

# NOTES

## THE TROLLEY PROBLEM OF CLIMATE CHANGE: SHOULD GOVERNMENTS FACE TAKINGS LIABILITY IF ADAPTIVE STRATEGIES CAUSE PROPERTY DAMAGE?

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*Faced with potentially staggering human and economic costs, governments around the world are beginning to plan and implement adaptive measures designed to stem the effects of climate change. Some of these adaptations will likely benefit certain property owners and communities at the expense of others. For example, seawalls intended to save valuable parcels of land from sea-level rise could wind up forcing seawater onto neighboring parcels that would not have flooded otherwise. One day in the not-too-distant future, societies will have to grapple with the question of whether the government is responsible for harms it causes in its attempts to save livelihoods and land threatened by climate change.*

*This Note seeks to address that question by analyzing the extent to which a government in the United States would face takings liability if its adaptive measures to address sea-level rise—one of the most salient property harms that will result from climate change—save certain parcels but harm others. Despite a long line of case law under which the government is liable for a taking when it intentionally floods private property, this Note concludes that, under certain circumstances, climate change adaptations could present the type of emergency situation that American courts have frequently held exempts the government from takings liability. This Note nonetheless argues that broader government takings liability may lead to more efficient and equitable climate change adaptation. It also considers some undesirable outcomes that could result from broader government takings liability and discusses potential solutions to minimize those problems.*

### INTRODUCTION

The trolley problem is one of the most well-known thought experiments in moral philosophy.<sup>1</sup> The problem imagines a trolley driver who

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1. Christopher W. Bauman et al., Revisiting External Validity: Concerns About Trolley Problems and Other Sacrificial Dilemmas in Moral Psychology, 8 *Soc. & Personality Psychol. Compass* 536, 538 (2014) (“Trolley problems are the most well-known thought experi-

spots five workers on the tracks immediately ahead of her.<sup>2</sup> The trolley cannot stop, and the workers cannot get off the track.<sup>3</sup> The driver's only alternative to barreling ahead and killing the five workers is to divert the trolley onto a sidetrack, where there is currently only one worker.<sup>4</sup> To what extent, the problem asks, is the driver morally responsible for the death of the one worker if she decides to divert the trolley onto the sidetrack to spare the five?<sup>5</sup>

Governments around the world may soon be facing an analogous dilemma in the context of climate change adaptation.<sup>6</sup> If rising sea levels or extreme weather events threaten life and property, governments may be forced to act to minimize the human and economic costs of climate change.<sup>7</sup> Some of these adaptive strategies might benefit certain property owners and communities at the expense of others.<sup>8</sup> For example, if rising sea levels threaten densely populated, low-elevation areas like parts of New York City,<sup>9</sup> the federal, state, or local government might sensibly

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ments in the field of ethics.”). For a thorough discussion of the problem, see Judith Jarvis Thomson, *The Trolley Problem*, 94 *Yale L.J.* 1395, 1395 (1985) (citing Philippa Foot, *The Problem of Abortion and the Doctrine of the Double Effect*, in *Virtues and Vices and Other Essays in Moral Philosophy* 19 (1978)). This Note is not the first piece of legal scholarship to draw analogies between the trolley problem and takings law. See Susan S. Kuo, *Disaster Tradeoffs: The Doubtful Case for Public Necessity*, 54 *B.C. L. Rev.* 127, 137–40 (2013). However, it appears to be the first to do so in the context of climate change adaptation.

2. Thomson, *supra* note 1, at 1395.

3. *Id.*

4. *Id.*

5. *Id.*

6. Indeed, in August 2017, a trolley problem–like scenario arose in the aftermath of Hurricane Harvey in the Houston area when the Army Corps of Engineers had to decide how much floodwater it would release from a flood-control project it operated, risking flooding downstream homes if it released too much and risking flooding upstream homes if it released too little. See John Echeverria & Robert Meltz, *The Flood of Takings Cases After Hurricane Harvey*, *Takings Litig.* (Oct. 23, 2017), <https://takingslitigation.com/2017/10/23/the-flood-of-takings-cases-after-hurricane-harvey/> [<http://perma.cc/9PK6-KV69>] (describing the Army Corps of Engineers' predicament and the resulting litigation). For a more thorough description of the Hurricane Harvey scenario and aftermath, see *infra* notes 103–105 and accompanying text.

7. See generally *Adaptation to Climate Change*, European Comm'n, [https://ec.europa.eu/clima/policies/adaptation\\_en](https://ec.europa.eu/clima/policies/adaptation_en) [<https://perma.cc/HP53-28WC>] (last visited Jan. 25, 2019) (“Adaptation strategies are needed at all levels of administration: at the local, regional, national, EU and also the international level.”); *Planning for Climate Change Adaptation*, EPA, <https://www.epa.gov/arc-x/planning-climate-change-adaptation#framework> [<https://perma.cc/9PVY-HBPG>] (last visited Jan. 25, 2019) (providing resources to communities and local governments in planning for climate change adaptation).

8. See David Dana, *Incentivizing Municipalities to Adapt to Climate Change: Takings Liability and FEMA Reform as Possible Solutions*, 43 *B.C. Env'tl. Aff. L. Rev.* 281, 286 (2016) (describing “improper diversion” takings claims that could arise if the government attempts to divert the harmful effects of climate change away from certain areas and toward others).

9. See Jeremy L. Weiss et al., *Implications of Recent Sea Level Rise Science for Low-Elevation Areas in Coastal Cities of the Conterminous U.S.A.*, 105 *Climatic Change* 635,

choose to erect barriers that protect the most vulnerable parts of the city. In doing so, however, the government may wind up forcing seawater onto property that would not have flooded in the absence of government intervention—the diverted seawater, after all, has to wind up somewhere. Just as the trolley problem asks if the driver is morally responsible for killing one to save five, some day in the not-too-distant future, societies may have to grapple with the question of whether the government is responsible for those it harms in its attempts to save life and land threatened by climate change.<sup>10</sup>

Inundations caused by sea-level rise pose, perhaps, the most readily imaginable example of how governments could face a trolley problem-type tradeoff in the context of climate change, and this Note will focus on sea-level rise as a lens through which to analyze government takings liability for climate change adaptations. But there are many other adaptation scenarios that could lead to the same basic dilemma. For example, following the destruction caused by Hurricane Sandy in 2012, New Jersey has sought easements from many beachfront property owners that would allow the government to widen the beaches and fortify them with sand dunes to make the areas more resilient to future storm surges.<sup>11</sup> Is New Jersey responsible for the diminution in property value caused to a homeowner who did not grant an easement but felt that her view was significantly obstructed by the sand dunes on neighboring parcels? To give another, more dire hypothetical: Cape Town was suffering an extreme drought in 2017 and early 2018, with many authorities fearing that the city's water supply would completely run dry—leaving millions without water.<sup>12</sup> If a major metropolitan area in the United States—say, Los Angeles—were faced with a similar crisis, would federal or state authorities act lawfully if they diverted water from other areas in an effort to save lives in Los Angeles?

No governmental entity in the United States can take private property without just compensation.<sup>13</sup> A rich—and often muddled—body of law exists that assesses when government actions and regulations go too

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638–39, 641 fig.3 (2011) (providing a map that shows which parts of New York, and several other American cities, are below six meters of elevation).

10. And in the coming months, courts will address a similar, albeit more limited, question in the context of flooding resulting from Hurricane Harvey. See Echeverria & Meltz, *supra* note 6.

11. See Emily C. Dooley, *Sandy-Hit Towns in N.Y., N.J. Wrestle with Eminent-Domain Choice*, *Ins. J.* (Sept. 3, 2014), <https://www.insurancejournal.com/news/east/2014/09/03/339379.htm> [<https://perma.cc/KL68-Q5ST>] (discussing New Jersey's attempts to purchase easements after Hurricane Sandy).

12. See Norimitsu Onishi & Somini Sengupta, *Dangerously Low on Water, Cape Town Now Faces 'Day Zero'*, *N.Y. Times* (Jan. 30, 2018), <https://www.nytimes.com/2018/01/30/world/africa/cape-town-day-zero.html> (on file with the *Columbia Law Review*).

13. U.S. Const. amend. V (“[N]or shall private property be taken for public use, without just compensation.”).

far and necessitate compensation for private landowners.<sup>14</sup> Within the takings jurisprudence, two strands of cases push in opposing directions on these sorts of climate change dilemmas, particularly in the context of sea-level rise. A long line of Supreme Court precedent suggests that, if land is flooded as a direct result of government action, that is a taking per se.<sup>15</sup> A recent decision in *Arkansas Game & Fish Commission v. United States* could expand this liability significantly, broadening the universe of potential government-induced flood takings claims to include those for which the resulting flooding is only temporary.<sup>16</sup> On the other hand, American courts recognize a public necessity exception to takings claims in contexts that could be similar to the position governments will soon find themselves in with climate change–adaptation decisions.<sup>17</sup>

This Note will examine the extent to which federal, state, and local governments will or should face takings liability if damage to private property directly results from future government-sanctioned climate change adaptations designed to save *other* parcels. Part I explores takings principles in the context of government-induced flooding and discusses the public necessity takings exception. Part II considers the types of government action that could lead to future takings liability and explains why the flood case law would generally lead courts to find takings liability in the climate change context, while the public necessity exception would counsel against finding takings liability. Part III explains why courts could rely on the public necessity exception to ultimately grant the government broad takings immunity in the context of climate change adaptation. Nonetheless, this Note advances the position that that would be a suboptimal result. By declining to rely on the public necessity exception, courts could use the takings doctrine as a tool to help the government internalize the costs of climate change adaptation. Part III also considers some undesirable outcomes that could result from broader government takings liability and discusses potential solutions to minimize those problems.

#### I. TAKINGS FOR GOVERNMENT-INDUCED FLOODS AND THE PUBLIC NECESSITY EXCEPTION

There is no existing law that directly addresses the question of when the government is liable for damage to private property that results from public efforts to adapt to the effects of climate change. But two areas of takings law promise to be especially helpful when courts one day must

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14. See generally *Pa. Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922) (“The 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.”).

15. See, e.g., *United States v. Cress*, 243 U.S. 316, 327–28 (1917); *Pumpelly v. Green Bay Co.*, 80 U.S. (13 Wall.) 166, 181 (1871); see also *infra* section I.A.

16. See 568 U.S. 23, 34 (2012).

17. See *infra* section I.B.

face that question. First, although sea-level rise is not the only climate change threat that may force the government to take adaptive action,<sup>18</sup> it is perhaps the most readily imaginable example. To that end, there is a well-developed doctrine on takings in the context of floods.<sup>19</sup> Second, when governmental entities act in emergency situations to protect human life or property—for example, to gain a strategic advantage during times of war<sup>20</sup> or to stop the spread of a fire<sup>21</sup>—the government is generally not liable for a taking.<sup>22</sup> Although much of the public necessity case law arises in contexts clearly unrelated to climate change, the *justifications* for why the government does not face takings liability in these cases would likely be applicable in climate change takings cases.

Section I.A of this Note explores how takings law has developed in the flood context. Section I.B discusses the public necessity takings exception. The flood-takings doctrine and the public necessity exception, taken together, provide the best starting points for understanding how courts may review climate change–related takings claims.

#### A. *Floods and Takings*

1. *The Per Se Rule and Permanent Flooding.* — The Supreme Court’s takings jurisprudence is dominated by two strands of analysis.<sup>23</sup> Under the ad hoc approach, reserved generally for regulatory takings and typified by *Penn Central Transportation Co. v. New York City*,<sup>24</sup> the Court engages in a multifactor balancing test to determine whether a government action “goes too far” and crosses some subjective line between socially useful regulation and unjustifiable imposition.<sup>25</sup> Under its per se

18. See, e.g., Dana, *supra* note 8, at 286 (discussing the possibility of government liability for, among other things, improperly diverting fires away from one community and toward another).

19. See *infra* section I.A.

20. See, e.g., *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 155–56 (1952) (refusing to impose liability on the government after the military destroyed the plaintiff’s oil fields in the Philippines to avoid the property falling into enemy hands).

21. See, e.g., *Bowditch v. Boston*, 101 U.S. 16, 18 (1879) (holding that the city was justified in destroying the plaintiff’s building to stop the spread of a fire).

22. See generally John Alan Cohan, *Private and Public Necessity and the Violation of Property Rights*, 83 N.D. L. Rev. 651, 690–732 (2007) (providing a comprehensive overview of the contexts in which the government can successfully avoid property liability under the doctrine of public necessity).

23. See Richard A. Epstein, *Physical and Regulatory Takings: One Distinction Too Many*, 64 Stan. L. Rev. Online 99, 101 (2012), <http://www.stanfordlawreview.org/wp-content/uploads/sites/3/2012/03/64-SLRO-99.pdf> [<https://perma.cc/Q9WF-AJKG>] (giving a broad overview of Supreme Court takings jurisprudence).

24. 438 U.S. 104 (1978).

25. *Pa. Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922) (“[I]f regulation goes too far it will be recognized as a taking.”); see also Epstein, *supra* note 23, at 101 (“[R]egulatory takings are only compensable when the government cannot show some social justification, broadly conceived, for its imposition.”). For a thorough discussion of the significance of *Penn Central* in steering the Court toward a utilitarian takings framework that emphasizes

rule, on the other hand, the Court generally requires the government to fully compensate property owners for a permanent physical occupation of their land or when the government has deprived owners of all viable economic uses of their land, without regard to the underlying policy justifications for the government action.<sup>26</sup>

Although the Court has most famously applied this per se rule in *Loretto v. Teleprompter Manhattan CATV Corp.*<sup>27</sup> and *Lucas v. South Carolina Coastal Council*,<sup>28</sup> the rule's origins can be found decades earlier in the context of government-induced flooding.<sup>29</sup> In *Pumpelly v. Green Bay Co.*, the Court found Wisconsin liable for a taking after a dam built under the authority of the state inundated the plaintiff's land.<sup>30</sup> In the years that followed, the Court has clarified the outer bounds of the per se takings line for government-induced flooding and has developed something of a permanence requirement: Only flooding that permanently impacts a property owner's land is a per se taking.<sup>31</sup> "Permanent," according to the Supreme Court, does not mean "constant."<sup>32</sup> In *United States v. Cress*, the Court held that the government was responsible for a taking after it constructed a dam that resulted in frequent, but not constant, overflowing onto the plaintiff's land.<sup>33</sup> The Court later clarified that only flooding that is the "direct result" of government action and amounts to "an

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balancing the nature of the government action against the investment-backed expectations of the property owner, see Eric R. Claeys, Takings, Regulations, and Natural Property Rights, 88 Cornell L. Rev. 1549, 1646–48 (2003) [hereinafter Claeys, Natural Property Rights] ("Federal regulatory takings law has followed *Penn Central's* conceptions of property and interest balancing ever since.").

26. See Epstein, *supra* note 23, at 101 ("In the case of a per se physical taking, the government must pay the landowner full compensation for the value of the land occupied.").

27. 458 U.S. 419, 426 (1982) (holding that a "permanent physical occupation" is a per se taking).

28. 505 U.S. 1003, 1019 (1992) (holding that a regulation that eliminates "all economically beneficial uses" for a parcel of land gives rise to a claim for a per se taking).

29. See *Loretto*, 458 U.S. at 427 ("As early as 1872, in *Pumpelly v. Green Bay Co.*, this Court held that the defendant's construction, pursuant to state authority, of a dam which permanently flooded plaintiff's property constituted a taking." (citation omitted)).

30. 80 U.S. (13 Wall.) 166, 181 (1871) ("[W]here real estate is actually invaded by superinduced additions of water, earth, sand, or other material, or by having any artificial structure placed on it, so as to effectually destroy or impair its usefulness, it is a taking, within the meaning of the Constitution . . .").

31. See Daniel T. Smith, Comment, Draining the Backwater: The Normalization of Temporary Floodwater Takings Law in *Arkansas Game and Fish Commission v. United States*, 101 Geo. L.J. Online 57, 61 (2013), <https://georgetownlawjournal.org/articles/180/draining-backwater-normalization-of/pdf> [<https://perma.cc/E88D-WYNJ>] (noting that the Supreme Court's "strong language" in *United States v. Cress*, 243 U.S. 316 (1917), "set the stage for a permanency requirement in floodwater takings").

32. See *Cress*, 243 U.S. at 328 ("There is no difference of kind, but only of degree, between a permanent condition of continual overflow by back-water and a permanent liability to intermittent but inevitably recurring overflows; and, on principle, the right to compensation must arise in the one case as in the other.").

33. See *id.* at 327–29.

actual, permanent invasion”—a condition that includes “intermittent but inevitably recurring overflows”—will be found to be a per se taking.<sup>34</sup>

The Federal Circuit has since added a helpful stipulation to the permanence rule: It is the permanence of the *consequences* of government action and not the *instrumentality* that matters for the purpose of takings liability.<sup>35</sup> In *Owen v. United States*, the Federal Circuit held the government liable for a taking after government dredging resulted in swifter river flow over the plaintiff’s property.<sup>36</sup> Even though the government action did not result in the permanent inundation with floodwaters, it did result in permanent damage to her property: Increased erosion along the banks washed away the plaintiff’s house.<sup>37</sup> In support of its conclusion, the *Owen* court cited the Supreme Court case *United States v. Causby*,<sup>38</sup> in which the Court left open the possibility of finding a takings claim where government action directly impacts a plaintiff’s ability to enjoy her land, even if the government has not directly entered the property.<sup>39</sup>

2. *Ridge Line’s Distinction Between Tort and Takings.* — Whether a court treats a property harm as a tort or a taking can have important consequences. Outside of the permanent, per se cases, there is often a fine line in the government-induced flooding context between tort and taking.<sup>40</sup> Indeed, in some respects, a taking is simply a specific type of tort—an injury that results in a deprivation of a property right.<sup>41</sup> Both torts and takings have their origins in common law, but because the Framers chose to preclude uncompensated takings in the Fifth Amendment, the government cannot waive its takings liability through statute as it can with its tort liability.<sup>42</sup> For example, the Federal Tort Claims Act severely limits what sort of tort claims can be brought against

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34. *Sanguinetti v. United States*, 264 U.S. 146, 149–50 (1924) (refusing to find takings liability against the government for lack of causation between a government-constructed dam and later flooding on the plaintiff’s property).

35. *Owen v. United States*, 851 F.2d 1404, 1412 (Fed. Cir. 1988) (“[I]t is ‘the permanence of the *consequences* of the Government act [that] is controlling, and there is no additional requirement that the *instrumentality* of the consequence be purely a governmental one.’” (second alteration in original) (quoting *Tri-State Materials Corp. v. United States*, 550 F.2d 1, 4 (Ct. Cl. 1977))).

36. *Id.*

37. *Id.* at 1406.

38. *Id.* at 1411–12.

39. 328 U.S. 256, 261 (1946) (holding that loss of enjoyment resulting from proximity to an airfield could possibly result in a successful takings claim).

40. See generally Bud Davis, Note, Strengthening the Floodwalls: Reinterpreting the Federal Circuit’s *Ridge Line* Test to Limit Government Liability in Takings Jurisprudence, 26 Fed. Cir. B.J. 29, 37–46 (2016) (discussing the origins of tort and takings claims, and why the distinction matters in the context of government-induced flooding).

41. *Id.* at 38.

42. *Id.* at 38–39.

the federal government.<sup>43</sup> Congress similarly chose to limit the federal government's tort liability in the context of government-induced flooding along the Mississippi River with the Flood Control Act of 1928.<sup>44</sup> Because no mere act of Congress can supersede the Fifth Amendment, individuals can much more easily attach liability to the government if they bring a takings claim rather than a tort claim.<sup>45</sup> Thus, it is important to differentiate between these two related classes of claims.

In *Ridge Line, Inc. v. United States*, the Federal Circuit devised a two-part test to determine whether a plaintiff had brought a viable takings claim, as opposed to a tort claim.<sup>46</sup> The plaintiff must show that (1) the harm she suffered was the “predictable result” of government action, and (2) “the government’s actions were sufficiently substantial to justify a takings remedy.”<sup>47</sup> The first prong is fairly straightforward and is satisfied only if the plaintiff shows either that “the government intends to invade a protected property interest or the asserted invasion is the ‘direct, natural, or probable result of an authorized activity and not the incidental or consequential injury inflicted by the action.’”<sup>48</sup> In short, if the government intended the result of its action—or if it knew or ought to have known the result—the first prong is satisfied.

The second prong is more complicated and is intended to separate injuries that “preempt the owner’s right to enjoy his property for an extended period of time” from ones that “merely inflict an injury that reduces its value.”<sup>49</sup> The *Ridge Line* court intended to attach takings liability only for injuries that fundamentally deprived a property owner of an ability to enjoy property rights and not for injuries that reduced the value of land without significantly affecting the owner’s underlying bundle of rights.<sup>50</sup> Thus, although the Federal Circuit explicitly stated in *Ridge Line*

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43. See 28 U.S.C. § 1346 (2012) (imposing strict limitations on the federal government’s tort liability resulting from negligent actions of government employees).

44. See 33 U.S.C. § 702c (2012) (“No liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place . . .”).

45. See Jennifer Klein, Columbia Law Sch., Potential Liability of Governments for Failure to Prepare for Climate Change 23 (2015), <http://columbiaclimatelaw.com/files/2016/06/Klein-2015-08-Liability-US-Gov-Failure-to-Prep-Climate-Change.pdf> [<https://perma.cc/8GCX-HZMA>] (“Indeed, takings claims pose fewer threshold obstacles than the negligence and fraud claims discussed above, since they are generally not barred by sovereign immunity in state court.”).

46. See 346 F.3d 1346, 1355 (Fed. Cir. 2003).

47. *Id.*

48. *Id.* (quoting *Columbia Basin Orchard v. United States*, 132 F. Supp. 707, 709 (Ct. Cl. 1955)); see also Tyler J. Sniff, Note, The Waters of Takings Law Should Be Muddy: Why Prospectively Temporary Government-Induced Flooding Could Be a Per Se Taking and the Role for *Penn Central* Balancing, 22 Fed. Cir. B.J. 53, 64–65 (2012) (explaining the *Ridge Line* test).

49. *Ridge Line*, 346 F.3d at 1356.

50. See Davis, *supra* note 40, at 49 (“This prong distinguishes takings from its tortious underpinnings by rejecting mere inflictions of injury that diminish or otherwise impair property value.”). For a discussion of the modern conception of property law as a



that one or two floodings is too sporadic to constitute a taking,<sup>51</sup> it stopped short of saying that temporary flooding would preclude a takings claim.

3. *Arkansas Game & Fish and the Expansion of Takings Liability.* — *Arkansas Game & Fish Commission v. United States* has the potential to transform the Supreme Court’s flood-related takings jurisprudence in that it afforded the Court an opportunity to address the question that *Ridge Line* had not reached.<sup>52</sup> Whereas *Ridge Line* left open—but did not expressly countenance—the possibility of government takings liability for temporary flooding, *Arkansas Game & Fish* removed all doubt: “[G]overnment-induced flooding of limited duration may be compensable.”<sup>53</sup> In reaching this conclusion, the Court sought to disabuse onlookers of any misconceptions that there was a disconnect between its flood-related takings jurisprudence and its takings jurisprudence generally.<sup>54</sup> Though—as discussed in section I.A.1—an earlier case, *Sanguinetti v. United States*, seemed to impose a permanence requirement on flood takings,<sup>55</sup> the Court in *Arkansas Game & Fish* noted that *Sanguinetti* had been decided in 1924,<sup>56</sup> decades before the Court explicitly recognized the availability of a takings claim for temporary deprivations of property.<sup>57</sup>

While the Court in *Arkansas Game & Fish* may have been setting out simply to bring its flood-related takings holdings in line with the remainder of its takings jurisprudence, the theoretical consequences in the context of climate change adaptation could be significant. The result of *Arkansas Game & Fish* is that even temporary flooding or relatively minor property injuries that result directly from government action, or are the foreseeable results of government action, could form the basis for

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“bundle of rights,” see generally J.E. Penner, The “Bundle of Rights” Picture of Property, 43 UCLA L. Rev. 711, 712 (1996) (explaining that property rights should not be understood as a legal relationship between an individual and a piece of property but rather as a series of rights the piece of property affords the individual).

51. *Ridge Line*, 346 F.3d at 1357 (citing *Eyherabide v. United States*, 345 F.2d 565, 569 (Ct. Cl. 1965)).

52. 568 U.S. 23, 34 (2012).

53. *Id.*

54. *Id.* at 36 (“There is thus no solid grounding in precedent for setting flooding apart from all other government intrusions on property.”).

55. See 264 U.S. 146, 149 (1924) (“[I]n order to create an enforceable liability against the government, it is, at least, necessary that the overflow be the direct result of the structure, and constitute an actual, permanent invasion of the land . . .”).

56. *Ark. Game & Fish*, 568 U.S. at 35.

57. See, e.g., *Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg’l Planning Agency*, 535 U.S. 302, 335–36 (2002) (holding that a temporary moratorium on development could result in a taking, pursuant to *Penn Central* analysis); *First English Evangelical Lutheran Church v. City of Los Angeles*, 482 U.S. 304, 318 (1987) (“These cases reflect the fact that ‘temporary’ takings which, as here, deny a landowner all use of his property, are not different in kind from permanent takings, for which the Constitution clearly requires compensation.”).

a successful takings claim.<sup>58</sup> This is a noteworthy broadening of the Court's flood takings doctrine that could effectively erase the permanence requirement the Court established in *Sanguinetti*.<sup>59</sup>

In practice, though, it is not yet clear how much of an impact *Arkansas Game & Fish* will have on the actual outcomes of takings cases. The Court's holding by no means instructs lower courts that temporary-flood takings claims *should* succeed, only that they are not barred by Supreme Court precedent.<sup>60</sup> At least one commentator has speculated that—unlike a claim for a permanent inundation, which would be analyzed under the Court's per se rules—a temporary inundation would still have to survive a *Penn Central* analysis.<sup>61</sup> It is possible, then, that *Arkansas Game & Fish* will have little practical effect on the government's takings liability for temporary floodings.<sup>62</sup> The case may give certain plaintiffs encouragement that previously hopeless claims have a chance,<sup>63</sup> but until subsequent case law clarifies the practical challenges of applying *Arkansas Game & Fish*, such plaintiffs are still facing a steep uphill battle.

#### B. *The Public Necessity Exception*

Common law and American courts recognize an important exception to takings liability, and indeed, to property torts more broadly. In cases of clear public necessity, the government can generally take or

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58. See *Ark. Game & Fish*, 568 U.S. at 31–32 (“[M]ost takings claims turn on situation-specific factual inquiries.” (citing *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978))).

59. See *Sanguinetti*, 264 U.S. at 149.

60. Norman A. Dupont, *The Court's 2013 Term and Environmental Law: A Whimper, Not a Bang*, *Trends*, Sept.–Oct. 2013, at 1, 3 (explaining that the Court's holding in *Arkansas Game & Fish* should not be interpreted as expressing approval for temporary-flood takings claims on the merits).

61. Dana, *supra* note 8, at 292; see also *supra* note 58 and accompanying text. Making out a successful *Penn Central* claim is no easy feat. In fact, the Supreme Court has never applied a multipronged takings balancing test in favor of the plaintiff bringing the claim. See Frank Michelman, *Takings*, 1987, 88 *Colum. L. Rev.* 1600, 1621 (1988) (discussing the Court's evolution toward a balancing test and the difficulties that plaintiffs have in succeeding under a *Penn Central* framework). One study found that, even in lower courts, *Penn Central* claims succeed less than ten percent of the time. F. Patrick Hubbard et al., *Do Owners Have a Fair Chance of Prevailing Under the Ad Hoc Regulatory Takings Test of Penn Central Transportation Company?*, 14 *Duke Envtl. L. & Pol'y F.* 121, 141 (2003) (finding that owners prevailed in 13.4% of all *Penn Central* cases in which the merits were addressed and in 9.8% of all *Penn Central* cases total).

62. See Dupont, *supra* note 60, at 3 (“[T]he Court warned that its decision was not to be taken as approval for all (or even many) future temporary-flooding cases.”).

63. Echeverria & Meltz, *supra* note 6 (noting that takings cases brought against the government for temporary government-induced flooding after Hurricane Harvey “would have been laughed out of court prior to the Supreme Court's 2012 decision in *Arkansas Game & Fish Comm'n v. United States*”).

destroy property without any liability.<sup>64</sup> Although this exception has its roots in centuries-old common law,<sup>65</sup> it was reaffirmed within the last three decades in *Lucas*, one of the Court's landmark takings cases of the late twentieth century.<sup>66</sup> This section explores two broad categories of public necessities that have consistently defeated takings and property claims: military and police actions, as well as government action to minimize the damage from natural disasters such as fires and disease.

1. *Military and Police Action.* — The Supreme Court has given significant latitude to government actors to test the limits of the Fifth Amendment during times of war. In *United States v. Caltex*, for example, the Court refused to impose takings liability after the military ordered the destruction of the plaintiff's oil facilities in Manila to avoid them falling into the hands of the Japanese during World War II.<sup>67</sup> The Court wrote:

The terse language of the Fifth Amendment is no comprehensive promise that the United States will make whole all who suffer from every ravage and burden of war. This Court has long recognized that in wartime many losses must be attributed solely to the fortunes of war, and not to the sovereign.<sup>68</sup>

Still, that does not mean the government's Fifth Amendment obligations during wartime disappear entirely. Typically, the government is only justified in claiming a public necessity exception if the risk posed is "immediate and menacing, or the necessity urgent."<sup>69</sup> And in *Youngstown Sheet & Tube Co. v. Sawyer*, the Court held that President Harry Truman had overstepped his constitutional authority in seeking to seize the nation's steel mills in order to prevent a halt in production that he claimed would have significantly hampered the country's efforts in the Korean War.<sup>70</sup> It is unclear, though, the extent to which *Youngstown* is a takings case and the extent to which it is a separation of powers case.<sup>71</sup> Indeed, Justice Jackson's concurring opinion—more famous than the

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64. For a comprehensive overview of the public necessity exception and the types of cases in which it frequently arises, see Cohan, *supra* note 22, at 690–732.

65. *Id.* at 653–54 (discussing the common law origins of public necessity as an excuse from private and public liability for property violations).

66. See *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1029 n.16 (1992) (noting that the government is not liable for the destruction of private property in cases of "actual necessity" (quoting *Bowditch v. Boston*, 101 U.S. 16, 18 (1879))).

67. 344 U.S. 149, 156 (1952).

68. *Id.* at 155–56 (citing *Lichter v. United States*, 334 U.S. 742, 787–88 (1948); *Bowles v. Willingham*, 321 U.S. 503, 517–19 (1944); *Omnia Commercial Co. v. United States*, 261 U.S. 502 (1923)).

69. *Mitchell v. Harmony*, 54 U.S. (13 How.) 115, 135 (1851).

70. 343 U.S. 579, 583 (1952).

71. See Christopher Bryant & Carl Tobias, *Youngstown Revisited*, 29 *Hastings Const. L.Q.* 373, 417 (2002) (discussing Justice Douglas's concurrence, which emphasizes that presidential action should be granted more deference by the courts when it is carried out with explicit congressional approval).

majority opinion of the Court<sup>72</sup>—is grounded in the reality that President Truman acted without congressional approval.<sup>73</sup> Justice Jackson seems to have accepted that Congress, in its wisdom, could have legally decided to seize the steel mills in the name of public necessity.<sup>74</sup> Thus, *Youngstown* does not so much stand for the proposition that, even in times of war, the Fifth Amendment cannot yield to necessity; rather, it stands for the proposition that, even in times of war, the *President* cannot circumvent the Takings Clause.<sup>75</sup>

Similar to the federal government's reduced takings liability during times of war, many state courts grant a public necessity exception to police actions that result in the destruction of private property in the course of apprehending a suspect.<sup>76</sup> In many cases involving police action, though, this practice is not so much an *exception* in takings law; rather, it is justified because courts view such police actions as falling more on the tort side of the takings–tort dividing line.<sup>77</sup>

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72. See *id.* at 420–21 (noting that the Court cites to Justice Jackson's concurrence more often than it cites to the opinion of the Court).

73. See *Youngstown*, 343 U.S. at 638 (Jackson, J., concurring).

74. See *id.* at 637 (“A seizure executed by the President pursuant to an Act of Congress would be supported by the strongest of presumptions and the widest latitude of judicial interpretation, and the burden of persuasion would rest heavily upon any who might attack it.”).

75. See Bryant & Tobias, *supra* note 71, at 417 (noting that Justice Douglas explained in his concurrence that Congress, not the President, has the power to pay compensation for seizures under the Fifth Amendment).

76. See Cohan, *supra* note 22, at 728 n.647 (listing cases in which state courts did not find the government liable for a taking after police damaged or destroyed property in the course of apprehending a suspect).

77. *Id.* at 728–29 (“The reasoning is that the damage is not a taking but rather a tort, and in turn the aggrieved party frequently cannot recover under a tort claim unless there is evidence of unreasonable governmental activity.”). For example, in holding that the state did not owe a store owner compensation after police caused significant property damage when they fired tear gas onto the premises to apprehend a dangerous suspect, the California Supreme Court explained that the “just compensation” clauses in the California Constitution and U.S. Constitution pertain only to public uses of private land and that a police officer enforcing criminal laws—and in the process damaging or destroying property—does not amount to a public use. See *Customer Co. v. City of Sacramento*, 895 P.2d 900, 905–06 (Cal. 1995) (noting that California’s “just compensation” provision “never has been applied to require a public entity to compensate a property owner for property damage resulting from the efforts of law enforcement officers to enforce the criminal laws”). The court left open the possibility, however, that the property owner could recover from public entities under these circumstances through a tort claim. *Id.* at 901 (“As we shall explain, under the circumstances presented here the public entities involved may be held liable, if at all, only in a tort action filed pursuant to the Tort Claims Act.”). Courts in other jurisdictions have reached similar conclusions. See, e.g., *Ind. State Police v. May*, 469 N.E.2d 1183, 1183 (Ind. Ct. App. 1984) (“[Plaintiffs’] further argument, citing eminent domain cases, that the acts of the police amount to a taking is without merit. This conduct is in the nature of tort.”); *Sullivan v. City of Oklahoma City*, 940 P.2d 220, 224 (Okla. 1997) (holding that a landlord did not have a viable takings claim after policed damaged a door while conducting a search but that the government could face tort liability).

There is, therefore, a subtle distinction between the two types of justification offered for the noncompensation of government destruction of private property resulting from military or police action, and that distinction can have important implications in a climate change context. The first justification, relied upon in military action cases like *Caltex*, acknowledges that the destruction constitutes a taking, but courts find that sometimes situations arise when it is necessary for the government to violate the letter of the Takings Clause in order to advance the public interest—and those losses must be borne by private parties.<sup>78</sup> Indeed, the brief dissent by Justice Douglas makes clear that the issue at stake in *Caltex* was not whether that type of destruction could give rise to a takings claim in general but rather whether the necessities of war excused the government's noncompensation for what would have otherwise been a taking under the Fifth Amendment.<sup>79</sup> The second justification, as relied upon in the police cases, is that destruction of property in the course of individual government officers carrying out their appointed duties is not even the type of government action contemplated by the Fifth Amendment or by analogous provisions in state constitutions.<sup>80</sup> Thus, the extent to which government action in the climate change context may be subject to takings analysis depends upon how a court characterizes the government action. Policies adopted or actions taken by a *legislature* or *government agency* to curb the effects of climate change that resulted in property harm would likely be subject to takings analysis and would need to qualify for a public necessity exception in order for the government to avoid liability.<sup>81</sup> Property harms committed by *individual officers* operating in emergency contexts would likely be viewed as torts,<sup>82</sup> and the government could more easily waive its potential liability.<sup>83</sup>

2. *Stopping the Spread of Fires and Diseases.* — In the United States, the suggestion that the government may destroy property without liability in an effort to minimize damage from a fire is almost as old as the

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78. See *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 155–56 (1952) (“The terse language of the Fifth Amendment is no comprehensive promise that the United States will make whole all who suffer from every ravage and burden of war.”).

79. *Id.* at 156 (Douglas, J., dissenting) (“[T]he Fifth Amendment requires compensation for the taking. . . . Whenever the government determines that one person’s property—whatever it may be—is essential to the war effort and appropriates it for the common good, the public purse, rather than the individual, should bear the loss.”).

80. See *supra* notes 76–77 and accompanying text.

81. For example, in *Caltex*, even though the Court ultimately found no takings liability for the military action that resulted in property damage, it made this finding because the challenged action fell under the public necessity exception and not because the challenged action could never constitute a taking under normal circumstances. See *Caltex*, 344 U.S. at 155–56; see also *supra* note 78 and accompanying text.

82. See *Cohan*, *supra* note 22, at 728–729 (“Numerous state courts have refused to grant compensation when private property is damaged or destroyed as a result of police action . . . . The reasoning is that the damage is not a taking, but rather a tort . . . .”).

83. See *Davis*, *supra* note 40, at 38–39.

Constitution itself. A 1788 Pennsylvania Supreme Court case contains dicta describing as “folly” the actions of the 1666 mayor of London, who refused to tear down buildings to save the city from a fire, for fear of being held liable for trespass.<sup>84</sup> Almost 100 years later, the U.S. Supreme Court made this suggestion of limited government liability explicit, holding in *Bowditch v. Boston* that the city was justified in destroying the plaintiff’s building to stop the spread of a fire.<sup>85</sup> The so-called “conflagration rule” is now well established in American courts and generally gives the government broad immunity from takings liability when it destroys buildings to prevent the spread of fires in urban settings,<sup>86</sup> and it is increasingly being applied in non-urban settings as well.<sup>87</sup>

The application of the public necessity exception is indicative of how the Supreme Court’s takings doctrine has taken a utilitarian turn over the past century or so.<sup>88</sup> The Court notably held in *Miller v. Schoene*—an early case in its utilitarian takings jurisprudence—that the public necessity of stopping a disease afflicting apple trees justified destroying a plaintiff’s private property without compensation.<sup>89</sup> In many ways, *Miller* marked one of the Court’s first steps away from its per se rules—where takings are common—and toward its ad hoc *Penn Central* approach—where takings are rare.<sup>90</sup> That is to say, under the per se framework, the

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84. *Respublica v. Sparhawk*, 1 U.S. (1 Dall.) 357, 363 (Pa. 1788).

85. See 101 U.S. 16, 18 (1879) (“At the common law every one had the right to destroy real and personal property, in cases of actual necessity, to prevent the spreading of a fire, and there was no responsibility on the part of such destroyer, and no remedy for the owner.”).

86. See Daniel H. Owsley, Note, *TrinCo* and Actual Necessity: Has the Federal Circuit Provided the Tinder to Burn Down the Public Necessity Defense in Wildfire Takings Cases?, 48 Colum. J.L. & Soc. Probs. 373, 377–78 (2015) (“The exigent circumstances of an urban fire and the overwhelming need to stop its spread led to the abridgement of property rights . . . . This ‘conflagration rule,’ developed distinctly in the urban fire context.”).

87. *Id.* at 378; see also *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1380 (Fed. Cir. 2013) (holding that the government could claim the conflagration rule in the context of wildfires, but declining to find that the present circumstances necessarily justified the use of the rule).

88. See Claeys, Natural Property Rights, *supra* note 25, at 1635–36 (“*Miller v. Schoene* now stands for the principle that regulations pass muster whenever the law under review increases society’s utility more than it diminishes the economic value of the affected owners’ property.”).

89. 276 U.S. 272, 279 (1928).

90. See Michelman, *supra* note 61, at 1621 & n.104 (noting that, beginning in 1922, the Court moved “steadily” toward a “highly non-formal, open-ended, multi-factor balancing method” for takings and stating that *Miller* was one of the “prominent way-stations” in that shift). In some respects, the public necessity exception is more than a mere carve out of the takings doctrine; rather, it is a crucial component of the Court’s favored *Penn Central* balancing test, which says that the necessity of government action might win out over the private interest in many instances. See *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978) (advising against finding a taking “when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good”).

public necessity exception is a threshold matter that defeats the takings claim, but in a *Penn Central* framework, the extent to which a public necessity exists is inherently baked into the fundamental takings analysis.

The Federal Circuit recently limited the applicability of the public necessity exception. In *TrinCo Investment Co. v. United States*—a case in which a private plaintiff claimed a taking after the U.S. Forest Service intentionally burned some of his timber in an effort to reduce the amount of fuel available for a nearby wildfire<sup>91</sup>—the Federal Circuit explained that “[t]he Supreme Court has consistently held that the doctrine of necessity may be applied only when there is an imminent danger and an actual emergency giving rise to actual necessity.”<sup>92</sup> In some sense, it is a tautology to say that the public necessity exception only applies in cases of “actual” necessity—yet this qualification could be significant. Initially in hearing *TrinCo*, the Court of Federal Claims had afforded the government much more leeway in invoking a public necessity defense.<sup>93</sup> The Court of Federal Claims treated as dispositive *Lucas’s* reference to “prevent[ing] the spreading of a fire” as a background principle that could defeat a per se takings claim.<sup>94</sup> Citing *Bowditch* and the related line of Supreme Court fire cases, the Court of Federal Claims was ready to grant the government essentially blanket takings immunity whenever it acted to prevent the spread of any fire.<sup>95</sup>

In reversing the Court of Federal Claims, the Federal Circuit’s statement that the public necessity doctrine requires an “imminent danger” and “actual necessity” is therefore a nontrivial constraint on the government’s takings liability.<sup>96</sup> The broader implications of the ruling are not yet clear, and courts have yet to clarify what precisely a showing of “actual necessity” requires.<sup>97</sup> At least one commentator, though, has taken issue with the *TrinCo* ruling and questions whether the Federal Circuit—in insisting on imminence and actual necessity—may have imposed a

91. 722 F.3d at 1376–77.

92. *Id.* at 1378.

93. *TrinCo Inv. Co. v. United States*, 106 Fed. Cl. 98, 101 (2012), rev’d, 722 F.3d 1375.

94. See *id.* at 100–01; see also *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1029 n.16 (1992) (absolving the government from takings liability for the “destruction of ‘real and personal property, in cases of actual necessity, to prevent the spreading of a fire’ or to forestall other grave threats to the lives and property of others” (quoting *Bowditch v. Boston*, 101 U.S. 16, 18–19 (1879))).

95. See *TrinCo*, 106 Fed. Cl. at 101 (“[T]he government is not liable for the destruction of property when it acts ‘[t]o prevent the spreading of a fire.’” (quoting *Omnia Commercial Co. v. United States*, 261 U.S. 502, 508 (1923))).

96. See *TrinCo*, 722 F.3d at 1378. As applied in *TrinCo*, the practical effect of the holding was that the Federal Circuit remanded the case, with instructions for the Federal Court of Claims to develop the factual record and ascertain whether the government’s actions were indeed actually necessary. *Id.* at 1380–81.

97. See Owsley, *supra* note 86, at 395 (“Ultimately, we do not yet know how the federal courts will react to *TrinCo*, or indeed whether they appreciate the potential extent of its impact . . .”).

higher burden for the government to clear to invoke public necessity than the Supreme Court really intended.<sup>98</sup>

## II. GOVERNMENT RESPONSES TO CLIMATE CHANGE THAT COULD CREATE TAKINGS LIABILITY AND HOW THE FLOOD AND PUBLIC NECESSITY DOCTRINES APPLY

Facing potential catastrophic costs from climate change,<sup>99</sup> governments might soon be forced to take drastic, and perhaps urgent, measures to protect life and property.<sup>100</sup> These actions could raise a wide array of property issues and takings claims,<sup>101</sup> but this Note is concerned only with those government actions that prioritize certain properties at the expense of others. Section II.A discusses the various types of government action that might result in this sort of takings claim in the context of climate change adaptation. Section II.B explains why the Supreme Court's flood-related takings jurisprudence would often cut in favor of finding the government liable for a taking, while section II.C explains why the public necessity exception cuts against finding the government liable for a taking.

### A. *Government Climate Change Adaptations that Could Create Trolley Problem-Type Takings Claims*

Governments and policymakers inherently face tradeoffs and must choose between competing interests every day.<sup>102</sup> Rarely, though, are policymakers faced with a trolley problem-type dilemma in which two

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98. *Id.* at 393–95 (“In its explication of the rule, the court also may have imposed modified requirements—for actual necessity and imminence—that were not enforced in the rule’s prior applications.”).

99. See Frank Ackerman & Elizabeth A. Stanton, Nat. Res. Def. Council, *The Cost of Climate Change 2* (2008), <https://www.nrdc.org/sites/default/files/cost.pdf> [<https://perma.cc/6N4T-V3C7>] (estimating the cost of unchecked climate change at approximately \$1.9 trillion per year by 2100).

100. For a categorization of adaptive government actions and how the takings doctrine might bear on them, see Dana, *supra* note 8, at 285–86.

101. See, e.g., *id.* (sorting the universe of potential takings claims for climate change adaptation into four categories: inaction, ineffective action, counterproductive action, and improper diversion); Michael Allan Wolf, *Strategies for Making Sea-Level Rise Adaptation Tools “Takings-Proof,”* 28 *J. Land Use & Envtl. L.* 157, 172–84 (2013) (listing government adaptations to prevent against sea-level rise and discussing how the regulated parties may have regulatory takings claims against the government). Whereas Professor Michael Wolf analyzes takings claims that property owners might bring when the government acts to protect those property owners’ own property, this Note examines takings claims that might result when the government acts to protect *other* properties.

102. See, e.g., Tax Policy Ctr., *The Tax Reform Tradeoff: Eliminating Tax Expenditures, Reducing Rates 1–2* (2018), [https://www.taxpolicycenter.org/sites/default/files/publication/153246/the\\_tax\\_reform\\_tradeoff\\_eliminating\\_tax\\_expenditures\\_reducing\\_rates\\_0.pdf](https://www.taxpolicycenter.org/sites/default/files/publication/153246/the_tax_reform_tradeoff_eliminating_tax_expenditures_reducing_rates_0.pdf) [<https://perma.cc/BJ2N-XAHY>] (describing the recent tradeoff in the tax reform debate about lowering rates across the board versus eliminating tax expenditures that benefit various individuals and organizations).



distinct, but similar, injuries are imminent, and the decisionmaker must act to minimize harm. But that was exactly the position the Army Corps of Engineers found themselves in during Hurricane Harvey in August 2017.<sup>103</sup> The Corps manages a flood-control project in Houston, and, faced with more floodwater than it had ever encountered, the Corps had to decide whether it should increase the rate of release from the project—inundating downstream properties, but saving certain upstream properties—or continue limiting water release, which would benefit downstream properties at the expense of upstream ones.<sup>104</sup> As of October 2017, sixty-one property owners, some upstream and some downstream, had filed claims for uncompensated takings, maintaining the Corps deliberately prioritized other properties over theirs.<sup>105</sup>

As discussed in section II.B.2, this precise type of takings claim, resulting from a temporary government-induced flooding, is an uphill battle—though a successful claim in that context is certainly possible.<sup>106</sup> But the Houston situation is demonstrative of a future in which property is seriously threatened by changing climates, and governments must choose how best to use their finite resources to protect parcels. Estimates of sea-level increase by the year 2100 resulting from climate change are highly variable but range from 0.3 meters on the low end<sup>107</sup> to 2.0 meters on the high end.<sup>108</sup> The impact of sea-level rise on the U.S. population could be

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103. See Echeverria & Meltz, *supra* note 6; see also Shannon Sims, *The U.S. Flooded One of Houston's Richest Neighborhoods to Save Everyone Else*, *Bloomberg Businessweek* (Nov. 16, 2017), <https://www.bloomberg.com/news/features/2017-11-16/the-u-s-flooded-one-of-houston-s-richest-neighborhoods-to-save-everyone-else> (on file with the *Columbia Law Review*).

104. Echeverria & Meltz, *supra* note 6. Ultimately, the Corps opted to release a significant amount of water—up to 13,000 cubic feet per second. *Id.*

105. *Id.* Downstream owners claimed that their homes were essentially sacrificed to protect upstream property owners and to avoid the possibility of a dam failure, which would have inundated not only downstream owners' properties, but many others as well. Upstream owners claimed that the Corps could have released more water but chose not to, prioritizing downstream owners at their expense. *Id.*

106. See *supra* notes 58–63 and accompanying text.

107. Intergovernmental Panel on Climate Change, *Summary for Policymakers, in Climate Change 2013: The Physical Science Basis, Summary for Policymakers* 3, 23 (Thomas F. Stocker et al. eds., 2013), [https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5\\_SPM\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_SPM_FINAL.pdf) [<https://perma.cc/G3TF-GFMD>].

108. Martin Vermeer & Stefan Rahmstorf, *Global Sea Level Linked to Global Temperature*, 51 *Proc. Nat'l Acad. Sci.* 21,527, 21,531 (2009). Recent evidence taking into account the unexpectedly high rate of melting ice in Antarctica suggests that estimates on the higher end of the spectrum are likely to be more accurate. See Robert M. DeConto & David Pollard, *Contribution of Antarctica to Past and Future Sea-Level Rise*, 531 *Nature* 591, 596 (2016) (noting that melting Antarctic ice has the potential to contribute a meter of sea-level rise by 2100 and more than fifteen meters by 2500); see also Brady Dennis & Chris Mooney, *Scientists Nearly Double Sea Level Rise Projections for 2100, Because of Antarctica*, *Wash. Post* (Mar. 30, 2016), <https://www.washingtonpost.com/news/energy-environment/wp/2016/03/30/antarctic-loss-could-double-expected-sea-level-rise-by-2100-scientists-say/> (on file with the *Columbia Law Review*).

devastating: A sea-level increase of 0.9 meters could inundate a land area home to 4.2 million people, and a larger increase of 1.8 meters could impact 13.1 million.<sup>109</sup> It is likely that within the next few decades, governments will face pressure to act to save certain vulnerable parcels—beginning what stands to be a controversial and expensive undertaking.

This section discusses three broad categories of government climate change adaptations that might benefit certain landowners' property at the expense of others' and could, therefore, create potential takings liability.

1. *Direct Action.* — The most straightforward action that might lead to takings liability in this context would be if the government itself took some adaptive measure, with the goal of protecting some property, but in the process negatively impacted other property that would not otherwise have been affected.<sup>110</sup> To return to the example provided in the introduction, if the government built sea barriers to protect low-lying areas of Manhattan from climate change, and as a direct result, flooded adjacent properties, those property owners whose land only flooded because of government action might choose to bring a takings claim.<sup>111</sup>

In addition to the general difficulties of demonstrating causation, which is always a requirement of a takings claim,<sup>112</sup> plaintiffs in such a case would specifically have to demonstrate that their land flooded *only* because of government action.<sup>113</sup> Courts have typically held that when harm to property would have resulted in the absence of government action—even if the harm would have come later than it did in the presence of action—the property owner has no takings claim.<sup>114</sup>

2. *Legislative or Regulatory Changes.* — Alternatively, a government might change a law to encourage climate change adaptations that ultimately result in certain owners protecting their property at the expense of others. For example, suppose a government had a prohibition against seawalls,<sup>115</sup> but bowing to pressure from certain owners who claim they

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109. Matthew E. Hauer et al., Millions Projected to Be at Risk from Sea-Level Rise in the Continental United States, 6 *Nature Climate Change* 691, 691 (2016).

110. See Dana, *supra* note 8, at 286. Professor David Dana refers to these in his article as “improper diversion” claims.

111. See *supra* notes 8–13 and accompanying text.

112. See *Ridge Line, Inc. v. United States*, 346 F.3d 1346, 1355 (Fed. Cir. 2003) (explaining that, to make out a successful takings claim, the loss to property must be intended by the government or a foreseeable result of government action).

113. See *Sanguinetti v. United States*, 264 U.S. 146, 149–50 (1924) (holding that no compensation was owed to the plaintiff because, even absent government action, his property would have been somewhat inundated anyway).

114. See, e.g., *Nicholson v. United States*, 77 Fed. Cl. 605, 617 (2007) (holding that no takings claim could be brought following the breach of levees during Hurricane Katrina because it was the hurricane, not the deficient levees, that was the primary cause of the flooding).

115. There are strong environmental reasons for such policies. Among other things, seawalls may protect property landward of the structure, but they cause increased erosion

need seawalls to protect their property from rising sea levels, the government chooses to repeal this policy. The seawalls that these owners can now legally build could wind up forcing water onto other owners' property.<sup>116</sup> This second set of owners might bring a takings claim against the government, given that the change in law, combined with the resulting predictable impact, was the direct cause of the loss in value to their property. These types of claims—that a change in the regulatory environment diminished an owner's property value—would be analyzed under the Court's *Penn Central* framework,<sup>117</sup> and a plaintiff bringing such a claim would face significant hurdles.<sup>118</sup>

The distinction between a “direct action” and a “regulatory change” is not always clear. For instance, one government adaptation strategy that straddles the boundary between these two categories would be if the government demanded flood easements from property owners. These easements would essentially give the government the right to inundate property in cases of emergency but would not in and of themselves

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on seaward land and on neighboring property, thus often having counterproductive total effects. See Molly Loughney Melius & Margaret R. Caldwell, Stanford Law Sch., 2015 California Coastal Armoring Report: Managing Coastal Armoring and Climate Change Adaptation in the 21st Century 8 (2015), <https://law.stanford.edu/wp-content/uploads/2015/07/CalCoastArmor-FULL-REPORT-6.17.15.pdf> [<https://perma.cc/C4L3-6VUA>].

116. Given the negative impact that seawalls can have on neighboring property owners, it is often sensible policy to prohibit them. Indeed, “[b]ecause seawalls cause increased erosion on neighboring properties, the construction of one seawall will often lead to the need for others.” *Id.*

117. See Robert Meltz, Takings Law Today: A Primer for the Perplexed, 34 Ecology L.Q. 307, 329 (2007) (explaining that when a government reduces a property's value but “falls short of completely eliminating use and/or value[,] courts use the test announced in *Penn Central*”).

118. A crucial prong in a *Penn Central* analysis is the extent to which the result of an alleged taking differs from a plaintiff's investment-backed expectations for her property. See *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (“The economic impact of the regulation on the claimant and, particularly, the extent to which the regulation has interfered with distinct investment-backed expectations are, of course, relevant considerations.”). Determining what a plaintiff reasonably expected about her land—like most *Penn Central* analyses—would be a heavily fact-specific inquiry. See *Ark. Game & Fish Comm'n v. United States*, 568 U.S. 23, 31–32 (2012) (“[M]ost takings claims turn on situation-specific factual inquiries.” (citing *Penn Cent.*, 438 U.S. at 124)). But if a plaintiff's parcel is located in an especially vulnerable area, or if climate change–related property injuries become increasingly frequent in the future, that would generally cut against finding a taking. In a future in which the impacts of climate change become a significant problem for property owners and governments, thus necessitating widespread government intervention and regulation, property owners who purchase vulnerable parcels would be aware going into the transaction that a deprivation of property rights to benefit the public good would be a distinct possibility. See generally Robert M. Washburn, “Reasonable Investment-Backed Expectations” as a Factor in Defining Property Interest, 49 Wash. U. J. Urb. & Contemp. L. 63, 65 (1996) (“The concept of distinct investment-backed expectations brings the economic impact of a regulation into the takings analysis by asking whether the regulation interferes impermissibly with expectations on which the owner has invested resources.”).

necessitate a temporary or permanent intrusion onto a property owner's parcel. This type of adaptation—a regulatory change in anticipation of later flooding—poses an especially difficult takings question.<sup>119</sup>

3. *Inaction.* — Finally, the government might choose to take no adaptive measures. It would generally be considered anathema to the takings doctrine that the government might face liability for doing nothing,<sup>120</sup> but Professor Christopher Serkin has considered this very possibility and developed a theory of “passive takings.”<sup>121</sup> Passive takings may be rare, but they would arise most often in instances when the government has set a statutory scheme on which property owners rely, and then a factual change in circumstance makes that scheme obsolete.<sup>122</sup> For example, if a government had a policy against seawalls, but then a factual change makes sea-level rise a more salient threat, and the government did not change its policy, Serkin argues it might be liable for a passive taking claim brought by the property owners who could not protect their property under the old statutory scheme.<sup>123</sup>

Note the symmetry between the seawall examples in this section and in section II.A.1. In one, the government might be liable if it allows seawalls to be built because it could impact adjacent landowners, and in the other, the government might be liable if it does not allow seawalls to be built because it would prevent different owners from taking protective measures. If liability attaches in both cases, it seems the government is damned if it does and damned if it doesn't. But if one goal of takings law is to force the government to internalize the externalities that its decisions entail, then perhaps the government *should* be damned either way.<sup>124</sup> The government maximizes social utility when it incorporates the

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119. As discussed in section II.B.1, a government action that results in a permanent physical occupation of a plaintiff's property is analyzed under the Court's per se takings doctrine and is generally more favorable to plaintiffs. But a mere regulatory change is analyzed under the Court's ad hoc *Penn Central* framework. See supra notes 24–25 and accompanying text. Thus, for a plaintiff bringing a takings claim after the government imposed an easement but before any physical inundation had occurred, it would be unclear which framework—which can be dispositive in takings cases—to apply.

120. See *Nicholson v. United States*, 77 Fed. Cl. 605, 620 (2007) (“In no case that we know of has a governmental agency's failure to act or to perform its duties correctly been ruled a taking.”); Davis, supra note 40, at 34 (“[E]arly Supreme Court cases held that in order to successfully state a takings claim, a claimant must show some intentional government action to directly appropriate property.”).

121. Christopher Serkin, *Passive Takings: The State's Affirmative Duty to Protect Property*, 113 Mich. L. Rev. 345 (2014).

122. See *id.* at 378 (“By defining the content of property, the government is analogous to the driver who sets the car in motion. The government cannot later claim that it did not act when that definition of property comes crashing into some new reality.”).

123. *Id.* at 394–97.

124. See Frederic Bloom & Christopher Serkin, *Suing Courts*, 79 U. Chi. L. Rev. 553, 576 (2012) (explaining that one purpose of the Takings Clause, rooted in standard economic theory, is to “force the government to internalize the costs of its actions, thereby . . . ensuring that government actions create more benefit than harm”). How takings law

costs of both action and inaction into its decision and chooses the least costly option.<sup>125</sup>

Though passive takings present a strong theoretical appeal—particularly in a trolley problem context where an actor might cause greater harm through inaction than through action—no court has yet attached takings liability for inaction.<sup>126</sup> And an April 2018 Federal Circuit ruling in litigation that resulted from flooding caused by Hurricane Katrina explicitly closes the door on imposing takings liability for government inaction under modern doctrine.<sup>127</sup> Therefore, although this Note will briefly discuss the potential policy benefits of passive takings in section III.B.2, the remainder of Part II will proceed under the assumption that a government would not face liability for inaction.

B. *The Flood Doctrine Cuts in Favor of Finding Takings Liability in Certain Climate Change Contexts*

This section applies the Supreme Court’s flood-related takings jurisprudence in the context of government-induced harm to property that results from climate change adaptation. It concludes that, in instances of permanent deprivation of property, the flood precedents cut strongly in favor of finding a taking. In instances of temporary deprivation, a court might have to go through a *Penn Central* framework,<sup>128</sup> which would produce varied results.

1. *Government Action that Results in a Permanent Deprivation.* — For certain types of takings claims resulting from climate change adaptations, the application of the Supreme Court’s flood takings jurisprudence is relatively straightforward. The Court has consistently held that persistent flooding that is the direct result of government action is a taking per se.<sup>129</sup> It stands to reason, then, that if the government constructs a dam or seawall and, in doing so, floods a property owner’s land that would not

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could be broadened to force the government to internalize the costs of climate change adaptation is discussed further in section III.B.

125. See *id.*

126. See Serkin, *supra* note 121, at 349 (“Courts and commentators frequently assert—and even more frequently assume—that the Takings Clause is implicated only when the government changes the law.”); see also, e.g., *Nicholson v. United States*, 77 Fed. Cl. 605, 620 (2007) (“In no case that we know of has a governmental agency’s failure to act or to perform its duties correctly been ruled a taking.”).

127. See *St. Bernard Par. Gov’t v. United States*, 887 F.3d 1354, 1360 (Fed. Cir. 2018) (“On a takings theory, the government cannot be liable for failure to act, but only for affirmative acts by the government.”).

128. For a brief discussion of the *Penn Central* framework, see *supra* notes 24–25, 61 and accompanying text.

129. See, e.g., *Pumpelly v. Green Bay Co.*, 80 U.S. (13 Wall.) 166, 181 (1871) (establishing the per se rule in a flooding context); see also *supra* notes 31–34 and accompanying text.

otherwise have been inundated by rising sea levels, that would qualify for per se taking analysis under the *Pumpelly* line of precedent.<sup>130</sup>

Plaintiffs bringing such claims, though, would still have to clear basic hurdles of takings law. Specifically, plaintiffs would likely have to satisfy both *Ridge Line* elements and show that they had suffered a taking, as opposed to a mere tort.<sup>131</sup> This would require a demonstration that the harm suffered was the “predictable result” of the government action and that it was “sufficiently substantial to justify a takings remedy.”<sup>132</sup> In light of *Arkansas Game & Fish*, this second prong would not necessarily require that plaintiffs suffer a permanent deprivation.<sup>133</sup> However, in order for claims to receive per se treatment as physical occupations of property—as opposed to ad hoc *Penn Central* treatment—plaintiffs would probably have to satisfy the standard established in *United States v. Cress* and show that the inundations are frequent and recurring.<sup>134</sup>

Short of a finding of public necessity, as discussed in section II.C, direct government action that leads to the permanent deprivation of a property right would likely result in a successful takings claim under current doctrine.

2. *Government Action that Results in a Temporary Deprivation.* — Climate change adaptations that result in temporary deprivations are more complicated. The Supreme Court said in *Arkansas Game & Fish* that a temporary deprivation due to government-induced flooding could lead to a successful takings claim, but the inquiry would be a fact-specific one and turn on the peculiarities of a given case.<sup>135</sup> The Court has not yet clarified how exactly that fact-specific inquiry should be conducted, but it might involve something akin to the *Penn Central* framework,<sup>136</sup> a mode of analysis in which successful takings claims are exceedingly rare.<sup>137</sup> How

130. See supra notes 27–39 and accompanying text.

131. See supra notes 46–51 and accompanying text.

132. *Ridge Line, Inc. v. United States*, 346 F.3d 1346, 1355 (Fed. Cir. 2003).

133. See supra notes 52–59 and accompanying text.

134. See 243 U.S. 316, 328 (1917); see also supra note 33 and accompanying text. For a discussion of the type of analysis a court would conduct for a truly temporary inundation that does not rise to the *Cress* standard, see infra section II.B.2.

135. See *Ark. Game & Fish Comm’n v. United States*, 568 U.S. 23, 31–32 (2012) (“[M]ost takings claims turn on situation-specific factual inquiries.” (citing *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978))).

136. *Dana*, supra note 8, at 292.

137. See Hubbard et al., supra note 61, at 141 (noting that plaintiffs bringing *Penn Central* claims succeed less than ten percent of the time); Michelman, supra note 61, at 1621 (noting the structural difficulties plaintiffs face in bringing a *Penn Central* claim). An additional challenge is that, unlike in the case of a straightforward, permanent deprivation of a property right—which would constitute a per se taking that could only be defeated if a court felt the public necessity defense applied—a *Penn Central* analysis is fundamentally a balancing exercise where the public benefit from the disputed government action is baked into the inquiry. See *Penn Cent.*, 438 U.S. at 124 (advising against finding a taking “when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good”). Thus, even if a court thought that, as a

willing American courts will be to recognize takings claims in the context of a temporary deprivation of property rights is very much an open question.<sup>138</sup> But the outcome of litigation surrounding the Army Corps of Engineers' decision to release a large quantity of flood water in the Houston area following Hurricane Harvey—which led to a temporary inundation of many parcels and allegedly caused significant downstream and upstream property damage—could provide helpful clues in the coming months.<sup>139</sup>

C. *The Public Necessity Doctrine Cuts Against Finding Takings Liability*

This section assesses the extent to which the public necessity doctrine would justify noncompensation when the government has taken adaptive action in response to climate change. Courts confronting this question would face two steps of analysis: (1) determining whether the doctrine of public necessity should even apply in the context of climate change adaptation;<sup>140</sup> and (2) determining, based on the factual basis of a particular case, whether the government acted out of “actual necessity.”<sup>141</sup>

1. *Whether Public Necessity Applies at All for Climate Change Adaptations.* — Because there is no precedent directly addressing whether a public necessity defense from takings liability should be allowed in cases of government-sanctioned climate change adaptations—and because courts applying the public necessity exception in other contexts have been

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threshold matter, climate change adaptation did not rise to the level of public necessity required to defeat a per se takings claim, a court conducting a *Penn Central* analysis would take the government's utilitarian calculus into account. See Eric R. Claeys, Takings and Private Property on the Rehnquist Court, 99 Nw. U. L. Rev. 187, 192 (2004) (describing the *Penn Central* test as a balancing inquiry in which the court takes into account the “social value” of the government action). And, in many cases involving extreme climate and weather events, it is difficult to imagine a court not being swayed by the government's justification for action in these types of contexts. Indeed, given how rare successful takings are under a *Penn Central* framework, see Hubbard et al., supra note 61, at 141, were the government to provide the justification that it inundated plaintiffs' parcel in an attempt to avert catastrophic property loss, such a defense is almost sure to find a sympathetic ear in any court applying the typical *Penn Central* framework.

138. See Dupont, supra note 60, at 3 (questioning what practical significance *Arkansas Game & Fish* will have).

139. See supra notes 103–105 and accompanying text.

140. This step is generally an implicit part of the takings analysis, as the types of cases in which a court will consider the public necessity exception fall into a finite enumerated set of categories for which a rich common law background already exists—for instance, military actions, police chases, conflagrations, or stopping the spread of diseases. See generally Cohan, supra note 22, at 690–732 (discussing the contexts in which the public necessity doctrine is typically invoked and providing case law for each topic).

141. See *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378 (Fed. Cir. 2013) (“The Supreme Court has consistently held that the doctrine of necessity may be applied only when there is an imminent danger and an actual emergency giving rise to actual necessity.”).

hesitant to set well-defined rules on its application<sup>142</sup>—a court seeking to answer whether the exception should be allowed in this context would do well to begin the analysis by examining the principles that justify the exception in other contexts.

There are two broad classes of justifications for the public necessity doctrine.<sup>143</sup> First, the exception often arises in situations in which a government actor—typically not an appointed or elected official—has to think quickly, often with the public welfare on the line.<sup>144</sup> To that end, the public necessity exception could be seen almost as a common law form of takings immunity: In order to incentivize government officials to act for the public good without regard to private loss, the government cannot be held liable for its decisions.<sup>145</sup> But the doctrine does not operate only in instances when individual government employees are forced to make snap decisions. In *Miller v. Schoene*, for example, the Supreme Court said the government was not liable for a taking after a duly elected legislature made a deliberative decision to sacrifice some property in order to protect apple trees from disease.<sup>146</sup>

This speaks to a second, ultimately more important, class of justifications for the public necessity doctrine: There are times when the government's utility maximization problem is so clear, and the stakes are so high, that it would be public malpractice not to take private property.<sup>147</sup> There are some who argue convincingly that this is a bad justification and that—even in dire situations where the utility-maximizing calculus is clear—the government should still be forced to compensate

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142. E.g., *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 156 (1952) (“No rigid rules can be laid down to distinguish compensable losses from noncompensable losses.”).

143. See Brian Angelo Lee, *Emergency Takings*, 114 Mich. L. Rev. 391, 410–11 (2015). Professor Brian Lee actually identifies four classes of justifications for the public necessity exception in his article, but for the purposes of this Note, those four classes can be collapsed into two. Lee's first justification stems from the notion that government officials will be hesitant to act in emergency situations if they believe the government (or even themselves personally) will be held liable for a taking. *Id.* His second, third, and fourth reasons all stem from the notion that the utilitarian calculus in emergency situations is clear (either because the government is not actually responsible for the destruction, because the property owner is actually receiving a reciprocal benefit from the government, or because the government is exercising police powers and not eminent domain powers in emergency settings). *Id.*

144. See, e.g., *Bowditch v. Boston*, 101 U.S. 16, 18–19 (1879) (holding that the city did not owe compensation for property destroyed in an effort to prevent the spread of a fire).

145. See Lee, *supra* note 143, at 411 (noting that a common justification for the public necessity exception is to avoid a situation in which a government official does not act in an emergency out of concern that the government—or she personally—may be held liable for a taking).

146. 276 U.S. 272, 279 (1928).

147. See Lee, *supra* note 143, at 404–05. Lee refers to this justification as “destruction necessity” and differentiates the necessity to destroy property from the necessity to not compensate a property owner for that destruction. See *infra* notes 152–161 and accompanying text.



the few it sacrifices in favor of the many.<sup>148</sup> This viewpoint has merits, and this Note largely endorses it in section III.B, but courts tend to be sympathetic to the government when it so clearly acts for an overwhelming public good.<sup>149</sup> Even cases that reject the application of the public necessity defense do not reject the *justification* for the defense.<sup>150</sup> For example, in *TrinCo*, the court refrained from holding that public necessity could never justify the government's destroying property to stop the spread of fire; rather, the court simply doubted that the fire in question was actually a significant threat to other property and asked for further factual development.<sup>151</sup>

Professor Brian Lee makes a useful distinction, however, between the justification for the government *destroying* private property in the face of a dire emergency and the justification for the government deciding not to *compensate* property owners for that destruction.<sup>152</sup> Even if the government has acted perfectly sensibly in sacrificing a few pieces of property to save a larger set of properties, that does not necessarily explain why, under the Fifth Amendment, the government owes the injured property owners no compensation.<sup>153</sup> Lee points to two prevailing principles that justify noncompensation: first, administrative difficulties in determining how much and to whom compensation is owed, and second, fiscal constraints in the government being able to afford the payments to all of the offended property owners.<sup>154</sup>

Courts' application of the public necessity exception is, in many ways, more understandable in light of these two noncompensation principles. In certain contexts—for example, during times of war, when records are destroyed or many property owners are killed—it may be practically impossible to determine who is actually owed compensation

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148. See Kuo, *supra* note 1, at 128–31 (“This Article contends that the public necessity defense should not apply to losses occasioned by disaster response.”); Lee, *supra* note 143, at 453 (arguing that justifications for noncompensation in emergency takings cases “lack persuasive force”).

149. See, e.g., *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 156 (1952) (finding a wartime public necessity exception defeated what otherwise would have been a certain *per se* taking); *Bowditch*, 101 U.S. at 18 (holding that Boston officials were justified in destroying the plaintiff's building to stop the spread of a fire). Some cases, such as *Bowditch*, can be justified by both rationales: A government official acts against a ticking clock, and the utilitarian calculus is clear and overwhelming.

150. E.g., *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378–80 (Fed. Cir. 2013) (holding that the record was not sufficiently factually developed to sustain a motion to dismiss based on the public necessity exception).

151. *Id.*

152. Lee, *supra* note 143, at 404–07 (distinguishing between “destruction necessity,” which justifies the government destroying private property, and “noncompensation necessity,” which justifies the government not paying the property owner for that destruction).

153. *Id.*

154. *Id.* at 406.

and how much property was actually destroyed.<sup>155</sup> This provides a reasonable justification for the *Caltex* Court, writing seven years after World War II ended, deciding that wartime losses are typically not compensable under the Fifth Amendment—even if the Court did not explicitly rely on the administrative difficulties of compensation in reaching its conclusion.<sup>156</sup>

A different type of administrative difficulty might justify noncompensation in the context of conflagration cases. Oftentimes when firebreaks are set and private property is destroyed it is unclear whether that private property would have survived the fire in the absence of government action.<sup>157</sup> Noncompensation in these cases, then, may be conflated with the general causation difficulties of takings claims: Because it is so practically difficult to determine whether the condemned property would have survived the fire—and if so, how much damage it would have sustained anyway—courts may have chosen simply to withdraw from the inquiry and as a matter of law decide that, in cases in which a government destroys property out of necessity posed by a fire, no takings compensation is due.<sup>158</sup>

Given these two noncompensation justifications—administrative difficulties and fiscal constraints—government adaptation in the face of the potentially disastrous effects of climate change presents a strong case for noncompensation. Climate change poses a unique judicial challenge, combining the significant administrative difficulty of determining precisely how much damage a given government action caused to a given property owner's parcel<sup>159</sup> with the staggering financial burden a government might face if it were forced to compensate property owners for all diminution in value that resulted from climate change adaptations.<sup>160</sup> Although courts are a bit opaque in expounding on their rationale for exempting certain emergency takings from

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155. See *id.*

156. See *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 156 (1952) (refusing to articulate a principle of noncompensation and instead stating that “[n]o rigid rules can be laid down to distinguish compensable losses from noncompensable losses”).

157. See, e.g., *Bowditch v. Boston*, 101 U.S. 16, 16 (1879) (“The fire did not first break out in his premises, but that part of the building and the contents were in danger from its progress.”).

158. See *Lee*, *supra* note 143, at 420 (explaining the intuition of the noncompensation principle in cases of imminent destruction from fire).

159. For example, demonstrating the causal impact between the Army Corps of Engineers' actions after Hurricane Harvey in Houston and the resulting property damage will be a significant hurdle for many of the plaintiffs in that action. See *Echeverria & Meltz*, *supra* note 6. Just as how this administrative difficulty may justify noncompensation in the fire context, see *supra* note 157 and accompanying text, so too might it justify noncompensation in a flood and climate change context.

160. See *supra* note 99 and accompanying text.

compensation,<sup>161</sup> takings carried out in the context of adapting to climate change seem to present both of the key features scholars have identified that would justify noncompensation in other contexts: It will often be practically difficult to determine the extent to which compensation is actually owed,<sup>162</sup> and it might be incredibly costly for the government to make whole all property owners who have been adversely impacted by the relevant climate change adaptation.<sup>163</sup> Therefore, if courts are consistent in their application of the necessity exception, it stands to reason that at least *some* climate change adaptation claims may be good candidates for that exception.

2. *Determining “Actual Necessity.”* — Even if courts determine that public necessity can, in certain circumstances, justify noncompensation for government takings in the context of climate change adaptation, that does not mean that the government would be free from takings liability in *every* climate change takings case.<sup>164</sup> The efficacy of the government’s public necessity defense in a given case would likely depend on the extent to which a court was willing to believe that the government faced an “actual necessity.”<sup>165</sup> The actual necessity standard is the Federal Circuit’s interpretation of what the Supreme Court requires in public necessity cases<sup>166</sup>—though at least one commentator has questioned

161. See Lee, *supra* note 143, at 394 (noting that “courts so often have endorsed [the noncompensation] principle despite its apparent incompatibility with other key features of takings law”).

162. The Hurricane Harvey litigation illustrates this point. See Echeverria & Meltz, *supra* note 6. Although the takings claims in those cases are for a temporary deprivation allowable under *Arkansas Game & Fish*, *id.*, even if government action in an analogous situation led to a permanent inundation, it might still be difficult to determine whether the flooding was attributable solely to the government’s action or would have occurred even in the absence of government intervention. In other words, the causal difficulties of making out a takings claim in these cases might lead to something like the conflagration rule developing in a climate change context, leading to the result that the government can claim a necessity exception so long as it can demonstrate “actual necessity.” See *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378 (Fed. Cir. 2013) (holding that the government could claim a public necessity exception for destroying property to fight a fire only if it could show the destruction stemmed from an actual necessity).

163. See *supra* note 160 and accompanying text.

164. Recall that in *TrinCo*, the Federal Circuit reversed and remanded a finding of government immunity from the takings claim on the grounds that the Court of Federal Claims did not sufficiently develop the factual record to determine that the government actually acted out of dire necessity. 722 F.3d at 1380. As the Federal Circuit explained, “The Supreme Court has consistently held that the doctrine of necessity may be applied only when there is an imminent danger and an actual emergency giving rise to actual necessity.” *Id.* at 1378.

165. *Id.*

166. *Id.* In the paragraph adopting the “actual necessity” language, the Federal Circuit cited four Supreme Court cases that it claimed establish the requirements of the public necessity exception: *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 151–56 (1952) (holding that wartime justified noncompensation for destruction of private property in the Philippines); *Ralli v. Troop*, 157 U.S. 386, 405–06 (1895) (holding that port authorities were justified in destroying a ship’s cargo to quell a fire); *Bowditch v. Boston*, 101 U.S. 16,

whether the Federal Circuit has heightened the standard beyond what the Supreme Court has actually held in its public necessity cases.<sup>167</sup> No case law since *TrinCo* has elucidated precisely what constitutes actual necessity,<sup>168</sup> but the plain text of the *TrinCo* court's decision indicates that an actual necessity must arise out of "an imminent danger and an actual emergency."<sup>169</sup> Although the case law on this matter is not fully developed, cases in the public necessity context often turn on the short timeframes in which government actors must make a decision.<sup>170</sup> Therefore, courts might be skeptical that governments truly act out of necessity if they take steps months or years in advance to adapt to the destructive effects of climate change.<sup>171</sup> A court strictly applying *TrinCo* might be unlikely to find the actual necessity standard met for such adaptations.

Ultimately, this would likely be a fact-specific inquiry that would depend on the underlying nature of the action and the environment,<sup>172</sup> but there are two factors that might generally cut in favor of courts finding that governments are indeed acting out of necessity. First, if courts recognize that climate change often necessitates large-scale public policy responses,<sup>173</sup> courts would be creating perverse incentives if they only allowed the public necessity defense in truly dire cases. This would motivate the government to wait until it can bolster its actual necessity claim before it acts, resulting in the absurd situation in which the government can avoid liability by waiting to act until the last possible moment. Second, one could argue that it is not a short timeframe and a ticking clock that create an actual necessity defense but rather the

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16–19 (1879) (holding that city officials were justified in destroying a house to stop the spread of an urban fire); and *Mitchell v. Harmony*, 54 U.S. (13 How.) 115, 135 (1851) (holding that the military could destroy property during the Mexican–American War to prevent it from falling into the hands of the enemy only upon a showing of emergency).

167. See Owsley, *supra* note 86, at 393–95 (discussing the four Supreme Court cases cited by the Federal Circuit in defense of the "actual necessity" test and determining that the textual support for the test is marginal).

168. See *id.* at 395 ("Ultimately, we do not yet know how the federal courts will react to *TrinCo* . . .").

169. *TrinCo*, 722 F.3d at 1378.

170. See, e.g., *Bowditch*, 101 U.S. at 18–19; see also *supra* notes 143–146 and accompanying text.

171. Cf. *TrinCo*, 722 F.3d at 1380 (holding that a public necessity defense may have been granted in error because it was not yet clear that destruction of the private property in question was necessary to prevent the spread of the fire).

172. Cf. *id.* (holding that more factual development was necessary to determine whether the case at hand indeed merited the public necessity exception).

173. See Ackerman & Stanton, *supra* note 99, at 2 (estimating the cost of unchecked climate change at approximately \$1.9 trillion per year by 2100); Hauer et al., *supra* note 109, at 691 (finding that a sea-level increase of 0.9 meters in the United States could inundate a land area home to 4.2 million people, and a larger increase of 1.8 meters could impact 13.1 million).

*certainty* of catastrophic harm.<sup>174</sup> Thus, even if the government acted well in advance of a dangerous climate event, if it could demonstrate that harm was certain, it could still potentially demonstrate actual necessity.

All this is to say that, were courts to adopt *TrinCo's* actual necessity test, whether the government faced takings liability for a given climate change adaptation would depend on the extent to which the court found the circumstances constituted an emergency. Professor Robin Craig adopted a similar view and encouraged governments to frame seizing water resources in the context of climate change adaptation as “emergencies” in order to bolster claims for takings immunity.<sup>175</sup> Under this theory, even if water resources in times of scarcity are redistributed from the many to the few for the public good, governments are more likely to reap the benefits of the public necessity doctrine if such activity is labeled from the beginning as an emergency action.<sup>176</sup> Broadening this principle to all trolley problem–type climate change problems, adaptations taken closer to the anticipated date of climate change–related harm might be more likely to receive takings immunity than those taken further from the date of anticipated harm.

### III. SHORTCOMINGS OF THE TAKINGS DOCTRINE AND INTERNALIZING THE COSTS OF CLIMATE CHANGE

Part III of this Note resolves the tension between the Court’s flood-related takings jurisprudence and the public necessity exception and discusses what results when the two doctrines collide. Section III.A applies the two existing frameworks and explains why, given the current doctrine, courts could use the public necessity exception to hold that, at least under certain circumstances, the government is not liable for takings that result from climate change adaptations. Section III.B argues on policy grounds that this is a suboptimal result and that the takings doctrine should not foreclose liability in these contexts. Section III.C briefly discusses some pitfalls of a broader approach to government takings liability in the climate change context and how those problems could be avoided.

#### A. *Resolving the Conflict Between Flood-Related Takings and Public Necessity*

Applying these conflicting doctrines requires two logical steps. First, the public necessity exception is a defense to a per se taking regardless of

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174. Cf. *TrinCo*, 722 F.3d at 1377–80 (finding that *TrinCo's* contention that the fire in question would not necessarily have burned any of its land absent government action raised sufficient doubts about whether an emergency actually existed to justify allowing *TrinCo's* taking claim to proceed on the merits).

175. See Robin Kundis Craig, *Adapting Water Law to Public Necessity: Reframing Climate Change Adaptation as Emergency Response and Preparedness*, 11 *Vt. J. Envtl. L.* 709, 744–48 (2010).

176. *Id.*

how strong of a claim a plaintiff otherwise has.<sup>177</sup> Second, a court would have to determine whether climate change is a context in which the public necessity exception is a valid takings defense, and also, given the peculiarities of a given case, whether the government acted out of actual necessity.<sup>178</sup> If so, then a plaintiff would likely not have a cognizable takings claim when the government acts at the expense of that plaintiff's property to minimize the impacts of climate change.<sup>179</sup>

1. *Public Necessity as a Defense to a Per Se Taking.* — Though the policy justifications for the per se takings rule in flood contexts may be stronger than the policy justifications for the public necessity exception,<sup>180</sup> a court does not apply the two doctrines by balancing one against the other. Even though, as discussed in section II.B, the court's flood-related takings jurisprudence maps neatly onto the sorts of problems that could result from climate change adaptations, the fact that a climate change taking might look very similar to a traditional flood-related taking is not the end of the inquiry. A valid public necessity claim defeats a per se taking,<sup>181</sup> but a per se takings claim—even a canonical one—cannot defeat a valid public necessity defense.<sup>182</sup> Therefore, a court must resolve the tension between the two doctrines by assessing to what extent climate change adaptation could give rise to a valid public necessity claim.

2. *Finding Necessity in Climate Change.* — Determining whether courts would find that climate change adaptations can give rise to a necessity defense is, admittedly, an imprecise science. As discussed in section II.C.1, two of the most convincing justifications for allowing noncompensation for certain emergency takings—administrative difficulties and the immense fiscal burden compensation would place on government

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177. See *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1029 n.16 (1992) (noting that the government is not liable for the destruction of private property in cases of “actual necessity” (quoting *Bowditch v. Boston*, 101 U.S. 16, 18 (1879))); see also *supra* section II.C.1.

178. Cf. *TrinCo*, 722 F.3d at 1378 (articulating the “actual necessity” test).

179. As discussed in section II.A.2, the analysis would be different in situations when a court would use its ad hoc *Penn Central* approach—for example, in cases of temporary deprivation of property rights. In such instances, a court would have to weigh the nature of the government action and the public benefits that would result against the violation of a property owner's reasonable investment-backed expectations. See *supra* notes 117–118 and accompanying text. Thus, regardless of whether the public necessity exception were an outright takings defense, a court could still consider the utilitarian justifications offered by the government on a case-by-case basis. See *supra* notes 136–137 and accompanying text. Because *Penn Central* takings claims succeed less than ten percent of the time, see Hubbard et al., *supra* note 61, at 141, the remainder of this section will discuss the interaction between flood takings and the public necessity defense in a per se context.

180. See *Kuo*, *supra* note 1, at 128–31 (arguing on policy grounds that the public necessity exception should “not apply to losses occasioned by disaster response”).

181. See, e.g., *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 156 (1952) (finding that a wartime public necessity exception defeated what otherwise would have been a certain per se taking).

182. See *Lucas*, 505 U.S. at 1029 n.16; see also *supra* note 177 and accompanying text.

coffers<sup>183</sup>—would cut in favor of courts deciding to allow the exception in this context. Indeed, climate change presents a context both in which it may be practically difficult to determine the extent to which government action *actually* caused property harm and in which the costs of making offended property owners whole could be substantial.<sup>184</sup>

Even if we assume that climate change adaptation does present a context in which public necessity could be invoked to defeat a takings claim, a court following the Federal Circuit test in *TrinCo* would need to determine whether the government faced an actual necessity.<sup>185</sup> No case law since *TrinCo* has clarified this standard,<sup>186</sup> but to the extent that the government could show that harm was imminent,<sup>187</sup> it could likely satisfy the *TrinCo* standard. Even in less extreme cases, a court still might find the actual necessity condition met.<sup>188</sup> The result of this analysis is that there are at least some cases—and, depending on the severity of conditions necessitating climate change adaptation, potentially many cases—in which the government would not face takings liability if it damages owners’ property to minimize the impact of climate change.

#### B. A Broader Takings Doctrine

Despite the current state of takings law and the public necessity exception—which, in many climate change contexts, would likely steer courts away from finding takings liability—there are strong policy reasons to believe that governments *should* face takings liability for climate change adaptations that prioritize the many at the expense of the few.<sup>189</sup> This section discusses the policy implications of takings law on climate change adaptation and how the doctrine could be improved.

1. *Forcing Governments to Internalize the Costs of Climate Change.* — The purpose of the Takings Clause, as stated by the Supreme Court, is to prevent the government from “forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public

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183. Lee, *supra* note 143, at 406 (discussing these two justifications for noncompensation).

184. See *supra* notes 162–163 and accompanying text (discussing the difficulty in determining causation in the Hurricane Harvey litigation and providing an estimate of the potential costs of climate change).

185. See *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378 (Fed. Cir. 2013) (“The Supreme Court has consistently held that the doctrine of necessity may be applied only when there is an imminent danger and an actual emergency giving rise to actual necessity.”).

186. See Owsley, *supra* note 86, at 395.

187. See Craig, *supra* note 175, at 744–48 (encouraging the government to frame water-related takings that result from climate change as “emergencies” to bolster the strength of the public necessity defense for those claims).

188. See *supra* notes 172–175 and accompanying text (discussing how the *TrinCo* standard might apply in a climate change context).

189. See *supra* note 148 and accompanying text.

as a whole.”<sup>190</sup> Given that climate change threatens catastrophic damage to society, affecting potentially millions of U.S. residents,<sup>191</sup> it seems on its face a textbook example of when costs should be borne by the public as a whole. For pure fairness reasons, then, there is a strong argument that expanded takings liability will make future responses to climate change more equitable.

There are also efficiency concerns at play, which relate to an important justification that scholars offer for the Takings Clause’s just compensation provision.<sup>192</sup> According to this argument, the goal of governance is to maximize social welfare, and the government should therefore be forced to realize the full costs of its actions so that it can be sure the benefits outweigh the costs (and if not, refrain from taking that action to begin with).<sup>193</sup> In the context of climate change adaptation, if the government no longer felt that its adaptive action would be utility maximizing if it were asked to bear the full costs of that action, then to what extent was it ever utility maximizing?

A numerical example might be helpful. Suppose the government is lobbied by a group of citizens to take adaptive action to protect a community that has an economic value of fifty units. The government expends forty units to do this, and so, it seems, has made a utility-maximizing decision: expending forty units to save fifty. But suppose the government’s action also inflicts harm of one unit on twenty property owners. In reality, then, this was not a utility-maximizing decision at all. The government inflicted on society a cost of sixty units<sup>194</sup> to save only fifty units. If the government had been forced to compensate those owners whose property it damaged, it might have avoided taking this measure.<sup>195</sup>

The example might be illustrative of a broader, less abstract point: The types of citizens that may be lobbying the government to begin

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190. *Armstrong v. United States*, 364 U.S. 40, 49 (1960).

191. The sheer cost of adaptation and the number of U.S. residents who may be impacted by climate change underscore the necessity of a widespread public response to the impacts of climate change. See *supra* note 173 and accompanying text.

192. See Ronit Levine-Schnur & Gideon Parchomovksy, *Is the Government Fiscally Blind? An Empirical Examination of the Effect of the Compensation Requirement on Eminent-Domain Exercises*, 45 *J. Legal Stud.* 437, 442 (2016) (explaining that one justification for the Fifth Amendment’s compensation provision is that it forces governments to internalize the costs of their actions).

193. See *id.*

194. That is, the forty units the government spent directly plus the twenty units in harm to property owners.

195. This example illustrates the concept of “fiscal illusion,” when government officials might ignore certain costs that are not explicitly contained in their budgets. Bloom & Serkin, *supra* note 124, at 576. Research suggests that the fiscal-illusion effect is weak in real life, and governments might rarely make non-utility-maximizing decisions even in the absence of the compensation provision. Levine-Schnur & Parchomovksy, *supra* note 192, at 463. Still, even if promoting efficiency is not a chief concern of takings policy, spreading the costs of climate change still might help promote fairness.



with—and those likely to receive the most generous government protection in a society facing the perils of climate change—are likely to be those who already have political and economic power.<sup>196</sup> Another important justification for the just compensation provision of the Takings Clause is that it ensures that special interests cannot lobby the government to use its power of eminent domain at the expense of less-connected citizens.<sup>197</sup> Ensuring that the government compensates property owners who are harmed by government decisions could be an important check on special interests' power to impact the government's response to climate change.

Practically speaking, there are various ways the takings doctrine could be broadened. Courts could simply decline to extend the public necessity exception to the context of climate change.<sup>198</sup> Or, more drastically, as various scholars have argued for, the Court could do away with the public necessity exception entirely.<sup>199</sup> The Court could also clarify the *Penn Central* framework or make it easier to bring a successful *Penn Central* claim—as other scholars have called for<sup>200</sup>—so that a sound public rationale for taking private property would not be dispositive in defeating a claim for a temporary or partial economic deprivation.

2. *Liability for Inaction?* — Applying the logic in section III.B.1 would lead one to the conclusion that the action–inaction distinction should have no relevance in determining when the government has to compensate property owners for the impacts of its decisions. If one goal

196. See, e.g., Martin Gilens & Benjamin I. Page, *Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens*, 12 *Persp. on Pol.* 564, 571–72 (2014) (reporting results from a statistical analysis that found that “economic elites and organized interest groups (including corporations, largely owned and controlled by wealthy elites) play a substantial part in affecting public policy, but the general public has little or no independent influence”).

197. See Lee, *supra* note 143, at 434 (describing takings compensation guarding against “opportunistic behavior by small but politically influential groups pursuing their own interests”).

198. Indeed, given that *TrinCo* seems to raise the bar for claiming a public necessity exception, courts would not have to make too much of a logical leap to rule, as a matter of law, that climate change can never in practice rise to the “actual necessity” standard established by that case. See *TrinCo Inv. Co. v. United States*, 722 F.3d 1375, 1378 (Fed. Cir. 2013) (“The Supreme Court has consistently held that the doctrine of necessity may be applied only when there is an imminent danger and an actual emergency giving rise to actual necessity.”). However, the analysis in section II.C.1 suggests that such a ruling might not be consistent with other public necessity holdings.

199. See *supra* note 148 and accompanying text.

200. See, e.g., Gideon Kanner, *Making Laws and Sausages: A Quarter-Century Retrospective on Penn Central Transportation Co. v. City of New York*, 13 *Wm. & Mary Bill Rts. J.* 679, 680–81 (2005) (noting that there have been negative consequences of *Penn Central* and explaining that these consequences were likely unintended); William W. Wade, *Penn Central's Economic Failings Confounded Takings Jurisprudence*, 31 *Urb. Law.* 277, 308 (1999) (suggesting *Penn Central's* parcel-as-a-whole analysis does not adequately capture the economic loss a property owner has suffered). Revisiting the Court's most significant takings case of the last half century is a fairly bold proposal that goes beyond the scope of this Note, but it is an issue that the problem of climate change could stir up.

of takings law is to force the government to make a utility-maximizing decision, the government should have to compensate those it has passively harmed through its decision to take no action, just the same as it should compensate those it actively harms.<sup>201</sup>

Although this result might appeal to economists, it would be a significant expansion of the takings doctrine. A takings claim has always required some sort of government *action*.<sup>202</sup> Though at least one scholar has made out a credible case for when inaction could lead to a takings claim, liability for inaction would only arise in cases when property owners had been relying on government for protection<sup>203</sup>—a condition that would likely be lacking in most climate change takings cases, given governments' generally slow policy response to the threat of climate change. All in all, imposing liability for government inaction would likely be an infeasible response to the question of government climate change adaptation, despite the theoretical and environmental appeal of such an approach.<sup>204</sup>

### C. *Avoiding Undesirable Results from Broader Takings Liability*

This section acknowledges three concerns that could result from broader government takings liability—discouraging the government from taking steps to adapt to climate change, placing an undue financial burden on government coffers, and disproportionately benefitting wealthy landowners—and discusses either why these potential problems will not materialize or how to minimize their downsides.

1. *Discouraging Governments from Taking Adaptive Action.* — One obvious result of broader government takings liability for climate change adaptation might be to discourage the government from taking

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201. For a theoretical discussion on government compensation for inaction, see generally Serkin, *supra* note 121, at 346–49.

202. See *supra* note 120 and accompanying text.

203. Serkin, *supra* note 121, at 378.

204. Especially when delving into property doctrines, which have evolved from centuries of common law that often make less than perfect sense in modern contexts, there is sometimes a tradeoff between following precedent and promoting optimal public policy. Cf. Daniel H. Cole, *The Law & Economics Approach to Property*, 3 *Prop. L. Rev.* 212, 221 (2014) (arguing that judges cannot ignore economic implications in resolving property disputes). It can, at times, be tempting to throw out the doctrine and start again on a fresh sheet of paper, but such an approach undermines the rule of law. See Jeremy Waldron, *Stare Decisis and the Rule of Law: A Layered Approach*, 111 *Mich. L. Rev.* 1, 3 (2012) (acknowledging that there are costs to stare decisis but explaining why the benefits likely outweigh the costs). In the context of climate change, expanding the takings doctrine by limiting the applicability of the public necessity defense would be only a marginal change—and an appropriate balancing of that tradeoff—whereas throwing out the government-action requirement to begin with could upend the doctrine.

aggressive steps to minimize the impacts of climate change.<sup>205</sup> Again, as discussed in section III.B.1, this need not be the case: If governments are simply acting to maximize social utility, then the result of broader government takings liability would simply be to discourage the government from taking *inefficient* steps to minimize the costs of climate change. Indeed, the purpose of imposing takings liability to begin with is not to prevent the government from acting—but to prevent it from acting inefficiently.<sup>206</sup>

The concern that increased takings liability might decrease productive government action perhaps stems from the misconception that the government has wronged a property owner when it is found liable for a taking. But there is nothing inherently wrongful about a government action that results in a taking.<sup>207</sup> Rather, the role of the Takings Clause is to “secure *compensation* in the event of an otherwise proper interference amounting in a taking.”<sup>208</sup> It is not the role of the Takings Clause to punish the government for a wrongful incursion on the rights of private property holder, for oftentimes the government has no reasonable choice but to violate property rights for the public good.<sup>209</sup>

2. *Impacts on Governments’ Financial Resources.* — While the concern about increased takings liability in and of itself seems misplaced, there is a valid concern that broader takings liability would put an undue strain on government coffers, diverting public funds away from other important purposes. Governments, after all, have finite resources and—particularly for state and local governments—are limited in their ability to accumulate debt.<sup>210</sup>

There are two reasonable policy responses to the potential financial strain that increased takings liability may place on governments. First, broader takings liability reflects the belief that the costs of climate

205. See Dana, *supra* note 8, at 295–96 (suggesting that local governments especially may hesitate to take adaptive action on climate change if they believe they will face takings liability).

206. See Bloom & Serkin, *supra* note 124, at 576 (explaining that one purpose of the Takings Clause, rooted in standard economic theory, is to “force the government to internalize the costs of its actions,” thereby “ensuring that government actions create more benefit than harm”).

207. See Lee, *supra* note 143, at 404–05 (“[M]odern judicial language has avoided treating takings as wrongs.”).

208. *First English Evangelical Lutheran Church v. Cty. of Los Angeles*, 482 U.S. 304, 315 (1987).

209. See, e.g., *United States v. Caltex (Phil.), Inc.*, 344 U.S. 149, 155–56 (1952) (refusing to impose liability on the government after the military destroyed plaintiff’s oil fields in the Philippines to avoid the property falling into enemy hands); *Bowditch v. Boston*, 101 U.S. 16, 18 (1879) (holding that the city was justified in destroying plaintiff’s building to stop the spread of a fire).

210. See Nat’l Conference of State Legislatures, NCSL Fiscal Brief: State Balanced Budget Provisions 2 (2010), <https://www.ncsl.org/documents/fiscal/StateBalancedBudgetProvisions2010.pdf> [<https://perma.cc/C6A5-TNCX>] (noting that forty-nine states have some form of a balanced budget provision, with Vermont being the sole exception).

change should be borne by society as a whole and thus might best be accompanied by a corresponding increase in taxes.<sup>211</sup> Imposing takings liability in this case would, in essence, be a transfer of wealth from taxpayers collectively to those specific taxpayers whom the government has harmed through its climate change adaptations.

Second, there are statutory schemes governments could enact to minimize takings and litigation costs. For example, the government could set up a special compensation fund—similar to what it did after 9/11 to compensate victims' families<sup>212</sup>—through which property owners could obtain fixed and immediate compensation and, in exchange, surrender all property claims against the government. The government could also incentivize more-resilient development in areas that are especially prone to floods and other natural disasters, the negative effects of which are likely to be exacerbated by climate change.<sup>213</sup>

3. *Concerns About Compensating Wealthy Landowners.* — There might also be distributional concerns about broader takings liability—that, in some cases, individuals being compensated by the government could be wealthy beachfront property owners who least need the government's help. Further research might be needed on the distributional impacts of broader takings liability to determine what sorts of property owners might be the main beneficiaries of such a legal change.<sup>214</sup>

Even if the distributional impacts of increased takings liability do turn out to be a significant consideration, the efficiency arguments raised in section III.B.1 about incentivizing the government to maximize social utility still stand<sup>215</sup>—with the added caveat that, in maximizing utility, the government may have also exacerbated wealth inequality. Wealth and income inequality are serious problems facing the United States,<sup>216</sup> but

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211. See *Armstrong v. United States*, 364 U.S. 40, 49 (1960) (noting that the purpose of the Takings Clause is to prevent the government from “forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole”).

212. See About the Victim Compensation Fund, September 11th Victim Comp. Fund, <https://www.vcf.gov/genProgramInfo.html> [<https://perma.cc/CT99-AK3E>].

213. See David R. Conrad & Edward A. Thomas, Proposal 2: Reforming Federal Support for Risky Development, in *15 Ways to Rethink the Federal Budget* 17, 18 (Michael Greenstone et al. eds., 2013), [http://www.hamiltonproject.org/assets/legacy/files/downloads\\_and\\_links/THP\\_15WaysRethinkFedDeficit\\_Feb13\\_rev\\_1.pdf](http://www.hamiltonproject.org/assets/legacy/files/downloads_and_links/THP_15WaysRethinkFedDeficit_Feb13_rev_1.pdf) [<https://perma.cc/3UUT-EMWV>] (proposing that the government impose higher development standards in areas likely to be impacted by natural disasters).

214. Information on the income distribution of potential climate change adaptation-related takings plaintiffs was not available and is beyond the scope of this Note.

215. See *supra* notes 190–195 and accompanying text.

216. See Edward N. Wolff, Household Wealth Trends in the United States, 1962 to 2016: Has Middle Class Wealth Recovered? 36 (Nat'l Bureau of Econ. Research, Working Paper No. 24085, 2017) (finding that, in 2016, measures of wealth inequality in the United States were at their highest levels in over fifty years); USA, World Inequality Database, <https://wid.world/country/usa/> [<https://perma.cc/S8W9-75WV>] (last visited Jan. 25, 2019) (showing that the share of income going to the top one percent of earners in the United

tailoring takings law in the face of severe climate change adaptation seems like a suboptimal avenue for the government to pursue a redistributive agenda. Indeed, as Professor David Weisbach argues, such progressive changes are better brought about through the tax code or other policy avenues than through the legal system.<sup>217</sup>

#### CONCLUSION

Societies around the world are already starting to feel the effects of climate change.<sup>218</sup> Within the next few decades, the human and economic costs could be staggering,<sup>219</sup> and governments will soon have to start grappling with the question of who should bear the costs of climate change. This presents a unique legal challenge for the court system, as longstanding Supreme Court precedents on flood-related takings indicate that the government should face takings liability when it intentionally causes flooding on a property owner's parcel, while other precedent suggests that the government does not owe compensation for takings when it acts out of public necessity. Although the takings doctrine, as it currently stands, would likely allow costs to lie where they fall when the government adversely impacts property owners through its attempts to adapt to climate change, that is a shortcoming in the takings doctrine that can and should be corrected. By broadening takings liability, courts can help encourage governments to internalize the costs of climate change adaptation, leading to more efficient and fairer adaptation strategies.

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States increased from about ten percent in 1970 to over twenty percent in 2014, while the share going to the bottom fifty percent of earners dropped from twenty percent to about thirteen percent over that period). See generally Thomas Piketty, *The Economics of Inequality* (Arthur Goldhammer trans., 2015) (discussing the causes and implications of income and wealth inequality).

217. David A. Weisbach, *Should Legal Rules Be Used to Redistribute Income?*, 70 *U. Chi. L. Rev.* 439, 439 (2003) (arguing that policymakers should rely on the tax code and not the legal system to redistribute wealth from higher-income individuals to lower-income individuals).

218. See Henry Fountain & Brad Plumer, *What the Climate Report Says About the Impact of Global Warming*, *N.Y. Times* (Nov. 3, 2017), <https://www.nytimes.com/2017/11/03/climate/climate-change-impacts.html> (on file with the *Columbia Law Review*) (“Global warming is affecting the United States more than ever, and the impacts—on communities, regions, infrastructure and sectors of the economy—are expected to increase.”).

219. See *supra* note 173 and accompanying text.

