364] Taking this into account, along with the fact that the level of retroactivity of the reform should be considered moderate in degree for the reasons noted above,[365] the third factor of the regulatory takings test should not be viewed as supporting a takings claim in the water reform context.

CONCLUSION

Climate change is exacerbating the need for legal reform in a wide variety of areas. In the water context, there is no shortage of proposals on how to address the main challenges that the United States and many other countries are experiencing. Virtually no attention, however, has been paid to the mechanisms that should be used to ensure that this necessary legal

360. Thomas W. Merrill, *The Character of the Governmental Action*, 36 VT. L. REV. 649, 651, 663, 669 (2012).

361. Christopher Serkin, Essay, Penn Central *Take Two*, 92 NOTRE DAME L. REV. 913, 923 (2016) (noting that this factor is generally only used "to identify those regulations that amount to permanent physical occupations of property"); Echeverria, *supra* note 353, at 186–87 (explaining that, under *Penn Central*, the third factor "focused on whether the government action could be characterized as a 'physical occupation' of private property").

362. 458 U.S. 419 (1982).

363. Echeverria, *supra* note 353, at 188; DANA & MERRILL, *supra* note 345, at 142–43.

364. *See supra* Section IV.A.

365. *See supra* Section IV.C.2.

change actually happens. This is particularly worrisome given that the main obstacles that stand in the way of water law reform are well known. Chief among them are political opposition and the threat of takings claims from those who stand to lose from these changes.

This Article fills this gap and proposes the use of delayed implementation to make the adoption of climate-change-related reforms in the water context more viable, but its conclusions are applicable to a wider range of legal transitions. As this Article has shown, delayed implementation provides policymakers with a particularly well-balanced strategy to deal with issues that are common to most legal transitions, that is, the fairness, efficiency, and political viability of the legal change, especially when property rights are being reshaped or even eliminated. In addition, by providing existing right holders with a period of time to adapt to the new rule, delayed implementation has the critical advantage of dramatically reducing the likelihood that legal reform will trigger the constitutional obligation to compensate transition losers, thereby removing one of the additional main barriers that complicate legal change.