

# CLIMATE CHANGE COMMON LAW NUISANCE SUITS: A LEGAL-EFFICIENCY ANALYSIS

BY

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*Multiple common law nuisance lawsuits have been filed against companies to either get them to stop emissions of greenhouse gases or to seek damages for harm from climate change. In American Electric Power v. Connecticut, the United States Supreme Court held that federal common law nuisance lawsuits for injunction of emissions activities were preempted by the Clean Air Act. The viability of state common law nuisance lawsuits, especially for damages, remains an open question, though several lower courts have weighed in on various aspects.*

*This Article provides an economic analysis showing that common law strict liability nuisance lawsuits for climate change damages would increase economic efficiency in all circumstances as well as provide an important incentive for climate change mitigation innovation. Because nuisance determinations can turn on arguments of economic efficiency, we argue that our findings argue for state common law nuisance lawsuits for damages from greenhouse gas emissions to be preserved and allowed to go forward.*

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## I. INTRODUCTION

Like the frog in the slowly heating water, we have proved unable to respond well to the long-term threat of climate change to the point where the threat now may be a short term one. The problem was well summarized by Nathaniel Rich for the New York Times Magazine:

The world has warmed more than one degree Celsius since the Industrial Revolution. The Paris climate agreement — the nonbinding, unenforceable and already unheeded treaty signed on Earth Day in 2016 — hoped to restrict warming to two degrees. The odds of succeeding, according to a recent study based on current emissions trends, are one in 20. If by some miracle we are able to limit warming to two degrees, we will only have to negotiate the extinction of the world's tropical reefs, sea-level rise of several meters and the abandonment of the Persian Gulf. The climate scientist James Hansen has called two-degree warming “a prescription for long-term disaster.” Long-term disaster is now the best-case scenario. Three-degree warming is a prescription for short-term disaster: forests in the Arctic and the loss of most coastal cities. Robert Watson, a former director of the United Nations Intergovernmental Panel on Climate Change, has argued that three-degree warming is the realistic minimum. Four degrees: Europe in permanent drought; vast areas of China, India and Bangladesh claimed by desert; Polynesia swallowed by the sea; the Colorado River thinned to a trickle; the American Southwest largely uninhabitable. The prospect of a five-degree warming has prompted some of the world's leading climate scientists to warn of the end of human civilization.<sup>1</sup>

The toughest emissions reductions being proposed, even by the most committed nations, will probably not be able to achieve any given global temperature stabilization target.<sup>2</sup> By increasing the amount of greenhouse gasses (GHGs) in the atmosphere, we are passing on a huge remediation burden (externality) to future generations that may have no solution. Given this situation, should we not aggressively seek measures to reduce our present and future risks, including the use of private and public nuisance cases?

As Frank Mahoney noted about forty-six years ago, there is a tendency to look to the legislatures for environmental remedies and to overlook or underrate the potential of common law to contribute to solving such problems.<sup>3</sup> Courts have a role to play and can contribute to a reduction of the huge damages from climate change, as well as reduce the potential for catastrophic risks, by allowing a cause of action based on public nuisance common law, rooted in strict liability, combined with a damage remedy adopting calculations based on current knowledge.<sup>4</sup> The damages should be a yearly assessment in order to produce a proper incentive for emission reduction and, most importantly, related technological change.

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<sup>1</sup> Nathaniel Rich, *Losing Earth: The Decade We Almost Stopped Climate Change*, N.Y. TIMES (Aug. 1, 2018), <https://perma.cc/4NVN-46HC>.

<sup>2</sup> *Id.*

<sup>3</sup> Frank E. Maloney, *Judicial Protection of the Environment: A New Role for Common-Law Remedies*, 25 VAND. L. REV. 145, 145 (1972).

<sup>4</sup> For a review of various mitigation techniques, see TIM FLANNERY, *ATMOSPHERE OF HOPE: SEARCHING FOR SOLUTIONS TO THE CLIMATE CRISIS* (2015).

While federal common law nuisance suits for injunctive relief for greenhouse gas emissions are blocked by the Supreme Court's decision in *American Electric Power Co. v. Connecticut*<sup>5</sup> (*American Electric Power Co.*), on grounds of preemption under the Federal Clean Air Act, lawsuits for damages at the state level may be in play.<sup>6</sup>

There are significant efficiency advantages to damages granted under strict liability for nuisance in the form of creating incentives for innovation and the search for alternative technologies. Suits brought by states, government subdivisions, and even private parties under common law nuisance law should be allowed to establish these damages. Many of the recent suits by cities establish damage that is not speculative as it is based on the cost of future adaptation efforts made necessary by climate change.<sup>7</sup> Even more generalized damages could be calculated from Environmental Protection Agency (EPA) generated information or other government calculations such as the social cost of carbon or some variant thereof.<sup>8</sup> While injunctive relief in nuisance lawsuits brings up difficult questions regarding the role of courts in GHG regulation, lawsuits for past, future, and ongoing damages, in lieu of an injunction, could be an appropriate remedy and impact the arc of future emissions.<sup>9</sup>

Our paper demonstrates that common law public nuisance suits to reduce emissions through damage claims are economically efficient under all conditions and scenarios. This provides a powerful argument for recognizing GHG emissions damages as cognizable under state law, even when there is a federal regulatory scheme. This economic proof also calls into question some prior case law rejecting both public and private nuisance law suits for GHG emissions. Outside of an explicit preemption of state law, this efficiency should be persuasive evidence of the need to preserve the common law public nuisance claims, and the role of courts in mitigating and compensating for damages due to GHG emissions.

Part II of the paper reviews nuisance law and how our courts have applied that to greenhouse gas emissions so far. Part III then discusses the history of nuisance lawsuits, noting that economic efficiency does and should play a powerful role in recognizing the presence of nuisance and that this gives courts a role in responding to damage claims. Part IV demonstrates how allowing state common law nuisance damage suits for greenhouse gas emissions to exist with or without regulation produces the optimal efficiency result in all circumstances. The Article then concludes.

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<sup>5</sup> 564 U.S. 410 (2011).

<sup>6</sup> *Id.* at 424, 429.

<sup>7</sup> See Amended Complaint at 53, *Bd. of Cty. Comm'rs of Boulder Cty. v. Suncor Energy*, No. 18-cv-30349 (Colo. Dist. Ct., June 11, 2018) ("All the Plaintiffs are expending considerable taxpayer dollars and undertaking adaptation measures to plan for, understand and protect their land, infrastructure, and residents from current and future anticipated climate impacts.").

<sup>8</sup> *The Social Cost of Carbon: Estimating the Benefits of Reducing Greenhouse Gas Emissions*, U.S. ENVTL. PROTECTION AGENCY, <https://perma.cc/YC44-5VYY> (last updated Jan. 19, 2017).

<sup>9</sup> See *Boomer v. Atl. Cement Co.*, 257 N.E.2d 870, 874 (N.Y. 1970).

## II. NUISANCE LAW AND THE DAMAGE FROM GREENHOUSE GAS EMISSIONS

A private nuisance is defined as an intentional unreasonable invasion in the private use and enjoyment of land.<sup>10</sup> A public nuisance is an interference with the health or moral welfare of the general public.<sup>11</sup> In the last 20 years, multiple cases have been brought claiming that the emission of greenhouse gases or the facilitation of greenhouse gas emissions are private or public nuisances subject to damages and injunction.

The keystone federal case from the U.S. Supreme Court held that federal common law nuisance lawsuits for injunction are preempted by the Clean Air Act.<sup>12</sup> The Court held that Congress delegated to EPA the decision whether and how to regulate carbon dioxide emissions from power plants, and that this delegation displaces federal common law.<sup>13</sup> Specifically, federal common law nuisance lawsuits for injunctive relief “would be displaced by the federal legislation authorizing EPA to regulate carbon-dioxide emissions.”<sup>14</sup> By finding preemption, the Court noted that, “[i]ndeed, were EPA to decline to regulate carbon-dioxide emissions altogether at the conclusion of its ongoing §7411 rulemaking, the federal courts would have no warrant to employ the federal common law of nuisance to upset the agency’s expert determination.”<sup>15</sup> The justices based their decision on the observation that the U.S. Congress had delegated the power to *regulate* greenhouse gases (including carbon dioxide) to the EPA.<sup>16</sup> Once Congress delegated regulatory authority to a federal administrative agency, the delegation displaced any federal common law right of the plaintiffs to seek common law relief in the courts. The plaintiffs had to take their complaints to the EPA.

The Supreme Court has declined to determine whether and to what extent nuisance claims based on state common law are preempted by the Clean Air Act.<sup>17</sup> Importantly, the *American Electric Power Co.* Court noted that a different standard governs for preemption of federal common law than for preemption of state common law. State law is only to be preempted if there is a clear and manifest Congressional purpose.<sup>18</sup> The Supreme Court’s 1987 decision in *International Paper Co. v. Ouellette*<sup>19</sup> (*Ouellette*) held that state law nuisance lawsuits were not

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<sup>10</sup> RESTATEMENT (SECOND) OF TORTS § 822 (AM. LAW INST. 1979) (the Third Restatement of Torts was approved at the American Law Institute’s 2018 meeting but has not been published).

<sup>11</sup> DAVID W. ROBERTSON ET AL., CASES AND MATERIALS ON TORTS 567 (5th ed. 2017).

<sup>12</sup> *Am. Elec. Power Co.*, 564 U.S. 410, 424 (2011); 42 U.S.C. §§ 7401–7671q (2012).

<sup>13</sup> *Am. Elec. Power Co.*, 564 U.S. at 426. After the Second Circuit delivered its opinion and prior to the Supreme Court’s judgment, EPA had taken several relevant actions following *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007), which included issuing the Endangerment Finding and establishing the Tailoring Rule, affecting the nation’s largest GHG emitters.

<sup>14</sup> *Id.* at 423.

<sup>15</sup> *Id.* at 426.

<sup>16</sup> *Id.*

<sup>17</sup> See Dan Farber, *The Return of Federal Common Law*, LEGAL PLANET (Mar. 1, 2018), <https://perma.cc/RS49-YRAR>.

<sup>18</sup> *Am. Elec. Power Co.*, 564 U.S. at 423.

<sup>19</sup> 479 U.S. 481, 500 (1987).

automatically preempted by the Clean Water Act.<sup>20</sup> Following *Ouellette*, the Fourth Circuit in *North Carolina ex. rel Cooper v. Tennessee Valley Authority*<sup>21</sup> (*TVA II*), refused to hold that Congress had “entirely preempted the field of emissions regulation [under the Clean Air Act].”<sup>22</sup>

However, while the Fourth Circuit expressly refused to find that the Clean Air Act preempted all state law tort claims concerning air pollution, it did find preemption in that particular case.<sup>23</sup> The court noted that the Clean Air Act was inclusive and predictable, thus occupying some of the air pollution field, and that emissions from four Tennessee coal plants were specifically subject to the comprehensive breadth of the Clean Air Act.<sup>24</sup> Indeed, the court noted that there were explicit Clean Air Act sections designed to address just the issue of interstate pollution that North Carolina complained of.<sup>25</sup>

Other federal courts have applied the preemption reasoning to damages as well as injunctions. Around the same time *American Electric Power Co.* was decided, two other federal cases involving federal tort claims were decided.<sup>26</sup> In *Comer v. Murphy Oil USA*,<sup>27</sup> owners of land and property along the Mississippi Gulf coast sued oil companies and energy companies seeking monetary compensation for damages. The landowners argued that these companies caused emissions of greenhouse gases that contributed to global warming and added to the ferocity of Hurricane Katrina which in turn destroyed their property.<sup>28</sup> In *Native Village of Kivalina v. ExxonMobil Corp.*<sup>29</sup> (*Village of Kivalina*), an indigenous village and city alleged that multiple oil, energy, and utility companies had emitted massive greenhouse gases which had resulted in global warming and the significant erosion of the land where the city sat and thus threatened the city with imminent destruction.<sup>30</sup> Just as in *American Electric Power Co.*, both courts in these cases dismissed the federal tort action claims on various grounds before reaching the merits.<sup>31</sup> After the decision by the Supreme Court in *American Electric Power Co.*, the *Comer* district court dismissed the tort action based on the *American Electric Power Co.* opinion and the Ninth Circuit upheld the dismissal by the *Village of*

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<sup>20</sup> Scott Gallisdorfer, *Clean Air Act Preemption of State Common Law: Greenhouse Gas Nuisance Claims After AEP v. Connecticut*, 99 VA. L. REV. 131, 146–47 (2013) (citing *Ouellette*, 479 U.S. 481, 494 (1987)).

<sup>21</sup> 615 F.3d 291 (4th Cir. 2010).

<sup>22</sup> *Id.* at 302.

<sup>23</sup> *Id.* at 296.

<sup>24</sup> *Id.* at 301, 308.

<sup>25</sup> *Id.* at 300 (“The Clean Air Act requires each state to ensure that its SIP ‘contain[s] adequate provisions prohibiting [air pollution] . . . which will contribute significantly to nonattainment in . . . any other State . . .’”).

<sup>26</sup> See Tracy Hester, *Climate Tort Federalism*, 13 FIU L. REV. 79, 84 (2018).

<sup>27</sup> 585 F.3d 855, 859 (5th Cir. 2009), *vacated en banc*, 598 F.3d 208, 210 (5th Cir. 2010), *dismissed for lack of quorum*, 607 F.3d 1049, 1055 (5th Cir. 2010).

<sup>28</sup> Hester, *supra* note 26, at 84.

<sup>29</sup> 696 F.3d 849 (9th Cir. 2012).

<sup>30</sup> *Id.* at 853.

<sup>31</sup> Hester, *supra* note 26, at 84.

*Kivalina* trial court.<sup>32</sup> These cases also had state tort claims, but the courts dismissed these claims once the federal tort claims failed.<sup>33</sup>

Certiorari was denied in *TVA II*<sup>34</sup> and so neither it nor the above federal cases are the final word on preemption under the Clean Air Act. In *TVA II*, the court distinguishes *Ouellette* because the district court had applied “in-state” nuisance law as opposed to the out of state law required.<sup>35</sup> Applying “in-state” nuisance law is more likely to be preempted when an activity has been “considered and specifically authorized by the government.”<sup>36</sup> Nevertheless, the court recognized its prior holding in *North Carolina ex rel. Cooper v. Tennessee Valley Authority*<sup>37</sup> (*TVA I*) that “the savings clause of the Clean Air Act may allow for some common law nuisance suits,”<sup>38</sup> but that such claims may survive only if they do not “undermine [the] regulatory structure.”<sup>39</sup>

More importantly, the Fourth Circuit’s reasoning only applies to injunctive relief. It is the concern over “a number of different states . . . [having] independent and plenary regulatory authority over a single discharge” that drives the holding in *TVA II*.<sup>40</sup> This issue is absent in state common law public nuisance law damage suits. Suing for damages does not dictate what regulation is required.

Moreover, greenhouse gas regulation under the Clean Air Act is far from comprehensive. In *Utility Air Group v. EPA*,<sup>41</sup> the Supreme Court explicitly held that Clean Air Act provisions that apply to common criteria pollutants do not apply to greenhouse gases.<sup>42</sup> This makes the role of state common law even more important to fill in the gaps where persons are harmed.

Given the outcomes in *American Electric Power Co., Comer, Village of Kivalina*, and *TVA*, groups are now focusing on bringing claims based on state tort law, and courts are split on how these cases should be decided.<sup>43</sup> Specifically, local governments in California, Colorado, New York, Washington, and Rhode Island have all brought tort lawsuits under their respective state laws against energy producers.<sup>44</sup> In California, San Mateo County, Marin County, and the City of Imperial Beach all alleged public nuisance, strict liability, failure to warn, private

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<sup>32</sup> *Id.* at 85.

<sup>33</sup> *Id.*

<sup>34</sup> 615 F.3d 291 (2010), *cert denied*, 564 U.S. 1054 (2011).

<sup>35</sup> *See id.* at 297.

<sup>36</sup> *Id.* at 309 (quoting *New England Legal Found. v. Costle*, 666 F.2d 30, 33 (2nd Cir. 1981)).

<sup>37</sup> 515 F.3d 344 (4th Cir. 2008).

<sup>38</sup> 615 F.3d at 302–03.

<sup>39</sup> *Id.* at 303 (quoting *Ouellette*, 479 U.S. 481, 497 (1987)).

<sup>40</sup> *Id.* at 301 (quoting *Ouellette*, 479 U.S. at 496–97).

<sup>41</sup> 573 U.S. 302 (2014).

<sup>42</sup> *Id.* at 333–34.

<sup>43</sup> Hester, *supra* note 26, at 79–82.

<sup>44</sup> *Cty. of San Mateo v. Chevron Corp.*, 294 F. Supp. 3d 934 (N.D. Cal. 2018); *Complaint, Cty. of Marin v. Chevron Corp.*, No. 17-CIV-02586 (Cal. Super. Ct. July 17, 2017); *Complaint, City of Imperial Beach v. Chevron Corp.*, No. C17-01227 (Cal. Super. Ct. July 17, 2017); *Complaint, State v. BP P.L.C.*, No. CGC-17-561370 (Cal. Super. Ct. Sept. 19, 2017); *Complaint, City of Richmond v. Chevron Corp.*, No. C18-00055 (Cal. Super. Ct. Jan. 22, 2018); *City of New York v. BP P.L.C.*, 325 F.Supp.3d 466, 468 (S.D.N.Y. 2018); *Complaint, Bd. of Cty. Comm’rs of Boulder Cty. v. Suncor Energy (U.S.A.), Inc.*, No. 18-cv-030349 (Colo. Dist. Ct. Apr. 17, 2018); *King Cty. v. BP P.L.C.*, No. C18-758-RSL, 2018 U.S. Dist. LEXIS 178873 (W.D. Wash. Oct. 17, 2018).

nuisance, negligence, and trespass claims against energy producers, mining companies, energy trading companies, and corporations.<sup>45</sup> They sought unspecified compensatory damages, punitive damages, disgorgement of profits, equitable relief to abate nuisances, and reasonable attorney's fees.<sup>46</sup> The court in San Mateo County ruled that federal common law does not control and remanded the case back to a California trial court.<sup>47</sup> Most recently, the Ninth Circuit has granted a motion to consolidate the appeals brought by the County of San Mateo, County of Marin, City of Imperial Beach, County of Santa Cruz, City of Santa Cruz, and City of Richmond.<sup>48</sup>

County governments in Colorado and Washington, plus the cities of San Francisco and Oakland, have targeted a small group of fossil fuel companies using public nuisance and other tort claims.<sup>49</sup> San Francisco in particular seeks the creation of an abatement fund in order to help with the infrastructure challenges of adapting to climate change.<sup>50</sup> The judge in the San Francisco and Oakland cases took a different view than the San Mateo County court and held that the courts were not the proper place to deal with such global issues and rejected the legal theory put forth by the cities.<sup>51</sup> Conversely, the U.S. District Court for the Western District of Washington granted a stay in October of 2018 to await the result of the California cases in the Ninth Circuit.<sup>52</sup>

Additionally, the City of New York brought a state tort lawsuit in federal court under federal diversity jurisdiction against only five energy corporations seeking monetary damages.<sup>53</sup> However, the Southern District of New York dismissed the case for similar reasons as those expressed by the judge in the San Francisco and Oakland cases and because of preemption by the Clean Air Act.<sup>54</sup>

The State of Rhode Island has also brought a state law tort action against twenty-one energy companies and various unnamed corporations.<sup>55</sup> The claims

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<sup>45</sup> Complaint at 79–98, *Cty. of San Mateo v. Chevron Corp.*, 294 F.Supp.3d 934 (Cal. Super. Ct. July 17, 2017) (No. 17-CIV-03222); Complaint at 79–87, *Cty. of Marin*, No. 17-CIV-02586 (Cal. Super. Ct. July 17, 2017); Complaint at 75–95, *City of Imperial Beach*, No. C17-01227 (Cal. Super. Ct. July 17, 2017).

<sup>46</sup> Complaint at 98, *Cty. of San Mateo*, 294 F.Supp.3d 934 (Cal. Super. Ct. July 17, 2017) (No. 17-CIV-03222); Complaint at 99, *Cty. of Marin*, No. 17-CIV-02586 (Cal. Super. Ct. July 17, 2017); Complaint at 95, *City of Imperial Beach*, No. C17-01227 (Cal. Super. Ct. July 17, 2017).

<sup>47</sup> Hester, *supra* note 26, at 82.

<sup>48</sup> Order, No. 18-15499, (9th Cir. Aug. 20, 2018).

<sup>49</sup> Complaint and Jury Demand, *Bd. of Cty. Comm'rs of Boulder Cty. v. Suncor Energy (U.S.A.), Inc.*, No. 18-cv-030349 (Colo. Dist. Ct. Apr. 17, 2018); Complaint, *King County v. BP P.L.C.*, No. 18-2-11859-0 (Wash. Super. Ct. May 9, 2018); Complaint for Public Nuisance, *State v. BP P.L.C.*, No. CGC-17-561370 (Cal. Super. Ct. Sept. 19, 2017).

<sup>50</sup> *See* Complaint for Public Nuisance at 39, *State v. BP P.L.C.*, No. CGC-17-561370 (Cal. Super. Ct. Sept. 19, 2017) (seeking an order to create an abatement fund).

<sup>51</sup> John Schwartz, *Judge Dismisses Suit Against Oil Companies Over Climate Change Costs*, N.Y. TIMES (June 25, 2018), <https://perma.cc/ALJ8-WW8Q>.

<sup>52</sup> *King Cty. v. BP P.L.C.*, No. C18-758-RSL, 2018 U.S. Dist. LEXIS 178873, at \*4 (W.D. Wash. Oct. 17, 2018).

<sup>53</sup> Complaint at 13–14, *City of New York v. BP P.L.C.*, 325 F.Supp.3d 466, (S.D.N.Y. Jan. 9, 2018) (No. 18-cv-182).

<sup>54</sup> Hester, *supra* note 26, at 90.

<sup>55</sup> Complaint, *Rhode Island v. Chevron Corp.*, 115–38, No. PC-2018-4716 (R.I. Super. Ct. July 2, 2018).

range from public nuisance, trespass, negligent failure to warn, negligent design defect, and strict liability failure to warn and design defect.<sup>56</sup> The complaint seeks abatement of the nuisance, compensatory damages, disgorgement of profits, punitive damages, and attorney's fees and costs of suit.<sup>57</sup> In July of 2018, the defendants removed the case to federal court particularly arguing federal question jurisdiction because of the implications the case could have nationally and internationally.<sup>58</sup> Rhode Island moved to remand the case back to state court in August of 2018, and most recently, the defendants filed opposition to the motion for remand.<sup>59</sup>

While there is no definitive answer concerning greenhouse gas state common law nuisance law suits for damages, the trend seems to be towards dismissing the cases. We believe this is misguided as these courts have ignored one factor that we believe should influence these state law nuisance cases. The damages remedies that could be awarded in climate change nuisance suits are economically efficient under all circumstances.

### III. THE ROLE OF ECONOMIC EFFICIENCY IN NUISANCE LAW

As noted in Part II, the Second Restatement of Torts defines nuisance as a [primarily intentional] unreasonable interference with the use and enjoyment of one's land, or an unreasonable interference with the public interest.<sup>60</sup> Unreasonableness in the Restatement is specifically defined as the "gravity of the harm outweigh[ing] the utility of the actor's conduct."<sup>61</sup>

Economic balancing was explicitly introduced into the common law of nuisance by the Pennsylvania Supreme Court in *Richard's Appeal*.<sup>62</sup> According to Professor George Smith, "economic balancing [in nuisance] . . . 'represented the thinking of courts into the 20th century.'"<sup>63</sup> Economic efficiency continues to be a bell-weather in all sorts of torts doctrine, and though nuisance law has been described as "opaque and unmanageable" the application of costs and benefits by a court in a specific case is conceptually a simple standard.

Indeed in rejecting a California city's public nuisance claim for greenhouse gas emissions, Judge Alsup in the Northern District of California explicitly referenced this test, asking:

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<sup>56</sup> *Id.*

<sup>57</sup> *Id.* at 140.

<sup>58</sup> Notice of Removal by Defendants Shell Oil Products Co. L.L.C. at 2, Rhode Island v. Chevron Corp., No. 2018-4716 (R.I. Super. Ct. July 13, 2018).

<sup>59</sup> Plaintiff's Motion to Remand to State Court, Rhode Island v. Chevron Corp., No. 2018-4716 (D.R.I. Aug. 17, 2018); Defendant's Opposition to Plaintiff's Motion to Remand to State Court, Rhode Island v. Chevron Corp., No. 2018-4716 (D.R.I. Sep. 14, 2018).

<sup>60</sup> RESTATEMENT (SECOND) OF TORTS, *supra* note 10, at § 822.

<sup>61</sup> *Id.* § 826(a).

<sup>62</sup> 57 Pa. 105, 113–14 (Sup. Ct. 1868).

<sup>63</sup> George P. Smith II, *Re-Validating the Doctrine of Anticipatory Nuisance*, 29 VT. L. REV. 687, 693 (2005) (quoting Paul M. Kurtz, *Nineteenth Century Anti-Entrepreneurial Nuisance Injunctions – Avoiding the Chancellor*, 17 WM. & MARY L. REV. 621, 658 (1976)).



With respect to balancing the social utility against the gravity of the anticipated harm, it is true that carbon dioxide released from fossil fuels has caused (and will continue to cause) global warming. But against that negative, we must weigh this positive: our industrial revolution and the development of our modern world has literally been fueled by oil and coal. Without those fuels, virtually all of our monumental progress would have been impossible. All of us have benefitted. . . . Is it really fair, in light of those benefits, to say that the sale of fossil fuels was unreasonable?<sup>64</sup>

While declining to answer that question, Judge Alsup has no problem in laying out the framework and the test. As Professor Seiler notes, a judge may be better placed than legislatures to make such an efficiency determination.<sup>65</sup> Some recent scholars have noted that in dynamic fields, determining economic efficiency in context can be difficult.<sup>66</sup> While we recognize that the energy and climate systems are dynamic and it may not be completely possible to predict that exact point of interdiction to stop global warming, such issues fall away when looking at damages only. Our economic analysis demonstrates, that at least as to damages, allowing the imposition of strict liability under common law nuisance for greenhouse gas emissions is economically efficient under all circumstances.

#### IV. NUISANCE LAWSUITS IN CLIMATE CHANGE CREATE EFFICIENT OUTCOMES UNDER ALL CIRCUMSTANCES

There has been a tension since the nineteenth century, between regulation and private rights of action, recognizing on the one hand the inefficiency of private rights where regulation achieves the desired result, and on the other hand recognizing that the regulation may be insufficient. In *Vaughan v. Taff Vale Railway Co.*<sup>67</sup> it was held:

[W]hen the legislature has sanctioned and authorized the use of a particular thing, and it is used for the purpose for which it was authorized, and every precaution has been observed to prevent injury, the sanction of the legislature carries with it this consequence, that if damage results from the use of such thing independently of negligence, the party using it is not responsible.<sup>68</sup>

However, in *Powell v. Fall*,<sup>69</sup> where the defendant's operation of a traction engine along a public highway caused a fire, Baron Bramwell did not think that the creation of the new restrictions on spark emissions should be read impliedly to block the plaintiffs right of action.<sup>70</sup> "More to the point, he thought that the

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<sup>64</sup> *City of Oakland v. BP P.L.C.*, 325 F. Supp. 3d 1017, 2023–24 (N.D. Cal. 2018).

<sup>65</sup> Bryan M. Seiler, *Moving from "Broken Windows" to Healthy Neighborhood Policy: Reforming Urban Nuisance Law in Public and Private Sectors*, 92 MINN. L. REV. 883, 902–03 (2008).

<sup>66</sup> See David M. Driesen, *Legal Theory Lessons from the Financial Crisis*, 40 J. CORP. L. 55, 56 (2014).

<sup>67</sup> (1860) 157 Eng. Rep. 1351

<sup>68</sup> *Id.* at 1354 (substituting a negligence rule for strict liability where plaintiff operated its railroad pursuant to statute); see also *Powell v. Fall* [1880] QB 428, 428–30 (Eng.) (determining a defendant was not negligent after having constructed an engine in compliance with the Locomotives Act).

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* at 429.

damages action provided a test for efficiency that should not be surrendered lightly.”<sup>71</sup> He found that the damage action provided a test for efficiency, holding:

It seems to me a just and reasonable enactment that, if a man for his own advantage uses a dangerous machine on the highway, he should pay damages for injury caused thereby. If the profit which he obtains from using it is not enough to enable him to pay for the damage he causes, the loss is not one to which the community or the injured person ought to be subject, and it is for the public benefit that the use of the machine should be suppressed.<sup>72</sup>

Consider the four tort constructs and two liability rules famously discussed by Calabresi and Melamed.<sup>73</sup> These are:

1. No remedy exists
2. A liability rule under which victims receive compensation, but no injunctive relief
3. A property rule in which victims have the right to abate the nuisance
4. An injunction abating the nuisance but in which victims must compensate the polluter for the losses due to the injunction.<sup>74</sup>

We suggest an additional sub-rule as follows:

5. A liability rule in which damages are awarded to the state for public nuisance on the basis of whether or not a performance standard has been met.<sup>75</sup>

In determining damages, we suggest that rules two and five have a salience based on considerations of efficiency. Richard Epstein notes:

Let the regulations in question be too stringent, and the tort suit will have little effect on overall safety levels. Let the regulations in question be too lenient, and defendants will find unjustified safe harbors from litigation. The preferred strategy within a unified system is to treat regulations and litigation as operating in separate spheres so that each responds solely to its own imperatives.<sup>76</sup>

Thus, absent an explicit preemption (which does not exist in the Clean Air Act), state common law damage actions should survive without regard to the standards set out by direct federal regulation. This efficiency gain should not be ignored in courts’ climate nuisance analyses. Strict liability through nuisance with damages is superior to negligence or optimal cost-benefit regulation as it gives a more efficient incentive for innovation. The efficiency gain lies in the role damages play in encouraging the development of efficient control technology.

<sup>71</sup> Richard A. Epstein, *Federal Preemption, and Federal Common Law, in Nuisance Cases*, 102 NW. U. L. REV. 551, 560 (2008).

<sup>72</sup> *Powell*, [1880] QB 428 at 429.

<sup>73</sup> Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1115–16 (1972).

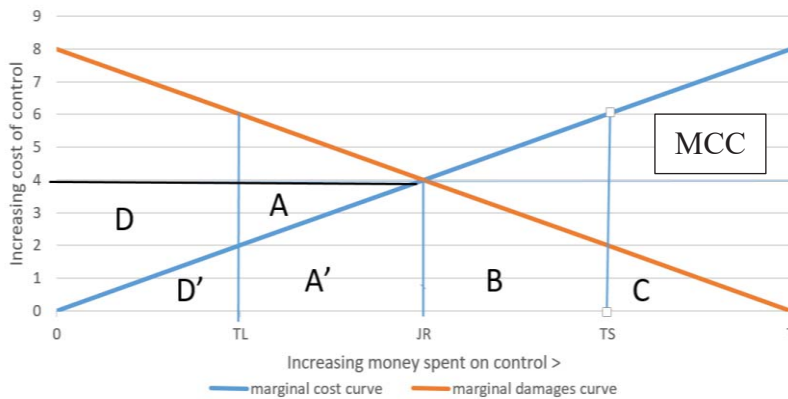
<sup>74</sup> *See, e.g., Spur Indus., Inc. v. Del E. Webb Dev. Co.*, 494 P.2d 700, 708 (Ariz. 1972).

<sup>75</sup> A sixth rule can also be suggested: An injunction whose conditions require the meeting of specified standards. The problem with rule six is that there may be conflicting performance standards.

<sup>76</sup> Epstein, *supra* note 71, at 560.

A powerful efficiency argument exists for allowing the collection of damages under strict liability in public and private nuisance cases for GHG emissions, namely that it will materially spur innovation. Innovation is seen as the most effective way to reduce the emission of GHGs.<sup>77</sup> This innovation would not be similarly spurred by a benefit-cost based regulatory regime. This suggests that preemption of state law common law claims by federal regulation should be read narrowly. The efficiency argument exists in all cases, that is, when no standards, correct standards, and incorrect standards are set. This is shown by Figure One below.

Figure One: The Efficiency Argument Under Correct and Incorrect Standards



Consider the efficiency situation under strict liability compared to regulation set by benefit-cost analysis. The horizontal axis represents emissions controlled and emitted. (Emissions controlled is read from left to right and emissions not controlled is read from right to left.) *MCC* is marginal control costs and *MD* shows marginal damages. *TL* is when the regulatory standard set by benefit-cost is too lenient and *TS* when too severe. *JR* is when the standard is just right. At *JR*, the level of emission allowed by regulation is set at 4 horizontal line. At *JR*, emissions are controlled from 0 to *JR* and are emitted from *JR* to *T*, where *T* is total emissions under current technology. When there is no regulatory control of emissions, the social gain in moving from 0 to *JR* is shown by areas *D* and *A*. This is a gain because the total gain of  $D+D' +A +A'$  is greater than the total costs which are shown by  $D'+A'$ . Subtracting the total costs from the total gain give the areas  $D+A$ . Areas *B* and *C* are still costs but they are borne by the individual affected, not by the regulated entities.

Now examine the case of the regulatory target being too low. As expected, efficiencies are gained by imposing strict liability. In moving from *TL* to *JR*, under strict liability, area *A* represents a social gain as the costs of reduction is less than

<sup>77</sup> There is some evidence that the current rate of innovation may be below the socially desirable level. See Todd Gerarden, et al., *Assessing the Energy-Efficiency Gap*, 55 J. ECON. LITERATURE 1486, 1487 (2017).

the damages. The efficiency argument has been favorably considered by Richard Epstein, who notes:

[S]uppose that the regulation is not efficient, for example, because it was passed in response to interest group pressures. At this juncture, the preservation of the private right of action has positive allocative consequences, and not just distributional ones.<sup>78</sup>

The gains do not end there. The analysis thus far is static, only comparing gains with existing technologies. Payment of damages also provides a proper incentive to innovate. Even where the standards are set correctly at *JR*, levying damages of areas *B+C* on the polluter creates an incentive to innovate to reduce these damages. These areas represent the wealth or damages transferred from the tortfeasor to the plaintiffs. The tortfeasor has no incentive to invest in new control technology unless the expected gains are greater than the cost of innovation, where expected gains are the reduction in damages. With strict liability, the courts would not set performance standards but rather set damages to the extent proved by the plaintiff. With strict liability, the plaintiff can recover all provable damages. Imposing the costs of *B+C* on the polluter instead of the victim would seem to be neutral for social utility as we have just reshuffled where the damage costs fall. However, shifting the costs to the polluter better aligns incentives for cost (damage) reduction on who is more likely to do so efficiently: the polluter.

Presumably, whoever bears the cost of *B & C* would want to reduce these costs (damages) if that could be done efficiently (for less than the *MCC*), but only the polluter has a method for doing so. The victim has no way to reduce aggregate climate change damages (the transaction costs of organizing all plaintiffs would be very high), but the polluter can reduce by innovation and will choose to do so when controlling the pollution becomes less costly than paying the damages. This innovation incentive is, we suggest, of major importance yet is rarely considered by any of the courts' preemption arguments nor in arguments for standard setting as opposed to damages.

How often is the correct standard set? Rarely of course! Even where the standard is set too severely at *TS*, there will still be a gain of innovation incentive represented in Figure One by area *C*. The most likely performance standards are those represented by *TL* or *TS*.<sup>79</sup> We assume that *TL* is the more likely. In this case the innovative gain is a function of *B+C*, [*f*(*B+C*,)]. This social gain under strict

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<sup>78</sup> Epstein, *supra* note 71, at 560. Epstein notes that: In this context, there are two possible sources of error.

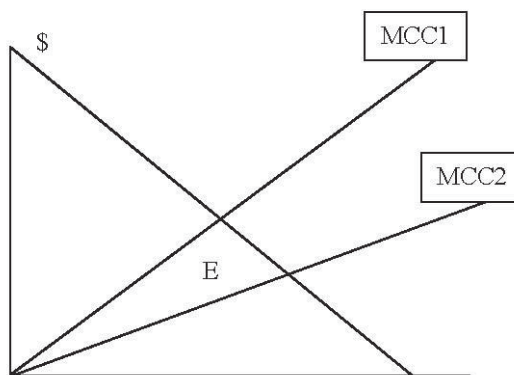
The statutory rules could be either too strong or too weak. If the former holds, the tort system will not supply the reason for conformity, but the threat of fines or criminal sanctions will. Once that happens, the likelihood of injury drops. The role of the statute in private litigation consequently becomes less important because the frequency of suit drops. If the latter holds so that the statutory standard is too low, then a regulated firm has a strong incentive to underprovide safety to strangers because it can take advantage of the statutory bar. Under this scenario, we get too little safety in the system.

*Id.*

<sup>79</sup> See generally Richard O. Zerbe, *Theoretical Efficiency in Pollution Control*, 8 W. ECON. J. 364 (1971) (discussing which liability levels for polluters can achieve optimized levels of pollution).

liability would be lost under a negligence rule, in which courts find negligence only in those cases in which injurer's performance is not cost justified, that is, the harm caused is greater than the costs of prevention, the Hand Rule for liability.<sup>80</sup> Damages with strict liability play a more powerful role than either negligence or performance standards. With the existence of government performance standards, negligence is unlikely to be found as long as the defendant meets the standards, reducing the innovation incentive as compared with damages under strict liability. The gains from innovation are illustrated in Figure Two below. The figure shows the control cost function *MCC1* shifting to the right (down) to become *MCC2*, so that the expected gross gains are represented by area *E*, the savings in control costs.

Figure Two: The Efficiency Gain from Innovation



In all of these cases, the ability to bring common law public nuisance suits is more likely than not to improve economic efficiency. When no regulations exist, the case for public nuisance tort is clear. Damages will tend to be reduced towards the optimal point and the firm(s) will pay for damages beyond the optimal point of damage control as a distributive transfer. That this transfer is not welfare neutral is a crucial fact not generally noted in the literature. The transfer creates an additional incentive to invest in damage control technology to reduce the expenses of the tort action. Thus, this investment will be socially efficient, since, under profit maximization, the investment will only be made if its expected cost is less than the expected reduction in damages. When the regulations are unenforced or under-enforced the same analysis holds, but with the caveat that the damages saved by tort action are reduced, but not eliminated, by the probability of future regulation enforcement.

Although the EPA is still engaged in setting performance standards for existing sources of GHGs under section 111(d) of the Clean Air Act, damage

<sup>80</sup> Barbara Ann White, *Risk-Utility Analysis and The Learned Hand Formula: A Hand That Helps or a Hand That Hides?*, 32 ARIZ. L. REV. 77, 103–05 (1990).

liability and standards can operate together, and it is efficient that they do so.<sup>81</sup> Even if the standard set by EPA were correct,<sup>82</sup> there remains an efficiency argument for allowing damages, even for companies meeting the standard.

Moreover, regulations are unlikely to be optimal due to the lack of information and the presence, perhaps, of political pressures. Yet, when the regulation is either too lenient or too severe, the presence of a nuisance action will promote efficiency, especially in situations in which regulations are too lenient. Where the regulation is too lenient, the possibility of such action will tend to move towards the optimal level of regulation. Damages beyond the optimal point will provide a distributional transfer that also provides an additional incentive to invest in new technology for pollution control. This investment is efficient as the firm will only make such investment when the expected gains in the reduction exceeds the expected costs of technological development. Since there is liability in any event, the tortfeasor doesn't suffer from "over-regulation." When the regulation is too severe, the effect of allowing a nuisance suit is to reduce the size of the transfer required. Yet if damages remain, the possibility of a tort or nuisance action will still create an additional and efficient incentive to invest in new control technology, though this incentive is reduced as compared with the other cases.

The major efficiency arguments for not allowing common law damage suits concurrent with regulation are that the courts have neither the expertise nor the experience to suggest performance standards and that, if they did, the results would be confusing.<sup>83</sup> The argument suggests that allowing plaintiff's claims could lead to alternative standards and resultant confusion. This only speaks to suits that attempt to set standards, but not to suits for damages, and does not apply with any force against the setting of continuing damages under strict liability. In determining damages, courts routinely rely on the testimony of expert witnesses. Indeed, EPA already has estimates of U.S. damages that could be brought to bear as we will show.

Moreover, it is the common law that is more likely to accurately assess community desires through efficiency. Efficiency is almost wholly defined by community values. Tilley, in a recent article, finds that scrutinizing tort doctrine yields "a surprising insight": tort law is primarily concerned with community.<sup>84</sup> She notes that "[a] linguistic study of the *Restatement of Torts* reveals that doctrine alludes to the concept of community more frequently and more comprehensively than it does to any other justificatory concept."<sup>85</sup> She goes on to note that, throughout the Restatement's discussion of negligence, strict liability, and intentional wrongs, doctrine disfavors stating interpersonal duties in positive terms, preferring to let them float with community values. Thus, she sees tort as a vehicle

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<sup>81</sup> Jeannine Anderson, *Court issues indefinite hold in 111(b) litigation*, AM. PUB. POWER ASS'N (Aug. 11, 2017), <https://perma.cc/V9JU-ALZH> ("In contrast to the 111(d) rule, the 111(b) rule has never been stayed and remains in effect.").

<sup>82</sup> Which is highly unlikely. Note the difference in reductions between the Clean Power Plan under the Obama EPA and the Affordable Clean Energy Plan under the Trump EPA. See Niina Heikkinen, *Clean Power Plan Replacement Could Lead to Increased Emissions*, SCI. AM. (Jan. 16, 2019), [perma.cc/2UXD-LDJN](https://perma.cc/2UXD-LDJN).

<sup>83</sup> See *Massachusetts v. U.S. Envtl. Prot. Agency*, 549 U.S. 497, 533–34 (2007).

<sup>84</sup> Cristina Carmody Tilley, *Tort Law Inside Out*, 126 YALE L.J. 1320, 1324 (2017).

<sup>85</sup> *Id.*

through which communities perpetually reexamine and communicate their values, encouraging individuals to coordinate private relationships without undue state involvement. Tort doctrine embeds a choice between the morality norms of traditional, closed communities and the efficiency norms of the modern, open community, depending on whether the dispute is local or national in scope. This is strongly consistent with Benefit Cost Analysis (BCA) and economic efficiency.<sup>86</sup>

## V. DAMAGE CALCULATIONS

In response to the Court's decision in *Massachusetts v. EPA*,<sup>87</sup> EPA in 2009 formally found that GHGs from transportation sources "contribute to the total greenhouse gas air pollution, and thus to the climate change problem, which is reasonably anticipated to endanger public health and welfare."<sup>88</sup>

The information EPA collects—along with other organizations—provides a substantial base of factual material for accessing damages.<sup>89</sup> For 2016, for example, EPA set the total volume of carbon dioxide equivalents emitted in the United States at 6,511 million metric tons. The electric power industry produced 28.4% of that amount, or 1,849 million metric tons. Plaintiffs in the *American Electric Power Co.* case alleged that the defendants at the time of the suit emitted about 650 million metric tons of carbon dioxide each year, roughly one-third of the total ascribed to the U.S. electric power industry.<sup>90</sup>

The Obama Administration Interagency Working Group established a price for GHG impacts, called the social cost of carbon, which was to be used when federal agencies were attempting to weigh costs and benefits of their decisions.<sup>91</sup>

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<sup>86</sup> Richard O. Zerbe, *Well Defined Efficiency and the Common Law* (May 29, 2019), [perma.cc/K5GH-D8LF](https://perma.cc/K5GH-D8LF).

<sup>87</sup> 549 U.S. 497 (2007).

<sup>88</sup> Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,499 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch.1).

<sup>89</sup> In addition, the Second Circuit accepted plaintiffs' assertion that defendants' contributions to global warming satisfied the "fairly traceable" element of standing. *Connecticut v. Am. Elec. Power Co.*, 582 F.3d 309, 345 (2d Cir. 2009). The contribution to harm was held to be actionable under the law of public nuisance. The Second Circuit held that the triviality of injuries was no bar to suit because the size of the injury is not germane to standing analysis. *Id.* at 347.

<sup>90</sup> "Plaintiffs allege defendants emit 650 million metric tons of CO<sub>2</sub> per year, 406 F.Supp.2d 265, 268 (S.D.N.Y. 2005), which is alleged to constitute 25% of U.S. electric power industry's emissions, which them-selves are said to be 10% of global CO<sub>2</sub> emissions. *Id.* According to the complaint, therefore, defendants are responsible for approximately 2.5% of all human emissions." Brief of Southeastern Legal Found. in Support of Petitioners at 10, *American Electric Power Co.*, 564 U.S. 410 (2011) (No. 10-174); U.S. ENERGY INFO. ADMIN., FREQUENTLY ASKED QUESTIONS: HOW MUCH OF U.S. CARBON DIOXIDE EMISSIONS ARE ASSOCIATED WITH ELECTRICITY GENERATION (Jun. 2018) <https://perma.cc/BEQ6-L22T>.

<sup>91</sup> See INTERAGENCY WORKING GRP. ON SOC. COST OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866, U.S. ENVTL. PROTECTION AGENCY 3 (2016), <https://perma.cc/HTL5-4RHH> [hereinafter TECHNICAL SUPPORT DOCUMENT]

Though this figure has been rejected by the Trump administration, EPA's website still maintains detailed lists of the social cost of carbon.<sup>92</sup>

EPA notes that given current modeling and data limitations, their estimates "do not include all important damages."<sup>93</sup> The figures represent the long-term damage done to agricultural productivity, human health, property values and energy costs, and other damages from the addition of a metric ton of carbon dioxide to the atmosphere.<sup>94</sup> The calculations also represent the benefits of not producing an additional metric ton of greenhouse gases. We add in the 7% discount rate as a comparison based on prior work by one of the authors suggesting that this is the appropriate discount rate to use.

Table One: Discount Rates and the Social Costs of Carbon per Metric Ton

Discount Rates and The Social Cost of Carbon Per Metric Ton <sup>95</sup>					
Year	7%	7%	5%	3.00%	2.50%
	High Impact	Average Impact	Average Impact	Average Impact	Average Impact
2015	\$10.60	\$8.70	\$11	\$36	\$56
2020	\$13.40	\$11.00	\$12	\$42	\$62
2025	\$16.94	\$13.91	\$14	\$46	\$68
2030	\$21.42	\$17.58	\$16	\$50	\$73
2035	\$27.08	\$22.23	\$18	\$55	\$78
2040	\$34.25	\$28.11	\$21	\$60	\$84
2045	\$43.30	\$35.54	\$23	\$64	\$89
2050	\$54.75	\$44.94	\$26	\$69	\$95

The figures are calculated in terms of social costs per metric ton of carbon dioxide.<sup>96</sup> Table One shows their figures. These figures are the discounted values of yearly damages over the period 2015 through 2050. The higher the discount rate the lower the present value of damages. EPA highlights the 3% discount rate. Even

<sup>92</sup> *The Social Cost of Carbon: Estimating the Benefits of Reducing Greenhouse Gas Emissions*, U.S. ENVTL. PROTECTION AGENCY (Jan. 19, 2017), <https://perma.cc/Q2HD-L5V5> [hereinafter *Social Cost of Carbon 2017*].

<sup>93</sup> Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662, 64,751 n.434 (Oct. 23, 2015) (codified at 40 C.F.R. pt. 60).

<sup>94</sup> *Social Cost of Carbon 2017*, *supra* note 92.

<sup>95</sup> *Id.*; see also TECHNICAL SUPPORT DOCUMENT, *supra* note 91, at 4.

<sup>96</sup> In calculating these figures, EPA relies on the IPCC 2015 Report. *Social Cost of Carbon 2017*, *supra* note 92.



using the 7% discount rate (which one of the authors demonstrates may be more appropriate),<sup>97</sup> damages are substantial and calculable.

The figures can be extrapolated into the future and discounted back into their present value. The figures vary from year to year and according to the discount rate used. For example, the damage done by a metric ton of carbon dioxide emitted in 2015 at a discount rate of 7% is \$10.60 in 2015. (At the discount rate of 3%, the social cost is \$36 per metric ton.) As years pass and emissions accumulate, the social costs of additional emissions expand. In 2055, for a 7% discount rate social costs reach \$45 per metric ton at the average estimate, and \$55 at the higher estimate, which EPA believes to be less probable. The damages increase “because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change, and because GDP is growing over time and many damage categories are modeled as proportional to gross GDP.”<sup>98</sup>

In sum, there are four points to be made here: 1) damages from an additional ton increase each year; 2) without further innovation the costs of reducing a given amount of damage will increase; 3) with innovation the costs of controlling each ton will decrease; 4) the net result can be either increasing or decreasing costs per unit of damage.

An alternative to these figures may be found by using the Intergovernmental Panel on Climate Change (IPCC) report directly which takes into account damages from GHGs more generally than just CO<sub>2</sub>.<sup>99</sup> This approach gives damages in 2015 of between \$10 and \$15 billion per year, or between about \$17 and \$23 per metric ton.

Carrying the example forward, can the power industries that were sued in the *American Electric Power Co.* case afford to pay for the damages caused by their emissions? At the lower end of the damage estimates—say \$11 per ton—a judgment would be onerous but within the capacity of the companies to pay. (A judgment of damages at \$11 per ton imposed on emissions of 650 million metric tons could produce an award in the \$7 billion range.) This is far less than the net income (profits) for 2017 received by the organizations named in the suit. However, by 2030, damages will be higher by a factor of 63% and in the \$12 billion range.

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<sup>97</sup> David F. Burgess & Richard O. Zerbo, *Appropriate Discounting for Benefit-Cost Analysis*, 2 J. BENEFIT-COST ANALYSIS, Apr. 2011, at 10.

<sup>98</sup> *Social Cost of Carbon 2017*, *supra* note 92.

<sup>99</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (Christopher B. Fields et al. eds., 2014), <https://perma.cc/K8MG-C9XF>.

Table Two: Revenue and Net Revenue from American Electric Power Defendant

Defendants	2017 Revenues in Billions	2017 Profits or Net Income
American Electric Power	15.424	1.91
Duke Power (Cinergy Co.)	23.57	10.7
Southern Co. of Georgia, Inc	23	0.842
(XcelEnergy Inc. of Minn.)	NA (company bought by Duke Power)	11.39
TVA	15	
<b>Total</b>	<b>76.994</b>	<b>24.842</b>

These calculations are illustrative. We present them to show that damages reasonably attributable to defendants can be made, that these are large, and that they are nevertheless within the power of these companies to pay being between about 40% to 50% of the joint net revenue of these companies. That this would be a heavy burden is clear, but that they would be net socially beneficial is beyond dispute.

## VI. CONCLUSION

Federal common law nuisance suits for injunctive relief are preempted by *American Electric Power Co.* Possibilities remain for state common law nuisance actions from damages associated with greenhouse gas emissions. Such actions have not been expressly barred by the current jurisprudence. This Article provides a compelling reason why they should not be barred.

Nuisance jurisprudence has long relied on the importance of economic efficiency in the justification for why such lawsuits should be cognizable. In this Article we demonstrate that allowing common law nuisance suits for damages is economically efficient in all situations, even if it co-exists with a regulatory

standard. While a static interpretation of the economic efficiency might indicate that the allowance of common law nuisance lawsuits merely shift who bears the cost of damages, we posit that aligning the responsibility with the polluter provides greater economic efficiency over time as the polluter has an incentive to lower control costs below that of damage awards.

Thus, nuisance actions have the potential to be a significant tool for control of greenhouse gases going forward. When a public nuisance from GHG emissions is found, the Article calls for strict liability with damages rewards to the government to be used for innovation adaptation. Such a cause of action is both efficient and not unreasonable on legal grounds.

