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## A CALL FOR ENERGY REALISM: WHEN IMMANUEL KANT MET THE KEEP IT IN THE GROUND MOVEMENT

Monika U. Ehrman\*

### *Abstract*

*The “Keep it in the Ground” Movement (the “Movement”) is a coalition of environmental groups that seek to end fossil fuel extraction by halting oil and gas development on federal lands. Supporters of the Movement demand a safer climate future and the transition to a renewable energy economy. However, the Movement is premised on the notion that the United States can divest fossil fuels, particularly petroleum hydrocarbons, from its energy economy and terminate oil and gas development in the near-term future. The Movement disregards the possibilities of serious economic impacts with respect to domestic revenues and infrastructure framework, and geopolitical risks tied to energy independence and regional stability. This Article examines the rise of the Keep it in the Ground Movement and analyzes the challenges that would follow its evolution and implementation if it continues to ignore the reality of American energy use and reliance. It promotes the adoption of Energy Realism in two forms.*

*The first form of this realism, Pragmatic Energy Realism, addresses the realities of actual petroleum consumption and reliance. The second form, Philosophical Energy Realism, borrows philosophical concepts arising from Kant’s theories of realism to develop the theory that there is only one uniform reality of energy. Application of these theories highlights the flaws of examining the issue from solely an environmental perspective. In fact, the author hypothesizes that such an evaluation is not correct. Rather, this Article asserts that there is only one reality with respect to energy, environment, poverty, and other aspects of energy consumption and environmental impact. It is therefore impossible to isolate any single perspective without fundamentally dismissing reality and instead embracing a subjective perspective.*

*This Article also proposes initiatives that the Movement could adopt to affect changes in consumer demand and energy consumption including:*

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*energy efficiency measures, implementation of a carbon tax, and addressing energy poverty. The author intends that understanding and adopting Energy Realism will provide new directions and goals for the Movement and further the necessary dialogue between stakeholders on the interrelationships between energy and environment.*

#### INTRODUCTION

Rex Tillerson stood upon the stage of the soaring Morton H. Meyerson Symphony Center, home of the Dallas Symphony Orchestra, ready to address the audience at the Exxon Mobil Corporation Annual Meeting of Shareholders. Outside, about sixty protesters gathered across the street, carrying signs with slogans like “Exxon Liar Liar Earth on Fire.”<sup>1</sup> They chanted various slogans such as, “Global warming is a war of the rich upon the poor”<sup>2</sup> and “Windmills, not toxic spills!”<sup>3</sup> Within the orchestral hall, a majority of the shareholders rejected resolutions to put a climate expert on the board and support the Paris Agreement goal, which seeks “to limit global warming to 2 degrees Celsius above pre-industrial levels.”<sup>4</sup> The Chief Executive Officer of ExxonMobil remarked to the crowd of 500, “[w]e’ve got to have some technological breakthroughs[;] but until we achieve those, to just say turn the taps off is not acceptable to humanity.”<sup>5</sup> The seated shareholders of the world’s third largest energy company<sup>6</sup> “responded with robust applause.”<sup>7</sup>

One year later, on May 31, 2017, Secretary of State Tillerson hosted a working breakfast for the Canadian and Mexican foreign ministers and a lunch for Vietnamese Prime Minister Nguyen Xuan Phuc at the Department of State, in Washington D.C.<sup>8</sup> He later met with former reality television star and current President Donald Trump at the White House.<sup>9</sup> That same morning at the Meyerson

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<sup>1</sup> David Koenig, *Exxon, Chevron Shareholders Reject Climate Resolutions*, U.S. NEWS & WORLD REPORT (May 25, 2016, 4:17 PM), <https://www.usnews.com/news/business/articles/2016-05-25/exxon-facing-heat-over-climate-change-holds-annual-meeting> [<https://perma.cc/3CAG-VXLE>].

<sup>2</sup> Christopher Helman, *What I Learned At ExxonMobil’s Annual Meeting*, FORBES (May 25, 2017, 8:53 PM), <https://www.forbes.com/sites/christopherhelman/2016/05/25/in-dallas-with-exxons-rex-tillerson-and-the-anti-carbon-crowd/#71aea74e1442> [<https://perma.cc/974V-NK5T>].

<sup>3</sup> John Schwartz, *Climate Change Activists Either Prod Exxon Mobil or Dump It*, N.Y. TIMES (May 25, 2016), <https://www.nytimes.com/2016/05/26/science/exxon-mobil-annual-meeting.html> [<https://perma.cc/5H85-8LKT>].

<sup>4</sup> Koenig, *supra* note 1.

<sup>5</sup> *Id.*

<sup>6</sup> *The World’s Biggest Public Energy Companies 2016*, FORBES, <https://www.forbes.com/pictures/ejle45hfef/no-3-exxonmobil/#5704b66e548c> [<https://perma.cc/L6NB-UD7M>].

<sup>7</sup> Koenig, *supra* note 1.

<sup>8</sup> Public Schedule, Rex Tillerson, Dep’t of State (May 31, 2017), <https://www.state.gov/r/pa/prs/appt/2017/05/271457.htm> [<https://perma.cc/YN36-GTWV>].

<sup>9</sup> *Id.*

Symphony Center, in Dallas, a majority of ExxonMobil's shareholders voted in favor of "more open and detailed analyses of the risks posed to its business by policies aimed at stemming climate change."<sup>10</sup> Even though its board had "recommended voting against the resolution . . . it passed, with 62 percent of shareholders voting 'yes' on the call for a '2-degree scenario' analysis."<sup>11</sup> ExxonMobil's new Chief Executive Officer, Darren Woods, addressed the crowd in the IM Pei-designed hall.<sup>12</sup> Looking over the audience, he affirmed that "the company was doing enough to address the impact of climate change and regulation on its business and that the board," which opposed the proposal, "believe[d] the company [had] adequately assessed the future impact of policy developments."<sup>13</sup> Woods also stated, "[w]e believe the risks of climate change are serious and warrant action, thoughtful action. As a company we are taking action in many ways."<sup>14</sup> But a voting majority disagreed with Woods and the recommendation of the board of directors. The shareholders wanted change.

In the United States, the federal and state governments, agencies, and public companies are struggling to develop plans and policies to address environmental and climate change challenges. In the wake of President Trump's announcement that the United States would withdraw from the Paris Climate Agreement in June 2017,<sup>15</sup> state legislatures were left to decide whether to pass their own resolutions in favor of aligning with the accord. Federal agencies such as the Bureau of Land Management ("BLM") attempt to reconcile environmental and energy policies under a pro-development administration, but face increased public opposition to drilling.<sup>16</sup> Meanwhile, publicly traded companies like ExxonMobil and Chevron

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<sup>10</sup> Diane Cardwell, *Exxon Mobil Shareholders Demand Accounting of Climate Change Policy Risks*, N.Y. TIMES (May 31, 2017) [https://www.nytimes.com/2017/05/31/business/energy-environment/exxon-shareholders-climate-change.html?\\_r=0](https://www.nytimes.com/2017/05/31/business/energy-environment/exxon-shareholders-climate-change.html?_r=0) [<https://perma.cc/7W44-HALS>].

<sup>11</sup> Erin Arvedlund, *ExxonMobil Shareholders Vote 'Yes' on Climate Change Analysis, Including Vanguard*, PHILA. INQUIRER (May 31, 2017), [http://www.philly.com/philly/columnists/erin\\_arvedlund/exxonmobil-shareholders-vote-yes-on-climate-change-analysis-did-vanguard-help-sway-result-20170531.html](http://www.philly.com/philly/columnists/erin_arvedlund/exxonmobil-shareholders-vote-yes-on-climate-change-analysis-did-vanguard-help-sway-result-20170531.html) [<https://perma.cc/D88T-BRF3>].

<sup>12</sup> *About Us: Darren W. Woods*, EXXONMOBIL, <http://corporate.exxonmobil.com/en/company/about-us/management/darren-w-woods> [<https://perma.cc/SCT7-X3L6>]; Dominic Rushe, *Shareholders Force ExxonMobil to Come Clean on Cost of Climate Change*, GUARDIAN (May 31, 2017, 1:28 PM), <https://www.theguardian.com/business/2017/may/31/exxonmobil-climate-change-cost-shareholders> [<https://perma.cc/3MWQ-HFJQ>].

<sup>13</sup> Rushe, *supra* note 12.

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

<sup>15</sup> Michael D. Shear, *Trump Will Withdraw U.S. from Paris Climate Agreement*, N.Y. TIMES (June 1, 2017), <https://www.nytimes.com/2017/06/01/climate/trump-paris-climate-agreement.html> [<https://perma.cc/V4NF-3CM8>].

<sup>16</sup> See, e.g., *Activists Come Out in Force to Oppose BLM Land Lease Sales*, ALBUQUERQUE J. (Dec. 6, 2018, 3:08 PM), <https://www.abqjournal.com/1254478/activists-come-out-in-force-to-oppose-blm-land-lease-sales.html> [<https://perma.cc/9MML-PA5Y>]; Blanca Garcia, *Federal Oil Drilling and Fracking Plan Opposed in Santa Barbara*, SANTA

face investor pressure to disclose and quantify climate change risks, in addition to litigation alleging corporate contribution to greenhouse gas emissions and concealing climate change evidence.<sup>17</sup>

The perceived struggle between the need for energy and the need to protect the environment appears irresolvable. Environmental activists decry that continued fossil fuel production and combustion will result in a permanently-changed planet, rendering habitats unlivable, changing ecosystems, and heralding an ominous future for biological life on a fragile planet.<sup>18</sup> Energy supporters contend that fossil fuels are vital and necessary in every sector of the modern economy.<sup>19</sup> And they also remind dissenters of the impracticability of moving away from hydrocarbons with a still nascent renewable energy sector incapable of taking its place.<sup>20</sup> Out of this age-old struggle, between the environment and energy concerns, arises the “Keep it in the Ground” movement (referred to hereinafter as the “Keep it in the Ground Movement” or the “Movement”).

The Keep it in the Ground Movement is a coalition of environmental groups that seek to end fossil fuel extraction by, *inter alia*, halting oil and gas leasing on, mainly, federal lands.<sup>21</sup> However, like all social movements, there are various factions within the Keep it in the Ground Movement. Some believe that existing petroleum production should remain but that no new oil and gas production sources should be brought on.<sup>22</sup> Others vehemently believe that all petroleum production in the United States should end immediately.

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BARBARA INDEP. (Oct. 12, 2018), <https://www.independent.com/news/2018/oct/12/federal-oil-drilling-and-fracking-plan-opposed-san/> [<https://perma.cc/59NQ-J6SV>].

<sup>17</sup> See, e.g., Ron Bousso, *BP Targeted with First Shareholder Resolution on Climate Goals*, REUTERS (Dec. 9, 2018, 6:01 PM), <https://af.reuters.com/article/energyOilNews/idAFL8N1YC2ZG> [<https://perma.cc/WFM4-FDVU>]; Jennifer Hiller, *Activist shareholders call on Chevron to meet Paris climate goals*, REUTERS (Dec. 19, 2018), <https://www.cnbc.com/2018/12/19/reuters-america-activist-shareholders-call-on-chevron-to-meet-paris-climate-goals.html> [<https://perma.cc/6JRX-K2B9>].

<sup>18</sup> See *How Will Global Warming Change Earth?*, NASA EARTH OBSERVATORY (June 3, 2010), <https://earthobservatory.nasa.gov/Features/GlobalWarming/page6.php> [<https://perma.cc/ESH6-WTCB>].

<sup>19</sup> Sean Hackbarth, *What Does ‘Keep it in the Ground’ Really Mean? Read This.*, U.S. CHAMBER OF COMMERCE (Apr. 25, 2016, 3:00 PM), <https://www.uschamber.com/series/above-the-fold/what-does-keep-it-the-ground-really-mean-read> [<https://perma.cc/7W44-HALS>].

<sup>20</sup> *Id.*

<sup>21</sup> Jeff Brady, *‘Keep It In The Ground’ Activists Optimistic Despite Oil Boom*, NPR (Mar. 16, 2018, 5:00 AM), <https://www.npr.org/2018/03/16/589908135/keep-it-in-the-ground-activists-optimistic-despite-oil-boom> [<https://perma.cc/JV7J-PD82>].

<sup>22</sup> See, e.g., Sammy Roth, *The New Climate Rallying Cry: Keep it in the Ground*, DESERT SUN (Apr. 13, 2016, 10:48 AM), <https://www.desertsun.com/story/news/environment/2016/04/13/climate-change-fossil-fuels-rallying-cry-keep-ground/81926856/> [<https://perma.cc/PZ7D-EK8W>].

Supporters of the Movement demand a safer climate future and a transition to a renewable energy economy.<sup>23</sup> The Movement rose to prominence in the United States, in November 2015, when Senators Jeff Merkley (D–Oregon) and then Democratic presidential candidate, Bernie Sanders (I–Vermont), introduced the Keep it in the Ground Act.<sup>24</sup> The proposed legislation denounced production of fossil fuels (coal, crude oil, and natural gas) on federal lands and the offshore continental shelf.<sup>25</sup> It simultaneously supported development of renewable energy sources.<sup>26</sup> Included in the legislation were the removal of federal lands from leasing activities and refusals to renew or extend existing leases.<sup>27</sup> In particular, the bill addressed U.S. policy, stating that:

(1) [F]ederal land and waters should be managed for the benefit of the people of the United States to avoid the most dangerous impacts of climate change and to promote a rapid transition to a clean energy economy; and

(2) [T]he government should pursue management of federal land and waters for the benefit of the people of the United States by not issuing any new lease or renewing any nonproducing lease for coal, oil, or natural gas in any such land or waters.<sup>28</sup>

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<sup>23</sup> Brady, *supra* note 21.

<sup>24</sup> Keep It in the Ground Act of 2015, S. 2238, 114th Cong. (2015); David Roberts, *Bernie Sanders and Jeff Merkley Have a New Bill to Leave Fossil Fuels in the Ground*, VOX (Nov. 4, 2015, 4:20 PM), <https://www.vox.com/2015/11/4/9671406/sanders-merkley-bill-leasing> [<https://perma.cc/G6HU-NP52>].

<sup>25</sup> S. 2238.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

[The] bill amends the Outer Continental Shelf Lands Act to prohibit the Department of the Interior from issuing a new lease, renewing, reinstating, or extending any nonproducing lease under such Act, or issuing any other authorization for the exploration, development, or production of oil, natural gas, or any other fossil fuel in the Arctic Ocean, the Atlantic Ocean, the Pacific Ocean, the Gulf of Mexico, or any other area of the outer Continental Shelf. Interior shall: (1) cancel any lease issued under such Act before the date of enactment of this Act in the Beaufort Sea, Cook Inlet, or Chukchi Sea; and (2) not conduct any lease sale, enter into any new lease, reoffer for lease any land covered by an expiring lease, or renew, reinstate, or extend any nonproducing lease in existence before such date for onshore fossil fuels, including coal, oil, tar sands, oil shale, and gas on land subject to the Mineral Leasing Act. Interior may exempt any provision of this Act if it determines that there is an imminent national security threat and that issuing an exemption would significantly reduce such threat, but only for as long as the threat persists. Interior may allow a nonproducing lease to be renewed or extended if: (1) the nonproducing lease contract was signed before enactment of this Act, and (2) Interior determines that giving effect to any provision of this Act is likely to lead to a court ruling that there was a material breach of the contract.

The legislation was not enacted during the 114th Congress (2015–2016); but its creation pushed the Keep it in the Ground Movement to the foreground, which included mentions of environmental and energy policy initiatives during the 2016 U.S. presidential election.<sup>29</sup>

Although the Keep it in the Ground moniker focuses on the U.S. environmental movement to halt development of fossil fuel production on public lands, it has also extended to halting development on private (fee) lands. Internationally, the movement is also known as “Leave it in the Ground” and is supported by various strategic partnerships between governments, non-governmental organizations (“NGOs”), and environmental activism groups. Many of these partnerships are backed by media-trusts, such as the U.K.’s *The Guardian*. Some of the derivative movements voice concern for direct impacts of climate change, such as island nations and sea level rise. Others voice opposition to hydrocarbons as part of investment portfolios and push for divestment in various forms.

However, the Movement is premised on a presently unrealistic and untenable notion that the world can divest fossil fuels, particularly petroleum, from its energy economy and terminate oil and gas development in the immediate or even near-term future. The Movement disregards the possibilities of serious harms to infrastructure and social order, economic harms with respect to revenues and infrastructure framework, and geopolitical risks tied to energy inter-dependence and regional stability. Lacking within its constructs is the notion of *Energy Realism*, acknowledging the prevalence and necessity of petroleum hydrocarbons to American society and economy. Making this acknowledgement will allow the Movement to evolve into one that includes consumer responsibility and advocates demand-side reduction.

This Article examines the rise of the Keep it in the Ground Movement and analyzes the risks and harms that would naturally follow its evolution and fulfillment. Part I of this Article begins with an overview of climate change science as the catalyst driving the Movement, and describes its development in the United States; Part II discusses *Pragmatic Energy Realism* and the major challenges facing the Movement, including economic fallacies, political repercussions, and technical inability; Part III discusses *Philosophical Energy Realism*; Part IV offers modifications that the Movement can adopt to forward goals of climate change protection while embracing Energy Realism; and Part V offers the author’s conclusions.

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Such a renewal or extension shall be for the shortest time practicable under the terms of the contract.

*Id.*

<sup>29</sup> See e.g., Bernie Sanders, *Keep Fossil Fuels in the Ground*, YOUTUBE (Nov. 4, 2015), <https://www.youtube.com/watch?v=ofMQXXVyDso> [https://perma.cc/3RZC-DV96]; Natasha Geiling, *These Will Be the Biggest Climate Fights of 2016*, THINKPROGRESS (Dec. 23, 2015, 1:00 PM), <https://thinkprogress.org/these-will-be-the-biggest-climate-fights-of-2016-b0b9a629fbbe/> [https://perma.cc/7CMJ-HW3B].

In an attempt to promote dialogue between environmental and energy stakeholders and include petroleum producers *and* consumers, this paper focuses on that coalition of Keep it in the Ground groups that seek an immediate termination of oil and gas production in the United States, in addition to the intermediary Keep it in the Ground groups that seek the end of new development.

PART I: CLIMATE CHANGE AS A CATALYST FOR THE “KEEP IT IN THE GROUND”  
MOVEMENT

Environmental activism is generally *a posteriori*. A catastrophic accident occurs; the environment is damaged; and citizens bring an action or lobby government to enact legislation to prevent future harms. Indeed, most American environmental legislation has formed in response to a damaging environmental act.<sup>30</sup> The Keep it in the Ground Movement was born out of a frustration that *ex post* legislative or lobbying action was insufficient to address hydrocarbon combustion. In response to this frustration, activists are promoting divestiture of fossil fuel assets from investment portfolios, denial of loans for exploration and production activities, and pressuring insurance companies to halt issuance of insurance policies to fossil fuel companies.<sup>31</sup> As climate change theory established itself as the leading science by the academic and scientific communities, the Movement focused its efforts on effecting positive environmental change within a short time frame.

A. Anthropogenic Climate Change

Climate change is one of the leading challenges facing humans in the twenty-first century.<sup>32</sup> It not only impacts global public health and meteorology but also agriculture, economics, and geopolitics.<sup>33</sup> Once referred to by its earlier moniker, *global warming*, climate change encompasses all adverse effects of the disruption of the natural chemical balance in the earth’s atmosphere, including global warming.<sup>34</sup>

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<sup>30</sup> See Livia Albeck-Ripka & Kendra Pierre-Louis, *America Before Earth Day: Smog and Disasters Spurred the Laws Trump Wants to Undo*, N.Y. TIMES (Apr. 21, 2018), <https://www.nytimes.com/2018/04/21/climate/environmental-disasters-earth-day.html> [<https://perma.cc/9LKC-W3N4>].

<sup>31</sup> See Gary E. Slagel, *Environmentalism and Financial Risk – The New Battlefield*, NAT’L L. REV. (July 6, 2017), <https://www.natlawreview.com/article/environmentalism-and-financial-risk-new-battlefront> [<https://perma.cc/CL29-KPVV>].

<sup>32</sup> Naomi Oreskes, *The Scientific Consensus on Climate Change*, 306 SCIENCE 1686, 1686 (2004); Proceedings of the 1st Int’l Tech., Educ. and Env’t Conference, Afr. Soc’y for Sci. Res., Badar Alam Iqbal & Farha Naaz Ghauri, *Climate Change: The Biggest Challenge in 21st Century* (2011), <http://www.hrmars.com/admin/pics/255.pdf> [<https://perma.cc/TA7B-ZZDH>]; MARK MASLIN, CLIMATE CHANGE: A VERY SHORT INTRODUCTION 1 (3d ed. 2014).

<sup>33</sup> MASLIN, *supra* note 32, at 1.

<sup>34</sup> See Caitlyn Kennedy & Rebecca Lindsay, *What’s the difference between global warming and climate change?*, CLIMATE.GOV (June 27, 2015), <https://www.climate.gov/>

The earth's temperature involves a delicate balance of solar radiation absorption and reflection.<sup>35</sup> The incoming short-wave radiation, which consists mainly of ultraviolet ("UV") radiation and visible light, passes almost entirely through the atmosphere without interference.<sup>36</sup> Ozone, the tri-oxygen compound, absorbs the high-energy UV radiation and thereby restricts how much of this dangerous radiation reaches the earth's surface.<sup>37</sup> "About one-third of the solar energy is reflected straight back into space [with t]he remaining energy . . . absorbed by both the land and ocean."<sup>38</sup> This absorption causes bodies of land and sea to warm and then "radiate this acquired warmth as long-wave infrared or 'heat' radiation."<sup>39</sup>

Atmospheric gases are mainly composed of water vapor ("H<sub>2</sub>O"), carbon dioxide ("CO<sub>2</sub>"), methane ("CH<sub>4</sub>"), and nitrous oxide ("NO").<sup>40</sup> These gases are known as greenhouse gases ("GHGs") as they absorb some of this long-wave infrared radiation, which increases atmospheric temperatures.<sup>41</sup> Without this greenhouse effect, the earth's temperature would be closer to zero degrees Fahrenheit, instead of the much balmer fifty-nine degrees Fahrenheit.<sup>42</sup> This gaseous balance has been upset since the advent of fossil fuel use, beginning with coal's proliferation during the Industrial Revolution and continuing with oil and natural gas.<sup>43</sup> The world has been burning these fossil fuels, which were deposited hundreds of millions years ago.<sup>44</sup> This relatively recent combustion is releasing the stored carbon back into the atmosphere as carbon dioxide and methane.<sup>45</sup> When these two gases are emitted into the atmosphere, they increase the greenhouse effect, which elevates the earth's temperature and contributes to global warming.<sup>46</sup>

The earth experiences cycles of warming and cooling over time and that this period of warming is simply one of those cycles.<sup>47</sup> And "[s]ince the beginning of the great northern ice ages, the global climate has indeed cycled from conditions that were similar or even warmer than today, to full ice ages, which caused ice sheets over 3 kilometers (km) [~1.86 miles] thick to form over much of North America and

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news-features/climate-qa/whats-difference-between-global-warming-and-climate-change [https://perma.cc/A6AC-ASCE].

<sup>35</sup> MASLIN, *supra* note 32, at 1.

<sup>36</sup> *Id.*

<sup>37</sup> *Id.* at 1–2.

<sup>38</sup> *Id.* at 2.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 2.

<sup>41</sup> *Id.*

<sup>42</sup> Qiancheng Ma, *Greenhouse Gases: Refining the Role of Carbon Dioxide*, NASA & GODDARD INST. FOR SPACE STUD. (1998), [https://www.giss.nasa.gov/research/briefs/ma\\_01/](https://www.giss.nasa.gov/research/briefs/ma_01/) [https://perma.cc/Y3SV-AF85]; *see also* MASLIN, *supra* note 32, at 2.

<sup>43</sup> MASLIN, *supra* note 32, at 7.

<sup>44</sup> *Id.* at 2.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *See* Renee Cho, *How We Know Today's Climate Change Is Not Natural*, EARTH INST. COLUMBIA UNIV. (Apr. 4, 2017), <https://blogs.ei.columbia.edu/2017/04/04/how-we-know-climate-change-is-not-natural/> [https://perma.cc/7T42-RVRR].

Europe.”<sup>48</sup> These glacial and interglacial (between ice ages) periods occurred every 41,000 years between 2.5 and 1 million years ago.<sup>49</sup> Since one million years ago, these periods have occurred every 100,000 years.<sup>50</sup> Scientists now equate these cyclic periods with the position of the earth in its orbit with respect to the Sun.<sup>51</sup> In fact, over the past 2.5 million years, the earth’s climate has been colder than the present over 80% of the time.<sup>52</sup> The most recent preceding epoch—the Holocene—began 11,650 years ago and was an example of a warm, stable, interglacial climate.<sup>53</sup> Although it began at the conclusion of the last ice age, in less than 4,000 years—a relatively short geologic time—“global temperatures increased by 6°C, relative sea level rose by 120 metres (m), atmospheric [carbon dioxide] increased by one-third, and atmospheric [methane] doubled.”<sup>54</sup> This climate encouraged biological and agricultural development, which in turn allowed for the rise of the *homo sapiens*.<sup>55</sup>

Humankind flourished during the Holocene. In fact, they were so successful a species that they began affecting their planetary environment. There is clear evidence of atmospheric carbon dioxide levels rising since the beginning of the Industrial Revolution.<sup>56</sup> The first measurements of carbon dioxide concentrations began in 1958 and were taken on the summit of Mauna Loa Mountain in Hawaii, a location remote from local sources of pollution.<sup>57</sup> These measurements show an annual increase of atmospheric carbon dioxide concentrations.<sup>58</sup> Combining the Mauna Loa data with information from ice core samples produced “a complete record of atmospheric [carbon dioxide] since the beginning of the industrial revolution.”<sup>59</sup> From this combination, atmospheric carbon dioxide levels have increased “from a pre-industrial concentration of about 280 ppmv [parts per million by volume] to over 400 ppmv at present, representing an increase of over 40 per cent [sic].”<sup>60</sup> In context, this evidence “demonstrate[s] that the level of pollution that we have already caused in one century is comparable to the natural variations which took thousands of years.”<sup>61</sup>

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<sup>48</sup> MASLIN, *supra* note 32, at 3.

<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> Chris Wilson, *Obituary: Remembering the Holocene Epoch*, TIME (Aug. 29, 2016), <http://time.com/4471327/holocene-epoch-end-anthropocene/> [https://perma.cc/D2KS-L8BR].

<sup>54</sup> MASLIN, *supra* note 32, at 3–4.

<sup>55</sup> Wilson, *supra* note 53.

<sup>56</sup> MASLIN, *supra* note 32, at 6.

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

<sup>58</sup> *Id.*

<sup>59</sup> *Id.* at 7.

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

Today, the Intergovernmental Panel on Climate Change (“IPCC”) “is the leading international body for the assessment of climate change.”<sup>62</sup> Established in 1988 by the United Nations Environment Programme (“UNEP”) and the World Meteorological Organization (“WMO”), its mission is to “provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts.”<sup>63</sup>

The IPCC does not collect or gather its own data:

[Rather, t]housands of scientists from all over the world contribute to the work of the IPCC. Review is an essential part of the IPCC process, to ensure an objective and complete assessment of current information. IPCC aims to reflect a range of views and expertise . . . . Because of its scientific and intergovernmental nature, the IPCC embodies a unique opportunity to provide rigorous and balanced scientific information to decision makers. By endorsing the IPCC reports, governments acknowledge the authority of their scientific content. The work of the organization is therefore policy-relevant and yet policy-neutral, never policy-prescriptive.<sup>64</sup>

The IPCC is mainly known for issuing its Assessment Reports, which report on the state of climate change knowledge.<sup>65</sup> In its most recent report—the Fifth Assessment Report—the IPCC warned:

Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased . . . . It is *extremely likely* that human influence has been the dominant cause of the observed warming since the mid-20th century.<sup>66</sup>

Climate change emerged to the forefront of environmental concern during the late 1980s and early 1990s.<sup>67</sup> The United Nations is a large driver of that concern, holding the Rio Earth Summit in 1992, out of which arose the United Nations

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<sup>62</sup> *Organization*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, <https://archive.ipcc.ch/organization/organization.shtml> [<https://perma.cc/PT4B-3A9A>].

<sup>63</sup> *Id.*

<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2013, at 4, 17 (T.F. Stocker et al. eds., 2013) [hereinafter IPCC 2013].

<sup>67</sup> See, e.g., Nathaniel Rich, *Losing Earth: The Decade We Almost Stopped Climate Change*, N.Y. TIMES (Aug. 1, 2018), <https://www.nytimes.com/interactive/2018/08/01/magazine/climate-change-losing-earth.html> [<https://perma.cc/EL3W-MLGH>].

Framework Convention on Climate Change (“UNFCCC”).<sup>68</sup> What was remarkable about the UNFCCC was that it clearly addressed a problem, which included a recognition of the then uncertainties of climate science:

The Parties to this Convention,

Acknowledging that change in the Earth’s climate and its adverse effects are a common concern of humankind,

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth’s surface and atmosphere and may adversely affect natural ecosystems and humankind,

Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs,

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases,

Noting that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof,

Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions . . . .<sup>69</sup>

Asserting that information, the UNFCCC set forth a lofty goal<sup>70</sup>:

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<sup>68</sup> *History of the Convention*, U.N. CLIMATE CHANGE, <https://unfccc.int/process/the-convention/history-of-the-convention#eq-1> [<https://perma.cc/NR7J-FWGL>].

<sup>69</sup> U.N. Framework Convention on Climate Change 2, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107, [http://unfccc.int/files/essential\\_background/background\\_publications\\_htmlpdf/application/pdf/conveng.pdf](http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf) [<https://perma.cc/53W2-R3RX>] [hereinafter UNFCCC].

<sup>70</sup> *What Is the United Nations Framework Convention on Climate Change?*, U.N. CLIMATE CHANGE, [http://unfccc.int/essential\\_background/convention/items/6036.php](http://unfccc.int/essential_background/convention/items/6036.php) [<https://perma.cc/39KK-3LRH>].

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.<sup>71</sup>

The next major international step in addressing climate change was the Kyoto Protocol, which was adopted on December 11, 1997 and entered into force on February 16, 2005; it was later amended by the Doha Amendment to the Kyoto Protocol on December 8, 2012.<sup>72</sup> The Protocol commits its parties “by setting internationally binding emission reduction targets”<sup>73</sup> and reducing greenhouse gas emissions by certain percentages below 1990 levels.<sup>74</sup> In addition to promoting satisfaction of these reductions by national measures, the Kyoto Protocol also encourages reductions using certain mechanisms, such as (1) International Emissions Trading, (2) Clean Development Mechanism, and (3) Joint Implementation.<sup>75</sup> Although President Clinton signed the Kyoto Protocol, the U.S. Senate refused to ratify it, instead passing the Byrd-Hagel resolution, which declines to ratify any treaty that:

(A) Mandate(s) new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period, or (B) would result in serious harm to the economy of the United States . . . .<sup>76</sup>

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<sup>71</sup> UNFCCC, *supra* note 69, at 9.

<sup>72</sup> *What Is the Kyoto Protocol?*, U.N. CLIMATE CHANGE, <https://unfccc.int/process-and-meetings/the-kyoto-protocol/what-is-the-kyoto-protocol/what-is-the-kyoto-protocol> [<https://perma.cc/G9AM-97AK>].

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> Demand Climate Justice, *A Brief History of the United States and the UN Climate Change Negotiations*, THE WORLD AT 1°C (June 2, 2017), <https://worldat1c.org/a-brief-history-of-the-united-states-and-the-un-climate-change-negotiations-bf7525d4ef13> [<https://perma.cc/SRT4-NM5U>].

The resolution passed 95–0 in favor.<sup>77</sup> And keeping in form with past (and current) U.S. practices, President George W. Bush withdrew the U.S. signature from the Kyoto Protocol.<sup>78</sup>

The UNFCCC held a widely-publicized global summit in Paris in Fall 2015.<sup>79</sup> The Paris Accord or Paris Agreement, as it was named, resulted in an accord now ratified by 174 Parties to the Convention (out of a possible 197).<sup>80</sup> The Accord pledges to keep average global temperature rise to below “2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.”<sup>81</sup> The Accord also desires to strengthen member countries’ ability to manage climate change impacts.<sup>82</sup> To achieve these goals, the Accord recommends instating “appropriate financial flows, a new technology framework and an enhanced capacity building framework . . . .”<sup>83</sup> Moreover, the Agreement encourages transparency measures and requires “a global stocktake every 5 years to assess the collective progress towards achieving the purpose of the Agreement and to inform further individual actions by Parties,” which pledged to reduce carbon dioxide levels.<sup>84</sup> The Accord offered various solutions to address climate change, including leaving hydrocarbons in the ground.<sup>85</sup> In calculating the amount of remaining hydrocarbon reserves in the subsurface, scientists theorized that the atmosphere can manage less than 1,100 gigatonnes of carbon dioxide.<sup>86</sup> Combusting all producible reserves would result in exceeding this limit by multiples, which leads to the premise that some amount of carbon should remain in the ground. Although signed by President Barack Obama through an executive order in 2016, President Donald Trump announced that the United States would withdraw from the Accord in June 2017.<sup>87</sup>

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<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> U.N. Framework Convention on Climate Change Conference of the Parties, Twenty-First Session, *Adoption of the Paris Agreement*, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015), [http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php) [<https://perma.cc/M32X-DV69>].

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> Christina Nunez, *Climate Mission Impossible: Scientists Say Fossil Fuels Must Go Untapped*, NAT’L GEOGRAPHIC (Jan. 7, 2015), <https://news.nationalgeographic.com/news/energy/2015/01/150107-fossil-fuel-unburnable-2-degree-climate-target-study/> [<https://perma.cc/P29Y-HFPK>].

<sup>86</sup> *Id.*

<sup>87</sup> Johannes Urpelainen, *Trump’s Withdrawal from the Paris Agreement Means Other Countries Will Spend Less to Fight Climate Change*, WASH. POST. (Nov. 21, 2017), [https://www.washingtonpost.com/news/monkey-cage/wp/2017/11/21/trumps-noncooperation-threatens-climate-finance-under-the-paris-agreement/?utm\\_term=.97c6a55dc423](https://www.washingtonpost.com/news/monkey-cage/wp/2017/11/21/trumps-noncooperation-threatens-climate-finance-under-the-paris-agreement/?utm_term=.97c6a55dc423) [<https://perma.cc/9LEE-WSEK>].

*B. The Fractivists*

The rise of the modern-day environmental movement against petroleum production is generally traceable to the recent use of hydraulic fracturing in shale and other unconventional formations. Known as the father of shale, George Mitchell's combination of horizontal drilling and hydraulic fracturing unleashed the shale revolution, catapulting the United States to the top energy producer in the world.<sup>88</sup> But opening up unconventional shale reserves also meant opening up areas of petroleum development that were previously nonproductive—and, more importantly, more urban—such as the populated Barnett shale areas in the North Texas cities of Arlington, Denton, and Fort Worth.<sup>89</sup> The movement of operations into the public eye, thereby attaining the dreaded NIMBY<sup>90</sup> status, is a main factor for the increased opposition to an activity once relegated to areas far from public settlement, such as West Texas and the Great Plains of Kansas and Oklahoma. The advent of hydraulic fracturing also meant that operational invasiveness increased because the requisite hydraulic fracturing process increased the time, labor, and activities of the project. These activities included transporting millions of gallons of water for the fracturing fluid slurry and the recovery and disposal of the fluid

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<sup>88</sup> Monika Ehrman, *The Next Great Compromise: A Comprehensive Response to Opposition Against Shale Gas Development Using Hydraulic Fracturing in the United States*, 46 TEX. TECH L. REV. 423, 430–31 (2014).

Born to Greek immigrant parents in Galveston, Texas, Mitchell attended Texas A&M University, graduating first in his class in petroleum engineering. He founded Mitchell Energy & Development Corporation, an independent oil and gas company headquartered in a small suburb forty miles north of Houston. Over the course of almost three decades, and backed in part by the United States Department of Energy (DOE), Mitchell's company spent millions of dollars to develop a highly specialized process that would allow economic production from shale. The final process combined two technologies, horizontal drilling and hydraulic fracturing, providing companies with a method to extract commercial quantities of gas. Without Mitchell's pioneering efforts, shale gas would have remained elusive—the industry aware of its existence, but unable to exploit it.

*Id.*

<sup>89</sup> See NORTH TEXANS FOR NAT. GAS, AN ENERGY REVOLUTION: 35 YEARS OF FRACKING IN THE BARNETT SHALE (2016), <https://d3n8a8pro7vnm.cloudfront.net/themes/55dc9a8f2213933dc0000001/attachments/original/1464723479/BarnettShale.pdf?1464723479> [<https://perma.cc/M699-5FBA>].

<sup>90</sup> “NIMBY” is the acronym for “Not in my backyard.” See Rosalie D. Morgan, *What the Frack?: An Empirical Analysis of the Effect of Regulation on Hydraulic Fracturing*, 16 QUINNIPIAC HEALTH L.J. 77, 108 n.217 (2012) (referring to Oxford Dictionary, which provides that “The NIMBY phenomenon is defined as: ‘a person who objects to the siting of something perceived as unpleasant or potentially dangerous in their own neighborhood, such as a landfill or hazardous waste facility, especially while raising no such objections to similar developments elsewhere.’”).

according to state regulations.<sup>91</sup> Additional activity increased truck traffic, noise, disruption, leaks or spills around the well pad site, and flaring.<sup>92</sup>

Of these aforementioned effects, wastewater disposal and flaring are two that create complicated challenges for the operator and the surrounding community. Following the hydraulic fracturing operation, the injected fracturing slurry, which is mostly composed of water, must be removed from the well.<sup>93</sup> This “flowback” process must be completed before production can commence.<sup>94</sup> Once flowed back, this mixture may contain brine water, injected chemicals, and non-combusted hydrocarbons.<sup>95</sup> The wastewater is not suitable for disposal into either local community water recycling facilities or into surrounding freshwater lakes or streams. It is typically injected into depleted reservoirs through disposal wells, which are governed by the regulatory agency and typically exempt from the Safe Drinking Water Act.<sup>96</sup>

Recently, these wastewater disposal wells have been associated with induced seismicity.<sup>97</sup> In addition to the wastewater recovered during the hydraulic fracturing flowback process, wastewater is also generated through conventional oil and gas production—in that naturally occurring formation water is produced along with any petroleum hydrocarbons.<sup>98</sup> During the production process, exploration and production companies drill through the subsurface, targeting hydrocarbon-rich formations.<sup>99</sup> These formations also contain salt water—essentially the brine from an ancient sea.<sup>100</sup> Production companies cannot dispose of this nonpotable salt water in public facilities or as effluent into a stream or other body of water because it often mixes with the produced hydrocarbons and various other minerals, chemicals, and sediments.<sup>101</sup> Once the hydrocarbons and accompanying fluids flow through the production wellhead, the hydrocarbons separate from the salt water; and the salt water must be disposed of, often in deep disposal wells.<sup>102</sup> This injection into the subsurface is triggering earthquakes in certain geographic regions predisposed to

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<sup>91</sup> Ehrman, *supra* note 88, at 432–34 (providing background information on hydraulic fracturing).

<sup>92</sup> See generally Hannah J. Wiseman, *Risk and Response in Fracturing Policy*, 84 COLO. L. REV. 729 (2013) (addressing the many obvious environmental impacts caused by fracking but also points out that fracking may have some less-obvious, indirect impacts on the environment and communities).

<sup>93</sup> Ehrman, *supra* note 88, at 432–34 (providing background information on hydraulic fracturing).

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> *Id.*

<sup>97</sup> Monika U. Ehrman, *Earthquakes in the Oilpatch: The Regulatory and Legal Issues Arising Out of Oil and Gas Operation Induced Seismicity*, 33 GA. ST. U. L. REV. 609, 617 (2017).

<sup>98</sup> *Id.* at 626–28.

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

<sup>101</sup> *Id.*

<sup>102</sup> *Id.*

such activity due to geologic composition, faulting structures, and disposal fluid characteristics.<sup>103</sup>

Studies indicate that various factors, such as the disposal depth, injection volume, and injection pressure influence the probability of seismicity near wastewater disposal operations.<sup>104</sup> Plate tectonics may also dictate whether seismic activity will occur and in what magnitude. For example, in Oklahoma, the plates are squeezing the region from east to west, which results in most earthquakes occurring along a northwest-southeast oriented fault.<sup>105</sup> Moreover, “a propensity for wastewater injection seismicity may be highly correlated to a region’s geology.”<sup>106</sup> The Arbuckle formation underlies much of Oklahoma; its porosity and geologic features allow for absorption of huge volumes of water, making it a good target for wastewater disposal.<sup>107</sup> Unfortunately, the Arbuckle often “rests on brittle, ancient basement rocks, which can fracture along major faults under stress.”<sup>108</sup> Thus, “[t]he deeper you inject, the more likely it is that the injected brine is going to make its way into a seismogenic fault zone, prone to producing earthquakes.”<sup>109</sup> The resulting earthquakes range in magnitude depending on the geologic structure and regional in-situ tectonic stress.<sup>110</sup>

Currently, “there are approximately 30,000 injection wells permitted for the disposal of wastewater generated by oil and gas operations in the United States.”<sup>111</sup> But of these injection wells, only a “very small fraction” are suspected of inducing seismicity.<sup>112</sup> Indeed, a recent report provided an estimate that only nine such wells have induced seismic events.<sup>113</sup> “Although seismic events over the past few years likely have increased that number, even now, the fraction remains small. Nevertheless, in the last few years, geologists suspect that injection disposal induced hundreds of seismic events, though many were not felt events.”<sup>114</sup>

The non-combusted hydrocarbons entrained in the wastewater are separated and flared if there is not a pipeline in place.<sup>115</sup> The flaring column is designed to operate at close to 100% efficiency, producing carbon dioxide as part of the combustion process.<sup>116</sup> However, if flaring efficiencies are less than perfect, non-

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<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

<sup>107</sup> *Id.*

<sup>108</sup> *Id.* (citation omitted).

<sup>109</sup> *Id.* (citation omitted).

<sup>110</sup> *Id.*

<sup>111</sup> *Id.*

<sup>112</sup> *Id.*

<sup>113</sup> *Id.* (citation omitted).

<sup>114</sup> *Id.* (citation omitted).

<sup>115</sup> Monika U. Ehrman, *Lights Out in the Bakken: A Review and Analysis of Flaring Regulation and Its Potential Effect on North Dakota Shale Oil Production*, 117 W. VA. L. REV. 549, 558–60 (2014) [hereinafter Ehrman, *Lights Out in the Bakken*].

<sup>116</sup> *Id.*

combusted methane is also released.<sup>117</sup> In an earlier era, direct venting of natural gas to the atmosphere was not uncommon.<sup>118</sup>

Under the Obama Administration, the Environmental Protection Agency (“EPA”) promulgated various rules affecting flaring and venting of natural gas.<sup>119</sup> Attempts to regulate the hydraulic fracturing process were also made, such as the Fracturing Responsibility and Awareness of Chemicals Act, but were never successful due to strong petroleum interests and failure to achieve congressional accord.<sup>120</sup> In the minutes before the Obama Administration ended, it promulgated rules that allowed the BLM to govern flaring and venting.<sup>121</sup> But during the first month of the Trump Administration, Congress overruled the regulation using the little used, but powerful, Congressional Review Act, which allows Congress to repeal rules passed within sixty legislative days of passage.<sup>122</sup> Pending litigation also

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<sup>117</sup> Natural gas flaring is a large source of methane emissions and a target of the 2012 New Source Performance Standards. Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 77 Fed. Reg. 49,490, 49,491–92 (Aug. 16, 2012) (to be codified at 40 C.F.R. pt. 60, 63).

The majority of these petroleum-related air emissions occur through flaring—a technique by which operators combust excess natural gas from oil and gas wells. Often used when midstream connections are not available, flaring is common practice in the oil and gas industry. Operators may employ flaring (1) during flowback, which is the period of time in the hydraulic fracturing operation when the injected slurry of water, proppant, and chemicals flows back through the wellbore or (2) when connection timelines are delayed—midstream companies can be notoriously uncertain with regards to construction timelines. In lieu of shutting in the well (stopping production), which delays income of saleable and more valuable hydrocarbons, operators instead send these non-connected volumes of gas (often referred to as “waste gas” or “flare gas”) up through flare stacks, where those volumes are then ignited and combusted. Ideally the entire volume of flare gas combusts, resulting in the formation of carbon dioxide and water. But inefficient flaring may lead to partial combustion and the consequent exhaust of methane and other toxics into the atmosphere. Importantly, carbon dioxide, a greenhouse gas, is always emitted during the combustion process.

Ehrman, *Lights Out in the Bakken*, *supra* note 115, at 550–51; JOHN S. LOWE ET AL., CASES AND MATERIALS ON OIL AND GAS LAW 1027 (7th ed. 2018).

<sup>118</sup> Ehrman, *Lights Out in the Bakken*, *supra* note 115, at 558–60.

<sup>119</sup> See generally Ehrman, *Lights Out in the Bakken*, *supra* note 115.

<sup>120</sup> See Mike Soraghan, *Senate Votes to Keep ‘Halliburton Loophole’; Regulation Stays with States*, E&E NEWS (Jan. 29, 2015), <https://www.eenews.net/stories/1060012514> [<https://perma.cc/E7B9-9GH9>].

<sup>121</sup> See Ellen M. Gilmer, *The Many Lives of BLM Methane Litigation*, E&E NEWS (May 3, 2018), <https://www.eenews.net/stories/1060080679> [<https://perma.cc/4WWL-JM7T>].

<sup>122</sup> See 5 U.S.C. § 801 (1996); Dino Grandoni, *Congress Decided Against Repealing this Climate Rule. So the Trump Administration Is Undoing It*, WASH. POST (Oct. 4, 2017), [https://www.washingtonpost.com/news/energy-environment/wp/2017/10/04/congress-decided-against-repealing-this-climate-rule-so-the-trump-administration-is-undoing-it/?utm\\_](https://www.washingtonpost.com/news/energy-environment/wp/2017/10/04/congress-decided-against-repealing-this-climate-rule-so-the-trump-administration-is-undoing-it/?utm_)

challenged whether the BLM possessed authority to regulate oil and gas operations or whether it was Congress's intent that the EPA retain and use authority to promulgate such environmental regulation.<sup>123</sup> On appeal before the Tenth Circuit, the appellate court dismissed the litigation, charging that the tentative repeal rendered the case moot.<sup>124</sup> Most recently, a California district court is hearing the legitimacy of the repeal.<sup>125</sup>

Other negative externalities associated with oil and gas development include the typical pollution torts, such as noise, continuing trespass, and contamination. In particular, surface owners complain of groundwater contamination by hydraulic fracturing fluids.<sup>126</sup> Numerous studies were conducted to determine whether a correlation existed and the circumstances for such occurrences.<sup>127</sup> The results indicate that poor wellbore completion, compromised casing integrity, and surface spills are the likely causes of groundwater contamination in oil and gas operations.<sup>128</sup> Further studies examined the potential health effects of any such contamination.<sup>129</sup>

Meanwhile, regulatory agencies lag behind continually advancing operational practices. Although drilling a well typically requires an application for a permit to drill, many state regulatory agencies do not require permits for the hydraulic fracturing operation, treating it like many other procedures in petroleum well development.<sup>130</sup> Others have added completion permitting regulations because of seismicity concerns.<sup>131</sup> On federal lands, the Obama Administration also attempted to regulate hydraulic fracturing, but these regulations' statuses remain in flux with the subsequent repeal by the Trump Administration and resulting litigation in opposition to the repeal.<sup>132</sup>

Environmental activists seized this series of disadvantageous moments within the oil and gas industry and created a movement.

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term=.d31c087c5240 [https://perma.cc/7HK9-6EAX].

<sup>123</sup> See Ellen M. Gilmer, *The Many Lives of BLM Methane Litigation*, E&E NEWS (May 3, 2018), <https://www.eenews.net/stories/1060080679> [https://perma.cc/4WWL-JM7T].

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> See generally Ehrman, *supra* note 88 (describing the key technologies and addresses the major arguments against shale gas development).

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> For more information on hydraulic fracturing and groundwater contamination, see JOHN S. LOWE ET AL., *supra* note 117, at 958.

<sup>130</sup> See generally DAVIS GRAHAM ET AL., *HYDRAULIC FRACTURING LAW AND PRACTICE* (2017).

<sup>131</sup> See, e.g., Railroad Commission of Texas, *Railroad Commission Adopts Disposal Well Rule Amendments Today* (Oct. 28, 2014), <https://www.rrc.state.tx.us/all-news/102814b/> [https://perma.cc/KRF9-667D].

<sup>132</sup> For more information on environmental litigation, see LOWE ET AL., *supra* note 117, at 959–60.

*C. The Keep it in the Ground Movement*

Akin to the logging protests of the 1980s and 1990s,<sup>133</sup> the Keep it in the Ground Movement began with isolated protests by individuals or groups tied by a common theme of inhibiting the extraction of natural resources by interfering with operations. The Movement embraced the logic that reducing the amount of carbon extracted from the ground would directly reduce the amount of greenhouse gases emitted during its combustion.<sup>134</sup> “For decades, environmentalists have tried to rid the air of pollution caused by fossil fuels, but they’ve always targeted combustion, working to clean up exhaust pipes or smokestacks, rather than shutting down oilfields or coal mines.”<sup>135</sup> The Sierra Club’s “extensive, expensive, and effective” *Beyond Coal* campaign proved to be an inspiration and template for the Movement.<sup>136</sup>

The Movement thus embraced a wide range of strategies, from encouraging institutional investors to divest their portfolios of oil and gas stock, to the prevention of oil and gas lease development on federal lands.<sup>137</sup> Targeting federal lands proved a stable foothold in its anti-extractive industry tactics because of the relative ease of entry. Nearly one third of the United States consists of public lands.<sup>138</sup> These onshore lands are governed by the Bureau of Land Management (“BLM”), a federal agency in the Department of the Interior, which is solely responsible for managing and leasing onshore federal minerals. These vast public lands, particularly in the Western Rocky Mountain states, either remain in the federal public domain or were patented into private ownership subject to mineral reservations by the United States.<sup>139</sup> Consequently, “federal minerals constitute an important part of the nation’s onshore domestic oil and natural gas reserves.”<sup>140</sup> The Movement was able to interfere in the federal leasing process because of applicable governing legislative processes, which are absent in most private mineral leasing transactions.

Lease sale protests are a disruptive tactic available to the Movement because of the auction requirement under the Mineral Leasing Act of 1920.<sup>141</sup> This strategy would not be effective on fee (private) lands where an auction is not required for the

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<sup>133</sup> Kate Schimel, *How the Keep it in the Ground Movement Came to Be*, HIGH COUNTRY NEWS (July 19, 2016), <http://www.hcn.org/articles/how-the-keep-it-in-the-ground-movement-gained-momentum> [https://perma.cc/7YSW-R898].

<sup>134</sup> *Id.*

<sup>135</sup> *Id.*

<sup>136</sup> See Michael Grunwald, *Inside the War on Coal*, POLITICO (May 26, 2015, 11:45 AM), <https://www.politico.com/agenda/story/2015/05/inside-war-on-coal-000002> [https://perma.cc/3TMQ-3HWD].

<sup>137</sup> Jean Feriancek, *It Seems Everyone Is Protesting BLM Oil and Gas Lease Sales*, 25 NAT. RESOURCES & ENV'T 52 (2011), [http://link.galegroup.com/apps/doc/A247971670/LT?u=uok\\_lawlib&sid=LT&xid=1bc20272](http://link.galegroup.com/apps/doc/A247971670/LT?u=uok_lawlib&sid=LT&xid=1bc20272) [https://perma.cc/Y2L9-LYMW].

<sup>138</sup> Rebecca W. Watson & Nora Pincus, *Hot Topics on Public Lands at End of Obama Era*, 36 ENERGY & MIN. L. INST. 125, 125 (2015) (“Nearly one third of the United States’ land mass is under the jurisdiction and management of the federal government.”).

<sup>139</sup> *Id.*

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

<sup>141</sup> Mineral Lands Leasing Act of 1920, 30 U.S.C. §§ 181–287 (1985).

sale or lease of minerals. Under the Mineral Leasing Act, oil and gas leases are issued to the highest qualified bidder at competitive lease sales held quarterly by BLM state offices.<sup>142</sup> The mineral leasing process starts with nominations of lands by interested parties.<sup>143</sup> The BLM then evaluates those nominated parcels to determine their availability and whether their leasing “conforms to BLM policies, regulations, and land use plans, and the potential environmental impacts of oil and gas leasing under [the National Environmental Policy Act].”<sup>144</sup>

The Movement focuses on two processes during the federal mineral leasing timeline: (1) purchasing the mineral leases as the auction’s highest bidder to permanently withdraw the parcel from oil and gas development; and (2) protesting during the thirty-day public protest period. This period allows concerned citizens and stakeholders to file protests to the BLM’s inclusion of parcels in the lease sale.<sup>145</sup> Under the first process, the successful bidder who makes the requisite payment becomes the owner of a fee simple determinable—a possessory estate in fee, subject to the condition of production. This winning bidder “must pay a minimum bonus of \$2 per acre, the first year’s annual rental and an administrative fee on the date of the sale, with the remainder of its bonus bid due in ten business days.”<sup>146</sup> The bonus is akin to an option payment, whereby the successful bidder—the lessee—has the option, but not the obligation, to develop. Many of these bonus bids are substantial—e.g., BLM New Mexico generated “approximately \$130.9 million in bonus bids on [September 7, 2017], while a BLM Wyoming sale on [February 7, 2017] generated \$128.9 [million] in total bonus bids.”<sup>147</sup> However, payments are later refunded “if BLM finds the protest to have merit and does not issue the lease.”<sup>148</sup> A 2010 study conducted by the U.S. Government Accountability Office (“GAO”) found that a large majority of BLM-identified lease parcels were protested.<sup>149</sup>

Under the second process, the BLM has discretion to withdraw from or defer “a lease sale in response to protests received or for other reasons.”<sup>150</sup> The BLM

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<sup>142</sup> Feriancek, *supra* note 137.

<sup>143</sup> *Id.*

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> *BLM Oil and Gas Lease Sales Generate \$360 Million in 2017*, BUREAU OF LAND MGMT. (Jan. 31, 2018), <https://www.blm.gov/press-release/blm-oil-and-gas-lease-sales-generate-360-million-2017> [<https://perma.cc/2JHF-5VVA>].

<sup>148</sup> Feriancek, *supra* note 137.

<sup>149</sup> *Id.* (referring to U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-10-670, ONSHORE OIL AND GAS: BLM’S MANAGEMENT OF PUBLIC PROTESTS TO ITS LEASE SALES NEEDS IMPROVEMENT (2010) (investigating the “extent to which BLM maintains and makes publicly available information relating to protests, the extent to which parcels were protested and the nature of protests, and the effects of protests on lease sale decisions and on oil and gas development”).

<sup>150</sup> *Id.*

The Mineral Leasing Act provides that “[l]eases shall be issued within 60 days following payment by the successful bidder of the remainder of the bonus bid, if

attempts to review and resolve protests before holding the lease sale.<sup>151</sup> But if it does not, the BLM has the ability to include those protested parcels in the sale.<sup>152</sup> If those protested parcels are included, the “BLM resolves the protests before issuing leases on the affected parcels.”<sup>153</sup>

In 2008, the Theodore Roosevelt Conservation Partnership requested the BLM withdraw 49,000 acres of land in Utah that were slated for oil and gas leasing.<sup>154</sup> The Conservation Partnership, which represents twenty-five sportsmen organizations,<sup>155</sup> aims to create and support federal policy and funding solutions with a membership comprised of American hunters, fisherman, and other sportsmen committed to President Roosevelt’s vision of stewardship and conservation.<sup>156</sup> Director of the Conservation Partnership’s Center for Western Lands, Joel Webster, wrote the group’s formal protest.<sup>157</sup> He reported, “Every single parcel we protested was removed.”<sup>158</sup>

Lease auction protests continue.<sup>159</sup> The Center for Biological Diversity (“CBD”) filed “formal ‘protests’ of oil and gas lease sales, an administrative step

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any, and the annual rental for the first lease year.” 30 U.S.C. [section] 226(b)(1) (A). Accordingly, BLM Instruction Memorandum No. 2005-176, Attachment 1-2 (June 27, 2005) indicates that the BLM state director will make every effort to reach a decision on a protest no later than the sixtieth calendar day from the sale. As a practical matter, it often has taken BLM much longer to resolve protests. After a protest decision is made by the BLM state director, it is appealable to the Interior Board of Land Appeals by filing an appeal notice within thirty days. See 43 C.E.R. [section] 4.411. If BLM dismisses a protest, the protesting party also can seek judicial review of alleged NEPA and other statutory violations in federal district court under the Administrative Procedure Act, 5 U.S.C. [section] 702.

*Id.*

<sup>151</sup> *Id.*

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*

<sup>154</sup> Schimel, *supra* note 133.

<sup>155</sup> April Reese, *The Leasing Protest Game*, HIGH COUNTRY NEWS (Aug. 14, 2008), <https://www.hcn.org/issues/368/17640> [<https://perma.cc/5DWN-AXSR>].

<sup>156</sup> *Our Mission*, THEODORE ROOSEVELT CONSERVATION PARTNERSHIP, <http://www.trcp.org/mission/> [<https://perma.cc/8HDG-D7H3>].

<sup>157</sup> Joel Webster, THEODORE ROOSEVELT CONSERVATION PARTNERSHIP, <http://www.trcp.org/team/joel-webster/> [<https://perma.cc/TYB9-QCRC>]; *see, e.g., Livingston Residents Protest BLM’s March Oil and Gas Lease Sale*, BILLINGS GAZETTE, (Jan. 11, 2018), [https://billingsgazette.com/news/state-and-regional/montana/livingston-residents-protest-blm-s-march-oil-and-gas-lease/article\\_c5e0dd36-62f3-5087-a337-c748f3e41e9b.html](https://billingsgazette.com/news/state-and-regional/montana/livingston-residents-protest-blm-s-march-oil-and-gas-lease/article_c5e0dd36-62f3-5087-a337-c748f3e41e9b.html) [<https://perma.cc/VV4W-V79G>]; Rebecca Moss, *Environmentalists Sue Feds to Block Oil, Gas Lease Sales*, NEW MEXICAN (Aug. 25, 2016), [http://www.santafenewmexican.com/news/local\\_news/environmentalists-sue-feds-to-block-oil-gas-lease-sales/article\\_006f1712-cc1f-54ac-bed6-10094d1826cf.html](http://www.santafenewmexican.com/news/local_news/environmentalists-sue-feds-to-block-oil-gas-lease-sales/article_006f1712-cc1f-54ac-bed6-10094d1826cf.html) [<https://perma.cc/S692-HGNX>].

<sup>158</sup> Reese, *supra* note 155.

<sup>159</sup> *See* BILLINGS GAZETTE, *supra* note 157; Moss, *supra* note 157.

that is a strategic part of the group's campaign to stop extraction of fossil fuels that emit greenhouse gases . . . ."<sup>160</sup> Through its protests, the CBD had hoped to persuade the Obama Administration to issue a moratorium on all lease sales while agencies reviewed climate impacts under the National Environmental Policy Act, and other federal legislation such as the Endangered Species Act, the Federal Land Policy and Management Act, and the Mineral Leasing Act.<sup>161</sup>

While protesting the lease parcels is a strategy that can remove federal parcels from development and thereby effectuate the Movement's goal to reduce GHGs, the protests effectively tie up already-strained resources at the BLM and halt any collection of potential revenue sources—the bonus, royalty, and fees. Because federal lands are held in trust for U.S. citizens, prevention of revenue generation thereby deprives the American public of necessary revenue. The BLM continues to examine how to increase efficiency during these auction and protest processes.<sup>162</sup>

The Movement also included offshoots of the Occupy movement, which, in part, calls for “economic reforms to bring stability to people experiencing recent and/or long-term financial disadvantage,” but also includes ecological and environmental reforms.<sup>163</sup> In fact, the recent Standing Rock Sioux protests over the

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<sup>160</sup> Dawn Reeves, *Advocates Protest Oil, Gas Lease Sales In Push For NEPA Climate Review*, INSIDE/EPA/CLIMATE, Mar. 23, 2016, LEXISNEXIS.

<sup>161</sup> *Id.*

<sup>162</sup> Jean Feriancek provides more detail on this in the following:

In May 2010 Secretary of the Interior Ken Salazar announced several oil and gas leasing reforms aimed at improving environmental protections on federal public lands, helping reduce the number of protests and increasing BLM's ability to resolve protests prior to lease sales. U.S. Department of the Interior News Release (May 17, 2010). Some of the changes--such as increased public involvement in the development of master leasing plans prior to leasing in areas where new oil and gas development is anticipated--are intended to cause BLM to give increased consideration of resource values other than oil and gas development before leasing decisions are made in an area. Other reforms relate more directly to the leasing and protest process. Rather than relying solely on nominations, BLM state offices are to develop a lease sale schedule that emphasizes rotating lease parcel review among field offices throughout the year, in order to balance the workload and allow the field offices to devote sufficient time and resources to parcel review. BLM Instruction Memorandum No. 2010-117. Sale notices will be posted ninety days (rather than forty-five days) prior to a lease sale, and are to include a link to the NEPA compliance documentation. *Id.* The thirty-day protest period begins when the sale notice is posted, thus giving BLM at least sixty days prior to the sale in which to review protests. *Id.* While it remains to be seen whether these reforms will result in a reduction in protests, it does seem likely that the changed schedule will enable BLM to resolve a higher percentage of protests prior to the sale date.

Feriancek, *supra* note 137, at 54.

<sup>163</sup> Susan E. Mason, *The Occupy Movement and Social Justice Economics*, Editorial, 93 FAMILIES SOC'Y 1, 3-4 (2012).

construction path of the Energy Transfer Partners' Dakota Access Pipeline ("DAPL") are an evolution of the Occupy movement.<sup>164</sup> The Standing Rock Sioux Tribe ("Tribe") and protestors worried that the DAPL's proposed path, which crossed the nearby Missouri River, would pose a threat to the Tribe's drinking water sources.<sup>165</sup> Beginning with the Tribe's August 2016 lawsuit against the U.S. Army Corps of Engineers,<sup>166</sup> protestors gathered to demonstrate and to stop construction of the pipeline.<sup>167</sup> The DAPL protests are thus representative of the new targets of those opposed to petroleum development—the oil and gas midstream (processing, storage, liquids extraction) and transportation sectors.

The Keep it in the Ground Movement is a close relative of the Fossil Free movement. Environmentalists promoted the Fossil Free movement to target "major institutional investors such as public pension funds, government-held investment funds, and philanthropic foundations" to divest coal and petroleum investments from their holdings.<sup>168</sup> Students lobbied their academic institutions to do the same.<sup>169</sup> To date, approximately forty-two campuses have agreed to divest their holdings, most notably Columbia, Georgetown, Johns Hopkins, Oregon State, Stanford, and Yale.<sup>170</sup> However, most economists agree that this divestment is purely a symbolic statement and will not substantially impact energy companies or greenhouse gas emissions.<sup>171</sup>

As discussed in the Introduction, the Keep it in the Ground Movement reached national attention when Senator, and recent Presidential candidate, Bernie Sanders,

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<sup>164</sup> Arun Gupta, *What Happened to the Occupy Movement?*, ALJAZEERA (May 22, 2012), <https://www.aljazeera.com/indepth/opinion/2012/05/2012521151225452634.html> [<https://perma.cc/523S-ZQGJ>].

<sup>165</sup> Mitch Smith, *Standing Rock Protest Camp, Once Home to Thousands, Is Razed*, N.Y. TIMES (Feb. 23, 2017), <https://www.nytimes.com/2017/02/23/us/standing-rock-protest-dakota-access-pipeline.html> [<https://perma.cc/W8VJ-VMQ2>].

<sup>166</sup> Motion Preliminary Injunction & Request Expedited Hearing, *Standing Rock Sioux Tribe. v. Army Corps of Engineers* (Case No. 1-16-cv-1534-JEB) (D.D.C. Aug. 4, 2016), <https://www.documentcloud.org/documents/3460833-StandingRockSiouxvUSACE-August2016.html> [<https://perma.cc/MGY7-U4VC>].

<sup>167</sup> See Rebecca Hersher, *Key Moments in the Dakota Access Pipeline Fight*, NPR (Feb. 22, 2017, 4:28 PM), <https://www.npr.org/sections/thetwo-way/2017/02/22/514988040/key-moments-in-the-dakota-access-pipeline-fight> [<https://perma.cc/2TED-4W2C>]; Wes Enzina, *"I Didn't Come Here to Lose": How a Movement Was Born at Standing Rock*, MOTHER JONES (2017), <https://www.motherjones.com/politics/2016/12/dakota-access-pipeline-standing-rock-oil-water-protest/> [<https://perma.cc/ZT9S-MXFT>].

<sup>168</sup> Jeff Tollefson, *Reality Check for Fossil-Fuel Divestment*, 521 NATURE 1, 16–17 (May 7, 2015).

<sup>169</sup> See e.g., Lorenzo Arvanitis & Serena Cho, *YPD Arrests 48 People at Divestment Sit-In*, YALE NEWS (Dec. 8, 2018, 7:55 PM), <https://yaledailynews.com/blog/2018/12/08/ypd-arrests-48-people-at-divestment-sit-in/> [<https://perma.cc/6AS9-MR9U>].

<sup>170</sup> *1000+ Divestment Commitments*, FOSSIL FREE, <https://gofossilfree.org/divestment/commitments/> [<https://perma.cc/8BBK-6KL2>].

<sup>171</sup> Tollefson, *supra* note 168.

and Jeff Merkley introduced the Keep it in the Ground Act.<sup>172</sup> An ambitious attempt at legislation, the act amended the Outer Continental Shelf Lands Act:

To prohibit the Bureau of Ocean Energy Management (BOEM) from issuing, renewing, reinstating, or extending any nonproducing lease, or issuing any authorization for the exploration or production of oil, natural gas, or any other fossil fuel in the Arctic Ocean, Atlantic Ocean, Pacific Ocean, Gulf of Mexico, or any other area of the Outer Continental Shelf.<sup>173</sup>

In addition to the prohibition, the act further provided that BOEM would “also cancel within 60 days any lease issued in the Beaufort Sea, Cook Inlet, or Chukchi Sea (three of the five bodies of water that encompass the Alaska Outer Continental Shelf).”<sup>174</sup> Onshore, the act prohibited the BLM from issuing, renewing, reinstating, or extending “any nonproducing lease for the exploration or production of any onshore fossil fuels, including coal, oil, tar sands, oil shale, and gas, on land subject to the Mineral Leasing Act.”<sup>175</sup>

One aspect of the Movement manifests itself in the form of the recent spate of climate change litigation, such as the lawsuit filed by the city of New York against such major oil companies as BP, Chevron, ConocoPhillips, ExxonMobil, and Royal Dutch Shell (the “majors”).<sup>176</sup> The municipal plaintiff alleges that the majors produced 11% “of all global-warming gases through the oil and gas products they have sold over the years . . . [and] also charges that the companies and the industry . . . have known for some time about the consequences [of these emissions] . . . .”<sup>177</sup> While the lawsuit focuses on alleged harms, this litigation is strongly supported by the Movement’s most prominent supporters, such as 350.org co-founder Bill McKibben.<sup>178</sup>

There is little question that the Keep it in the Ground Movement is part of a new breed of environmentalism and not your parents’ “old school greens.”<sup>179</sup>

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<sup>172</sup> Roberts, *supra* note 24.

<sup>173</sup> Keep It in the Ground Act of 2015, S. 2238, 114th Cong. (2015).

<sup>174</sup> *Id.* at 6.

<sup>175</sup> *Id.* at 4.

<sup>176</sup> Chris Mooney & Dino Grandoni, *New York City Sues Shell, ExxonMobil and Other Oil Companies Over Climate Change*, WASH. POST (Jan. 10, 2018), [https://www.washingtonpost.com/news/energy-environment/wp/2018/01/10/new-york-city-sues-shell-exxonmobil-and-other-oil-majors-over-climate-change/?utm\\_term=.02638401edb6](https://www.washingtonpost.com/news/energy-environment/wp/2018/01/10/new-york-city-sues-shell-exxonmobil-and-other-oil-majors-over-climate-change/?utm_term=.02638401edb6) [<https://perma.cc/EKT2-79EA>].

<sup>177</sup> Monika U. Ehrman, *Reclaiming Energy Efficiency in an Age of Petroleum Exclusion*, 71 ARK. L. REV. 481, 481 (2018).

<sup>178</sup> *New Yorkers Celebrate as NYC Mayor Announces Divestment from Fossil Fuels, Files Climate Lawsuit*, 350.ORG (Jan. 10, 2018), <https://350.org/press-release/nyc-divests/> [<https://perma.cc/GC4F-X2NE>].

<sup>179</sup> Elena Schor, *Rowdy Greens Take Charge*, POLITICO (Sept. 21, 2014, 6:59 AM), <https://www.politico.com/story/2014/09/rowdy-greens-take-charge-111160> [<https://perma.cc/M7EB-QCMV>].

PART II: ENERGY REALISM—THE PRAGMATIC APPROACH & THE CHALLENGES  
FACING THE KEEP IT IN THE GROUND MOVEMENT

In applying concepts of realism to the energy debate, two types of realism will be applied in this Article. The first application is the Merriam-Webster definition of realism: “the concern for fact or reality and rejection of the impractical and visionary.”<sup>180</sup> This Article refers to this notion of Energy Realism as *Pragmatic Energy Realism*. In this application, prohibiting the extraction and development of hydrocarbons creates short and long-term problems in American economy and infrastructure.

Advocates for the Movement fail to prioritize the critical importance of petroleum hydrocarbons to the U.S. industrial and social infrastructure, economy, and political stability. The main challenge to a sudden transition away from petroleum is lack of a replacement energy source with the same abundance, reliability, and affordability. Renewable energy sources are a promise-filled future that require industrial electric power storage—capacity—before they can replace combustible hydrocarbons.

Withdrawing hydrocarbons poses several challenges to the daily reality of American energy use. First, the present energy consumption portfolio is composed largely of petroleum hydrocarbons, which provide a majority of the supply for the power generation and transportation sectors.<sup>181</sup> Current sources of renewable energy are unable to replace these uses.<sup>182</sup> Second, petroleum production generates large revenues for federal, state, and local governments.<sup>183</sup> Removing these revenue streams would create budget deficiencies. Replacing those critical revenue streams would require high taxation of the replacement renewable systems, an almost certain fiscal death knell. Finally, withdrawal from domestic petroleum supplies would almost certainly require the United States to rely on foreign sources of petroleum supplies in the interim period—however lengthy—while renewable sources scale up and become capable of replacing domestic petroleum sources. This reliance harms U.S. global interests and elevates geopolitical risk.<sup>184</sup>

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<sup>180</sup> *Realism*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/realism> [<https://perma.cc/T87P-BRP4>].

<sup>181</sup> *U.S. Energy Facts Explained*, U.S. ENERGY INFO. ADMIN., [https://www.eia.gov/energyexplained/?page=us\\_energy\\_home](https://www.eia.gov/energyexplained/?page=us_energy_home) [<https://perma.cc/H2JA-KKRA>].

<sup>182</sup> Robert Bryce, *Don't Count Oil Out*, SLATE (Oct. 4, 2011, 7:20 AM), <https://slate.com/technology/2011/10/oil-and-gas-wont-be-replaced-by-alternative-energies-anytime-soon.html> [<https://perma.cc/U63J-HPP2>].

<sup>183</sup> DANIEL RAIMI & RICHARD G. NEWELL, OIL AND GAS REVENUE ALLOCATION TO LOCAL GOVERNMENT IN EIGHT STATES (2014), <https://energy.duke.edu/sites/default/files/attachments/Oil%20Gas%20Revenue%20Allocation%20to%20Local%20Government%20FINAL.pdf> [<https://perma.cc/872P-4MHJ>].

<sup>184</sup> See generally Maria Luisa Paraguez Kobek et al., *Shale Gas in the United States: Transforming Energy Security in the Twenty-First Century*, 10 NORTÉAMERICA 7 (2015) (detailing the various impacts that reliance on gas has for international trade relations).

*A. The Current Energy Portfolio*

The Keep it in the Ground Movement is premised on a notion that eliminating hydrocarbons from the American energy portfolio will automatically trigger supply shift from those hydrocarbon sources to renewable sources. However, the United States is a hydrocarbon-based economy; there is simply not enough renewable supply to meet the current energy demands.<sup>185</sup> Renewable energy sources, such as wind and solar, produce electrical power when wind turns a turbine or the Sun heats water, generating steam, which turns a turbine. These energy sources produce power that must be transmitted immediately to the power grid because of the lack of industrial-grade electrical storage. In other words, we cannot yet store electricity generated by many renewable sources;<sup>186</sup> unlike natural gas or coal, where the chemical energy is stored within the resource. These resources may be kept, respectively, in storage reservoirs and pipelines or in railcars. Without industrial-grade electrical capacitance to store energy produced by renewable sources such as solar and wind, there is not a soon-to-be-realized reality in which renewables can supply the current demand for energy.

In 2016, total U.S. primary energy consumption was about 97.4 quadrillion British thermal units (Btu).<sup>187</sup> This demand can be allocated among five sectors: (1) electric power [39%], (2) transportation [29%], (3) industrial [22%], and (4) residential and commercial [11%].<sup>188</sup> Importantly, the two former sectors are the primary consumers of the electric power sector.<sup>189</sup> Moreover, of the above sectors, petroleum, which includes crude oil and liquids, supplies 92% of energy used for transportation; and 38% for industrial use.<sup>190</sup> Natural gas provides 45% of industrial use; 74% of residential and commercial use; and 27% for electric power.<sup>191</sup> A complete chart detailing U.S. primary energy consumption by source and sector is provided below in Figure 1.<sup>192</sup>

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<sup>185</sup> James Temple, *Relying on Renewables Alone Significantly Inflates the Cost of Overhauling Energy*, MIT TECH. REV. (Feb. 26th, 2018), <https://www.technologyreview.com/s/610366/relying-on-renewables-alone-would-significantly-raise-the-cost-of-overhauling-the-energy/> [<https://perma.cc/FN52-TA54>].

<sup>186</sup> Arguably, hydroelectric power is a stored form of potential energy in that the water can be contained in an impoundment.

<sup>187</sup> *U.S. Energy Facts Explained*, *supra* note 181.

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

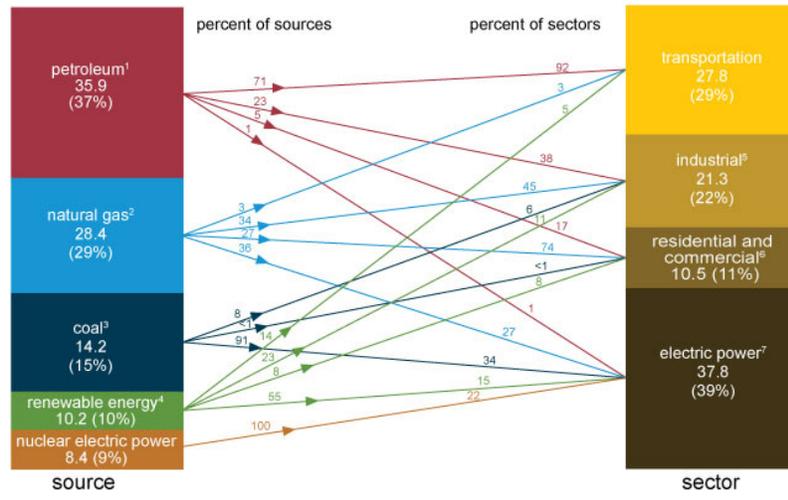
<sup>190</sup> *Id.*

<sup>191</sup> *Id.*

<sup>192</sup> As of the writing date of this Article, only the 2016 figures were available.

### U.S. primary energy consumption by source and sector, 2016

Total = 97.4 quadrillion British thermal units (Btu)



<sup>1</sup> Does not include biofuels that have been blended with petroleum—biofuels are included in "Renewable Energy."  
<sup>2</sup> Excludes supplemental gaseous fuels.  
<sup>3</sup> Includes -0.02 quadrillion Btu of coal coke net imports.  
<sup>4</sup> Conventional hydroelectric power, geothermal, solar, wind, and biomass.  
<sup>5</sup> Includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants.  
<sup>6</sup> Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.  
<sup>7</sup> Electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes 0.24 quadrillion Btu of electricity

net imports not shown under "Source."  
 Notes: • Primary energy is energy in the form that it is accounted for in a statistical energy balance, before any transformation to secondary or tertiary forms of energy occurs (for example, coal before it is used to generate electricity). • The source total may not equal the sector total because of differences in the heat contents of total, end-use, and electric power sector consumption of natural gas. • Data are preliminary. • Values are derived from source data prior to rounding. • Sum of components may not equal total due to independent rounding.  
 Sources: U.S. Energy Information Administration, *Monthly Energy Review* (April 2017), Tables 1.3, 1.4a, 1.4b, and 2.1-2.6.

Figure 1. 2016 U.S. Primary Energy Consumption by Source and Sector  
 (Source: EIA)

#### B. First Challenge: Power and Transportation Sectors Heavily Rely on Petroleum

As evident from the discussion above, reducing or removing petroleum from the U.S. energy portfolio results in a direct and consequential impact on the electric power and transportation sectors.

The electric power sector, which is responsible for 39% of energy consumption in the United States, currently derives only 15% of its energy consumption from renewable energy sources.<sup>193</sup> Natural gas and coal, however, provide 61% of power generation source material.<sup>194</sup> Nuclear energy is the remainder stalwart, providing 22% of the energy required for electric power.<sup>195</sup> So how does the power grid operate if we removed 61% of the energy source required? And further, as an aside, the Movement typically does not support nuclear energy as a renewable source; thus,

<sup>193</sup> *U.S. Energy Facts Explained*, *supra* note 181.

<sup>194</sup> *Id.*

<sup>195</sup> *Id.*

removing nuclear energy from the mix would effectively withdraw 83% of energy source from electric power generation.<sup>196</sup>

Without sustainable energy sources required for power generation, regional and temporal (time of day) brownouts and blackouts would occur. To replace fossil fuel sources, the United States will need to pay to construct additional renewable energy electric generation capacity, which will cost about \$2.5 trillion.<sup>197</sup> And construction costs are only one such cost. Until industrial capacity electric storage becomes a reality, one should also include the cost attributed to reliability.<sup>198</sup> If intermittent energy sources, such as solar and wind, were used in place of dependable and capable-of-peaking natural gas, there would be “daily power outages when the wind stops blowing and the sun stops shining.”<sup>199</sup>

The future demand for electric vehicles, which requires electric power to charge batteries, is a potential enormous uncounted demand on our current electrical grid. Thus while electric vehicles may be lauded for their lowered greenhouse gas emissions,<sup>200</sup> the battery charging requirement increases the likelihood that the vehicles will be charged using fuels that contribute to GHG emissions. Moreover, the proliferation of electric vehicles increases the burden on an already stressed power grid and spurs development of relatively easily obtainable power, generated by natural gas or coal.

Electric power imports from Canada are possible. Canada’s abundance of hydropower allows companies like BC Hydro, Manitoba Hydro Electric Energy and Natural Gas, Hydro-Québec, and the Ontario Hydro post-breakup companies—Ontario Power Generation and Hydro One—to export electrical power to the United States through the connected North American eastern and western power grids.<sup>201</sup> The regional electric grids bordering Canada such as the Northeast Power Coordinating Council (“NPCC”), the Midwest Reliability Organization (“MRO”), and the Western Electricity Coordinating Council (“WECC”) ensure this reliability and stability.<sup>202</sup> However, continued imports of power—with decreasing exports to Canada—reduce the United States’ ability to source its own electric power. And

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<sup>196</sup> Chuck Baclagon, *Nuclear: No Room for Revival*, 350.ORG (Sept. 8, 2016), <https://350.org/nuclear-no-room-for-revival/> [<https://perma.cc/GC4F-X2NE>]; *U.S. Energy Facts Explained*, *supra* note 181.

<sup>197</sup> Sean Hackbarth, *What Does ‘Keep it in the Ground’ Really Mean? Read This.*, U.S. CHAMBER OF COM. (Apr. 25, 2016, 3:00 PM), <https://www.uschamber.com/series/above-the-fold/what-does-keep-it-the-ground-really-mean-read> [<https://perma.cc/7W44-HALS>] (according to energy expert Vaclav Smil, Distinguished Professor Emeritus at the University of Manitoba and Fellow of the Royal Society of Canada [Science Academy], <http://vaclavsmil.com>).

<sup>198</sup> *Id.*

<sup>199</sup> *Id.*

<sup>200</sup> This statement accounts for lowered GHGs during vehicle operation, not during the manufacturing or transport processes.

<sup>201</sup> See *U.S.-Canada Electricity Trade Increases*, U.S. ENERGY INFO. ADMIN. (July 9, 2015), <https://www.eia.gov/todayinenergy/detail.php?id=21992> [<https://perma.cc/7AHV-9HTG>].

<sup>202</sup> *Id.*

sustained electrical power imports, especially with surging market prices or during volatile periods, would be detrimental to American financial welfare.

Similar to the electric power sector, the transportation sector relies on petroleum to provide for its inputs. Currently, crude oil supplies 92% of the transportation sector requirements.<sup>203</sup> This extraordinary percentage is obvious as most internal combustion engines and jet engines require refined petroleum products, such as gasoline or jet fuel. A withdrawal of crude oil supplies thus has monumental impact on this sector.

As previously discussed, a corresponding transition to electric vehicles does not solve the problem—increased power generation is required to charge electric batteries. While the Movement’s supporters argue that this curtailment of petroleum would serve as the financial impetus to create renewable energy projects, it is unlikely that these projects could be developed at a rapid pace without causing significant harm and disruption.

*C. Second Challenge: Petroleum Hydrocarbons Provide Great Economic Benefits to U.S.*

Removing petroleum from the United States effectively removes billions of dollars annually from the American economy.<sup>204</sup> These primary revenue sources from oil and gas production include bonuses, royalties, and taxes, and do not include secondary sources, such as employment, income tax, material and equipment purchases, etc.<sup>205</sup> Bonus payments are the upfront payments received by the mineral interest owner as an incentive to execute the oil and gas lease. The bonus is paid on a per mineral acre basis and is analogous to a financial option price, where the option price is paid whether or not the option is ever exercised. Bonus payments depend on the perceived value of the mineral acreage by the would-be-lessee and the negotiating leverage held by the would-be-lessor. For example, the BLM requires that federal oil and gas leases meet a uniform national minimum acceptable bid of two dollars per acre.<sup>206</sup> The royalty—here the lessor’s royalty—is a cost-free share of production paid to the lessor out of the stream of production. It is generally stated as a percentage or fraction within the oil and gas lease. Like bonus payments, the royalty rate depends on perceived mineral property value and negotiating leverage. Unlike the bonus payment, the royalty is not a one-time payment, but rather a stream of payments that continue so long as there is production in paying quantities. Thus, the royalty may become more valuable than the bonus because of the duration of the

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<sup>203</sup> *U.S. Energy Facts Explained*, *supra* note 181.

<sup>204</sup> *Profits for Oil, Gas & Coal Companies Operating in the U.S. and Canada*, OIL CHANGE INT’L (May 2015), <http://priceofoil.org/profits-oil-gas-coal-companies-operating-u-s-canada/> [<https://perma.cc/MUP4-ADFB>].

<sup>205</sup> *Id.*

<sup>206</sup> U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-17-540, OIL, GAS, AND COAL ROYALTIES: RAISING FEDERAL RATES COULD DECREASE PRODUCTION ON FEDERAL LANDS BUT INCREASE FEDERAL REVENUE 5 (2017).

payments; conversely, if there is no production—the well is dry or produces in uneconomic amounts—there is no royalty. With respect to federal lands,

the Mineral Leasing Act of 1920 sets the royalty rate for competitive leases at not less than 12.5 percent of the amount or value of production. However, until January 2017, BLM regulations generally established a fixed royalty rate of 12.5 percent. For noncompetitive leases, the act, as amended, sets the royalty rate at a fixed rate of 12.5 percent.<sup>207</sup>

On federal lands, the BLM leases to companies for production of onshore petroleum (oil and gas) and coal resources, generally through a competitive bidding process, which was discussed earlier in this Article.<sup>208</sup>

If BLM receives any bids, called bonus bids, on an offered lease that are at or above a minimum acceptable bid amount, the lease is awarded to the highest bidder, and, for oil and gas, a lump-sum payment in the amount of the bid is due to [the Office of Natural Resources Revenue] when BLM issues the lease.<sup>209</sup>

Taxes are paid to the governments (federal, state, and local) in the form of severance taxes and property taxes. Severance taxes are taxes levied on the value or volume of oil and gas produced.<sup>210</sup> Property taxes are those locally-levied taxes on the value of the oil and gas property.<sup>211</sup> Secondary revenues are those that are not directly from the production and sale of oil and gas, but that derive indirectly from the industry. These revenues within the oil and gas sector include employment and revenues from supporting services (payments made to contractors and consultants, housing for employees and crews, etc.). Although these revenues are quantifiable, this Article focuses only on the three types of primary revenues discussed above. Further, the sale of the petroleum hydrocarbons themselves is excluded from the revenues. But in 2013, the simple value of production (gross production multiplied by monthly average regional pricing) of the top sixteen producing states totaled \$268.9 billion.<sup>212</sup>

Currently, the United States receives about \$6 billion annually<sup>213</sup> from oil and gas leases managed by the Department of Interior and the BLM, which is responsible

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<sup>207</sup> *Id.* at 7.

<sup>208</sup> *Id.* at 6.

<sup>209</sup> *Id.* at 5.

<sup>210</sup> See generally RAIMI & NEWELL, *supra* note 183.

<sup>211</sup> *Id.*

<sup>212</sup> DANIEL RAIMI & RICHARD G. NEWELL, RESOURCES FOR THE FUTURE, US STATE AND LOCAL OIL AND GAS REVENUES 5 (2016) [hereinafter RAIMI & NEWELL, RESOURCES FOR THE FUTURE].

<sup>213</sup> *Revenue from extraction on federal lands and waters*, NAT. RESOURCE REVENUE DATA, U.S. DEP'T INTERIOR, <https://revenue.data.doi.gov/explore/#federal-revenue>

for federal onshore lands, and the BOEM, which is responsible for federal offshore lands. The top sixteen states receive approximately \$14.264 billion in severance taxes; \$495 million in other state taxes or fees; \$5.657 billion in local property taxes;<sup>214</sup> \$6.504 billion in state leases (those lands held in trust by the state for its citizens); and \$1.454 billion as state share of federal leases.<sup>215</sup> Altogether, these sixteen states received about \$29 billion in annual revenues from oil and gas.<sup>216</sup> Thus, not only is \$35 billion removed from annular revenue, but this amount encompasses only those direct revenues. Adding indirect revenues vis-à-vis revenue received by the producers (after first sale); midstream, downstream, distribution, and marketing revenues related to this same production; and associated revenues such as employment, equipment, materials, and other services, likely dramatically increases revenue amounts.

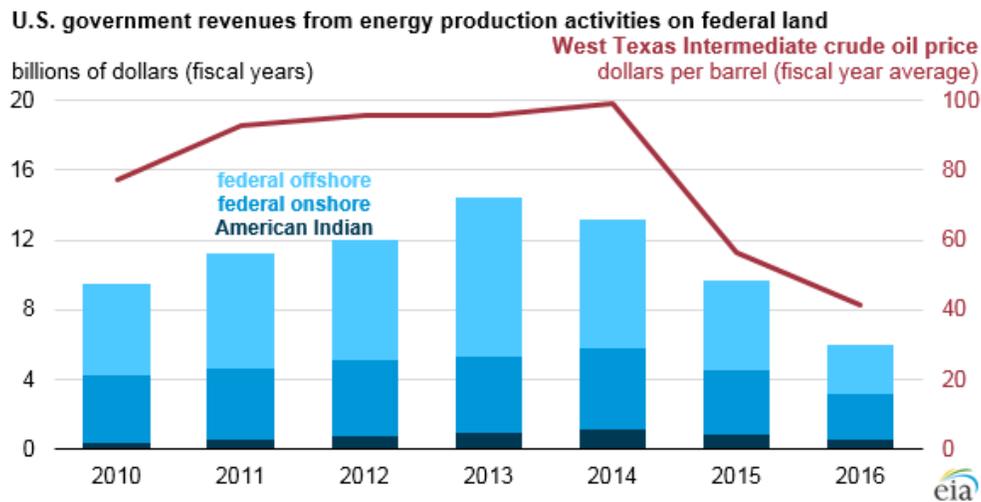


Figure 2. U.S. Government Revenues—Energy Production Activities on Federal Land (Source: EIA)

[<https://perma.cc/UX5R-MACS>] (showing revenue of \$6.148 billion from oil and gas in 2017).

<sup>214</sup> I include local property taxes because if oil and gas production were prohibited the value of the mineral property most certainly declines or is easily dismissed.

<sup>215</sup> RAIMI & NEWELL, *RESOURCES FOR THE FUTURE*, *supra* note 212, at 7.

<sup>216</sup> *Id.*

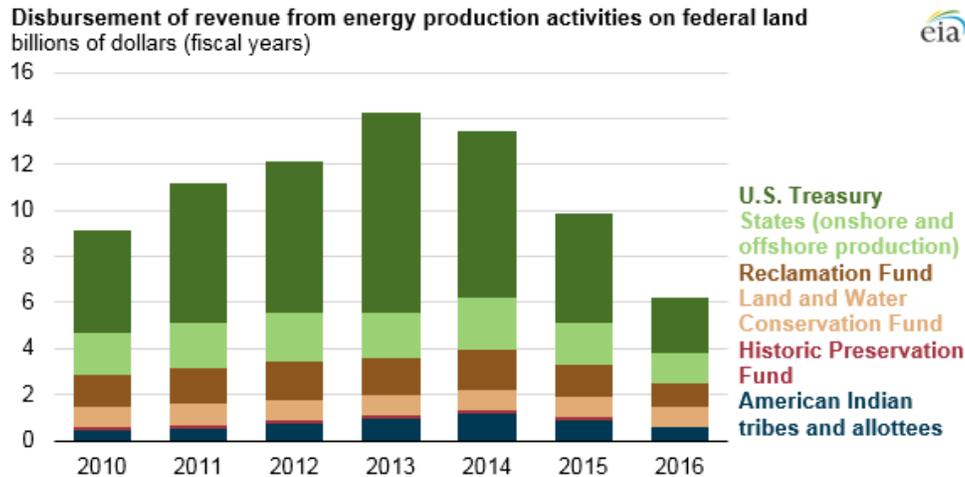


Figure 3. Disbursement of Revenue from Energy Production Activities on Federal Land (Source: EIA)

Prohibiting oil and gas development not only removes these revenues but also impacts the areas to which they flow, i.e., local property taxes are “collected by or flow to local governments, including counties, municipalities, hospital districts, and airport authorities.”<sup>217</sup> Dissecting these flows reveals the critical importance of oil and gas production at the local and state level. For example, of the \$6.5 billion received from mineral interests on state lands, much of that revenue goes to state current expenditures and education trust funds.<sup>218</sup> Of the \$14.3 billion in severance taxes, much of that revenue goes to state current expenditures.<sup>219</sup> And finally, of property taxes, the majority goes to education current expenditures and local governments.<sup>220</sup> Any academic teacher at a public school is verily able to attest to shrinking state budgets for post-secondary education as a result of decreased state revenues. For those states with high petroleum production potentials, state education budgets have been directly impacted by the decrease in commodity prices.<sup>221</sup> For states with small populations, reduction of production revenues and resulting cuts to budget can not only result in educational impacts but threaten the viability of colleges within the university itself. In North Dakota, the state first realized tremendous fiscal gains during accelerated exploration and development in the prolific Bakken shale formation.<sup>222</sup> Subsequent to the decline in crude oil commodity

<sup>217</sup> *Id.*

<sup>218</sup> *Id.* at 8.

<sup>219</sup> *Id.*

<sup>220</sup> *Id.*

<sup>221</sup> *Id.* at 16.

<sup>222</sup> See Patrick C. Miller, *Then and Now: Bakken Economy by the Numbers*, N. AM. SHALE MAG. (Apr. 8, 2015), <http://northamericanshalemagazine.com/articles/1079/then-and-now-bakken-economy-by-the-numbers> [<https://perma.cc/JF8U-MF5G>].

prices and resulting budget shortfalls, cuts were made to state education.<sup>223</sup> Similar education budget cuts were seen in Alaska, Oklahoma, and Wyoming.<sup>224</sup> Removing these petroleum-based revenues have direct and real consequences for state citizens.

Supporters of the Movement may declare that revenues from renewable energy generation will supplant these petroleum-based revenues. But there are still novel legal issues regarding ownership of wind and solar sources and taxing authority.<sup>225</sup>

*D. Third Challenge: Removal of U.S Petroleum Production Will Increase Foreign Dependency on Energy Supplies*

In the throes of the oil price shocks of the 1970s, President Richard Nixon declared that America would become “energy independent.”<sup>226</sup> Nixon’s goal of energy independence would be echoed by presidential administrations following his.<sup>227</sup> It was only recently, first under President Obama, that the United States has come closest to achieving this goal. In 2013, the United States surpassed Saudi Arabia to become the largest producer of crude oil and petroleum liquids.<sup>228</sup> In 2009, the Americans surpassed Russia to become the largest producer of natural gas.<sup>229</sup> These achievements were unimaginable in even the mid-2000s when the United States began investing in and building liquefied natural gas import terminals, which receive deliveries of chilled and compressed natural gas and re-gasify these deliveries for shipment through mainland pipelines. After the advent of hydraulic fracturing and its combination with horizontal wells, the shale (r)evolution began in earnest. In 2016, Cheniere Energy became the first to export American natural gas.<sup>230</sup> There was such an abundance of natural gas in the United States that it was now selling the commodity to international purchasers.

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<sup>223</sup> See Aria Bendix, *Why Oil and Coal States Are Slashing Their Education Budgets*, ATLANTIC (Mar. 15, 2017), <https://www.theatlantic.com/education/archive/2017/03/why-oil-and-coal-states-are-slashing-their-education-budgets/519738/> [https://perma.cc/FTJ5-ZTXV].

<sup>224</sup> *Id.*

<sup>225</sup> See William Yardley, *Who Owns the Wind? We do, Wyoming Says, and It’s Taxing Those Who Use* (Aug. 14, 2016, 3:30 AM), <http://www.latimes.com/nation/la-na-sej-wyoming-wind-tax-snap-story.html> [https://perma.cc/2VPS-48MT].

<sup>226</sup> See Daniel Yergin, *Congratulations, America. You’re (Almost) Energy Independent*, POLITICO (Nov. 2013), <https://www.politico.com/magazine/story/2013/11/congratulations-america-youre-almost-energy-independent-now-what-098985> [https://perma.cc/H8B4-XEE2].

<sup>227</sup> *Id.*

<sup>228</sup> See Linda Dorman, *United States Remains the World’s Top Producer of Petroleum and Natural Gas Hydrocarbons*, U.S. ENERGY INFO. ADMIN (June 7, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=31532> [https://perma.cc/M5XL-BXMA].

<sup>229</sup> *Id.*

<sup>230</sup> See Christopher Helman, *How Cheniere Energy Got First in Line to Export America’s Natural Gas*, FORBES (May 6, 2013), <https://www.forbes.com/sites/christopher-helman/2013/04/17/first-mover-how-cheniere-energy-is-leading-americas-lng-revolution/#2aca801c2995> [https://perma.cc/M4RW-UTBF].

Reliance on foreign supplies of oil and gas has not only affected the American consumer and industrialist, but also the country's foreign policy and designation of protected interests. This designation and protection often results in armed conflict and wars to safeguard those interests. The Gulf War was largely fought as a resource war—to protect crude oil interests and prevent Iraq from seizing Kuwait's oilfields, which would have disrupted global supplies.<sup>231</sup> Current tensions arise in the South China Sea, where China's nation-building (and island-building) ambitions blossom. In May 2014, a Chinese oil rig traversed waters off the Paracel Islands and “provoked an international crisis.”<sup>232</sup> Vietnam protested the incursion, “insist[ing] that the rig was operating illegally . . . .”<sup>233</sup> One only need look to Russia's petroleum behemoths GazProm and Rosneft to comprehend the phrase “oil weapon.” Gazprom, Russia's natural gas monopoly and the world's largest energy company,<sup>234</sup> has often used its influence as a major European supplier to wield political will over reluctant or discordant neighbors, such as Ukraine.<sup>235</sup>

The United States' newfound resource independence frees itself from the political strings of the petroleum cartel, OPEC. Once arguably one of the world's most powerful organizations, the member states have faced increased competition from the energy-abundant United States, which now exports petroleum.<sup>236</sup> This competition in effect decreases the influence of the cartel and therefore alleviates geopolitical resource-based tensions in the often-volatile Middle East and North Africa regions.<sup>237</sup>

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<sup>231</sup> See Tony Karon, *Ten Years After: Who Won the Gulf War?*, TIME (Jan. 16, 2001), <http://content.time.com/time/world/article/0,8599,95352,00.html> [<https://perma.cc/E5WH-58F2>].

<sup>232</sup> Emily Meierding, *Oil Wars: Why Nations Aren't Battling over Resources*, WASH. POST (May 19, 2016), [https://www.washingtonpost.com/news/monkey-cage/wp/2016/05/19/oil-wars-why-nations-arent-battling-over-petroleum-resources/?utm\\_term=.a5951044e97f](https://www.washingtonpost.com/news/monkey-cage/wp/2016/05/19/oil-wars-why-nations-arent-battling-over-petroleum-resources/?utm_term=.a5951044e97f) [<https://perma.cc/98QN-U3H4>].

<sup>233</sup> *Id.*

<sup>234</sup> See Barclay Ballard, *Exxon Loses Top Spot in Energy Rankings to Russian Gazprom*, WORLD FIN. (Oct. 3, 2017), <https://www.worldfinance.com/markets/exxon-loses-top-spot-in-energy-rankings-to-russian-gazprom> [<https://perma.cc/C87F-BB5U>].

<sup>235</sup> See David Koranyi, *The Trojan Horse of Russian Gas*, FOREIGN POL'Y (Feb. 15, 2018, 9:24 AM), <http://foreignpolicy.com/2018/02/15/the-trojan-horse-of-russian-gas/> [<https://perma.cc/4RX7-EQJC>]; Clifford Krauss, *Russia Uses Its Oil Giant, Rosneft, as a Foreign Policy Tool*, N.Y. TIMES (Oct. 29, 2017), <https://www.nytimes.com/2017/10/29/business/energy-environment/russia-venezuela-oil-rosneft.html> [<https://perma.cc/7NUN-SBYH>]; Christian Oliver, *Russia's Gas Still a Potent Weapon*, FIN. TIMES (Mar. 20, 2014); Monika Ehrman, *Competition Is a Sin: An Evaluation of the Formation and Effects of a Natural Gas OPEC*, 35 ENERGY L.J. 175, 193–94 (2006) [hereinafter Ehrman, *Competition Is a Sin*].

<sup>236</sup> See, e.g., Tsvetana Paraskova, *U.S. Shale Challenges OPEC's Oil Dominance in Asia*, OILPRICE.COM (Dec. 31, 2018, 4:00 PM), <https://oilprice.com/Energy/Crude-Oil/US-Shale-Challenges-OPECs-Oil-Dominance-In-Asia.html> [<https://perma.cc/3WW5-XLGT>].

<sup>237</sup> See Ehrman, *Competition Is a Sin*, *supra* note 235, at 195.

Geopolitical risk may not always arise from petroleum sources. China holds 95% of the world's supply of rare earth elements, which are used in the manufacturing of solar panels and hybrid car batteries.<sup>238</sup> A sudden or ill-planned move to solar energy may result in threats to American energy security.<sup>239</sup> A diversified portfolio of energy sources results in the mitigation of energy security and supply risks, in addition to relieving geopolitical tensions. This diversity of energy sources includes petroleum hydrocarbons and coal.

PART III: ENERGY REALISM—THE PHILOSOPHICAL APPROACH<sup>240</sup>

*That all our knowledge begins with experience there can be no doubt.*<sup>241</sup>

Realism branches into two main tributaries—Continental Legal Realism and American Legal Realism.<sup>242</sup> Supreme Court Justice Oliver Wendell Holmes is often referred to as the father of American Legal Realism.<sup>243</sup> His musings in the seminal paper, *The Path of Law*, established the foundations of modern day legal pedagogy and law school education, in addition to the application of realism to jurist principles.<sup>244</sup>

Legal Realism arose in opposition to the Legal Formalism and is a naturalistic approach to law.<sup>245</sup> The purpose of the law, Holmes insisted, was the deterrence of undesirable social consequences: “I think that the judges themselves have failed adequately to recognize their duty of weighing considerations of social advantage.”<sup>246</sup> This naturalistic approach traces its foundation back to Greek and Roman philosophers, who espoused this understanding as the moral law, the universal law, and the law of reason.<sup>247</sup> This philosophical naturalism contains the belief that natural law is based on value judgments, which “reflect the essential

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<sup>238</sup> David Ferris, *5 Years After Crisis, U.S. Remains Dependent on China's Rare Earth Elements*, E&E NEWS (Jan. 12, 2015), <https://www.eenews.net/stories/1060011478> [<https://perma.cc/XT37-RS5Y>].

<sup>239</sup> *See id.*

<sup>240</sup> Duncan Currie, *National Review: A Call For Energy Realism*, NPR (Aug. 2, 2010, 8:50 AM), <http://www.npr.org/templates/story/story.php?storyId=128926936> [<https://perma.cc/P9LS-RWBS>].

<sup>241</sup> IMMANUEL KANT, *CRITIQUE OF PURE REASON* 715 (F. Max Müller trans., The Macmillan Co. 2d ed. 1922) (1781).

<sup>242</sup> L.L. Fuller, *American Legal Realism*, 82 U. PENN. L. REV. 429, 429–31 (1934).

<sup>243</sup> E. Hunter Taylor, Jr., *H. L. A. Hart's Concept of Law in the Perspective of American Legal Realism*, 35 MODERN L. REV. 606, 609 (1972).

<sup>244</sup> *See* Robert Rubinson, *The Holmes School of Law: A Proposal to Reform Legal Education Through Realism*, 35 BOS. C. J.L. & SOC. JUSTICE 33, 43–45 (2015).

<sup>245</sup> JOHN R. ANDERSON ET AL., *THE CAMBRIDGE HANDBOOK OF THINKING AND REASONING* 690 (Keith J. Holyoak & Robert G. Morrison, eds. 2005).

<sup>246</sup> Zechariah Chafee, Jr., *Freedom of Speech in War Time*, 32 HARV. L. REV. 932, 959 (1919).

<sup>247</sup> L.B. CURZON, *JURISPRUDENCE* 47–48 (1979).

nature of the universe and are *immutable and eternally valid*.<sup>248</sup> Over the centuries, natural law evolved and out of its evolution emerged the concept of transcendental idealism, which is founded on natural law.<sup>249</sup> In adopting this naturalism, legal realists postulate that the formation and study of law should emulate these natural scientific methods.<sup>250</sup> And like the scientific method, upon which legal realism relies, the legal hypotheses made must be tested against observations to determine whether the hypothesis is true.<sup>251</sup>

While American Legal Realism largely focuses on the application of realism to the judicial process and decision-making by state and regulatory lawmakers, Continental Realism focuses on the broader application of realism to natural processes.<sup>252</sup> Energy production and utility are two such processes that may benefit from this broader application.

Immanuel Kant “synthesized early modern rationalism and empiricism”<sup>253</sup> and rejected the then “prevailing theories of natural law that locate the source of values in nature or the reason of the thing, since nature is devoid of values.”<sup>254</sup> Concisely, he posed:

[W]hen we have the course of nature alone in view, ‘ought’ has no meaning whatsoever. It is just as absurd to ask what ought to happen in the natural world as to ask what properties a circle ought to have. All that we are justified in asking is: what happens in nature? What are the properties of the circle?<sup>255</sup>

Under a theory of Continental Realism, we challenge our current theories and perspectives on energy use by adopting “Kant’s belief that reality fundamentally

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<sup>248</sup> *Id.* at 49.

<sup>249</sup> *Id.* at 72–73.

<sup>250</sup> See Torben Spaak, *Naturalism in Scandinavian and American Realism: Similarities and Differences*, in UPPSALA-MINNESOTA COLLOQUIUM: LAW, CULTURE AND VALUES 33 (Mattias Dahlberg ed., 2009), [https://www.researchgate.net/publication/228229294\\_Naturalism\\_in\\_Scandinavian\\_and\\_American\\_Realism\\_Similarities\\_and\\_Differences](https://www.researchgate.net/publication/228229294_Naturalism_in_Scandinavian_and_American_Realism_Similarities_and_Differences) [https://perma.cc/JR7X-W2VP].

<sup>251</sup> James Bogen, *Theory and Observation in Science*, in THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY (Edward N. Zalta ed., 2017), <https://plato.stanford.edu/entries/science-theory-observation/> [https://perma.cc/4KTS-8ADE].

<sup>252</sup> See PAUL ENNIS, CONTINENTAL REALISM, preface (2011) (“Continental realism is a middle path that accepts, contra traditionalist continental philosophy, that the natural sciences, realism, and analytic philosophy are not a threat, but aids in the task of first science: metaphysics.”).

<sup>253</sup> Michael Rohlf, *Immanuel Kant*, in THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY (Edward N. Zalta ed., 2017), <https://plato.stanford.edu/entries/kant/> [https://perma.cc/FPA6-Z7KQ].

<sup>254</sup> THE BLACKWELL GUIDE TO THE PHILOSOPHY OF LAW AND LEGAL THEORY 288 (Martin P. Golding & William A. Edmundson eds., 2008).

<sup>255</sup> *Id.*

exceeds our understanding; human reason should not be the criterion of the real.”<sup>256</sup> Opponents to fossil fuel use first must understand the reality of current fossil fuel use and accept its reality. Kant also predicted that “[o]nly that which we put into each experience can we be certain we will find in all experience.”<sup>257</sup> For those who embrace the environmental perspective, all they will thus see in their reality—Locke’s blank page upon which experiences write—are environmental disquiets.<sup>258</sup> The same is true for those who observe from an energy perspective—all they will see is a vision of energy, without the requisite balance of environment. The second application of Energy Realism is thus based on this philosophical perspective. Philosophical Energy Realism builds upon the foundation of Legal Realism and Naturalism.

The Keep it in the Ground Movement premises its argument on the logic that hydrocarbon combustion results in the emissions of greenhouse gases; and greenhouse gas emissions contribute negatively to climate change. The Movement concludes that preventing the extraction of said hydrocarbons will prevent the emission of greenhouse gases. However simple the logic, there are two problems with the Movement’s argument. The first is that it does not address the demand side of the equation, discussed *infra*. The second is that it conflicts with this notion of Energy Realism.

As Albert Einstein’s equation explains, energy is equivalent to matter. Einstein’s equation demonstrates that energy can be transformed into matter and matter into energy.<sup>259</sup> Simply, energy (E) is the ability to do work and exists in varying forms: thermal (heat), radiant (light), kinetic (mechanical), electrical, chemical, nuclear, and gravitational.<sup>260</sup> Petroleum—oil and gas—is a form of chemical energy, where the energy is stored in the atomic and molecular bonds. In order to release that energy, petroleum undergoes combustion.<sup>261</sup> The combustion process is a chemical reaction where fuel (petroleum) reacts with oxygen and releases radiant and thermal energy.<sup>262</sup> We use these forms of energy in the transportation and energy sectors discussed earlier. Our uses, in addition to the effects of our uses, exist independent of our ability to conceive of or perceive them.

Another virtue of applying a Kantian philosophy in the formation of Energy Realism is the use of the *noumenon*, which is “[a]n object of purely rational

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<sup>256</sup> Lee Braver, *A Brief History of Continental Realism*, 45 CONTINENTAL PHIL. REV. 261, 261 (2012).

<sup>257</sup> *Id.* at 264.

<sup>258</sup> *Id.*

<sup>259</sup> *What Is Energy? Explained: Laws of Energy*, U.S. ENERGY INFO. ADMIN. (Dec. 19, 2018), [https://www.eia.gov/energyexplained/index.cfm?page=about\\_home](https://www.eia.gov/energyexplained/index.cfm?page=about_home), [<https://perma.cc/GF2R-8YW8>].

<sup>260</sup> *Id.*

<sup>261</sup> *Chemical to Thermal Combustion*, PENN STATE COLLEGE OF EARTH AND MIN. SCI., [https://www.e-education.psu.edu/egee401/content/p2\\_p2.html](https://www.e-education.psu.edu/egee401/content/p2_p2.html) [<https://perma.cc/67AR-WHWH>].

<sup>262</sup> *Id.*

apprehension; specifically, with Kant, a nonempirical concept.”<sup>263</sup> Another definition of the *noumenon* is “[a]n object knowable by the mind or intellect, not by the senses; specifically (in Kantian philosophy) an object of purely intellectual intuition.”<sup>264</sup> In contrast with the *phenomenon*, the noumenon exists independently of human sense or perception. Kant suggested that this noumenal world exists but is beyond human comprehension because of man’s inability to comprehend a world without the use of phenomenon.<sup>265</sup>

Energy Realism thus dictates that there is one reality, and that this reality exists independent of the observations or truths identified by participants within. Energy consumption of petroleum hydrocarbons exists independent of whether one believes or does not believe in the view that Americans consume petroleum and its derivative products. Renewable capacity or generation levels exist whether one believes or does not believe that capacity or those levels.

Energy sources are divided into renewable sources and nonrenewable sources; where a renewable source is one that is easily replenished, and a nonrenewable source is not easily replenished.<sup>266</sup> These familiar renewable sources include solar energy from the sun, geothermal energy from heat inside the earth, wind energy, biomass from plants, and hydropower from flowing water. Nonrenewable sources include petroleum (oil and natural gas), coal, and nuclear energy. However, this characterization between renewable and nonrenewable with respect to the origin of the energy source should not be confused with the perceived environmental impact of the source. While nuclear energy may be a nonrenewable energy source (the requirement of Uranium), the nuclear generation process does not produce greenhouse gas emissions.<sup>267</sup> Likewise, biofuels, though composed of renewable biological components, are generally combusted to produce energy. This combustion process releases greenhouse gases.

The adoption of Philosophical Energy Realism ultimately embraces the Pragmatic Energy Realism tenet that we need to be realistic about our current energy needs and consumption behavior. But Philosophical Energy Realism also includes the realization that our energy system, composed of inputs and outputs, is exactly that—a system of quantifiable inputs and outputs. Failing to recognize the totality of the system distracts the viewer from the *reality* of the system and instead obfuscates this reality with a perspective. The Movement views the energy system reality through a lens of environmental and anti-extractive industry focus, thereby losing the ability to view the reality. Those who view the reality through a lens of pro-carbon production also fail to recognize another reality, their perspective

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<sup>263</sup> Robert G. Parr et al., *What Is an Atom in a Molecule?*, 109 J. PHYSICAL CHEMISTRY A 3957, 3958 (2005).

<sup>264</sup> *Id.*

<sup>265</sup> T. I. Oizerman, *Kant’s Doctrine of the “Things in Themselves” and Noumena*, 41 PHIL. & PHENOMENOLOGICAL RES. 333, 340 (1981).

<sup>266</sup> U.S. ENERGY INFO. ADMIN., *supra* note 259.

<sup>267</sup> Leighton Walter Kille, *Valuing the greenhouse gas emissions from nuclear power*, JOURNALIST’S RESOURCE, <https://journalistsresource.org/studies/environment/climate-change/nuclear-power-greenhouse-gases> [<https://perma.cc/S2QU-LSNL>].

tampering with the realities of increased greenhouse gas emissions and the impending effects of climate change.

Energy Realism, whether from the Pragmatic or Philosophic Approach, is the necessary framework upon which the Movement should be founded.

#### PART IV: THE REFORMATION OF THE KEEP IT IN THE GROUND MOVEMENT

Whether analyzed using a Pragmatic or Philosophic approach, Energy Realism should act as a catalyst for the evolution of the Keep it the Ground Movement. This evolution means that the Movement must become something other than a supply-side focused group. It must include focusing on demand- or consumption-side solutions. It must adopt Energy Realism and provide for the eventual evolution away from hydrocarbons, which as humanity has seen over the course of centuries, is likely to happen of its own accord. The Damoclean sword that hangs low over this eventuality is, of course, climate change. Can humans wait for this gradual shift or do ideas need to be promoted to help further this movement without harming (albeit perhaps lowering) social and industrial growth?

To be viable, the Movement must adopt Energy Realism. First, it must accept the notion that an America that immediately halts production of hydrocarbons, whether on federal or all lands, is an America in chaos. This country, like much of the rest of world, is too reliant upon petroleum to make a sudden shift away. Second, and most importantly, there must be a focus on the demand side—on petroleum demand. Thus far, the Movement focuses on oil and gas producers as the targets of their campaign. But it is not the producers alone who can change the future—it is also the consumer citizen. And while there has been little conversation or dialogue (or desire) with respect to changing consumer behavior, there is much logic for same.

Consumers drive demand, which drives production. Even the majors acknowledge that the best step forward with respect to environmental policy is not a ban or moratorium, but a carbon tax. However, in the current Administration and congressional environments, a consumption tax is not favored by those eager to win election campaigns. Environmental advocacy groups are no different; they lose consumer support if they advocate for tax imposition. So it appears that politics and lack of a comprehensive energy policy drive decision-making. Adopting Energy Realism may prevent this failure.

The author proposes that the Movement evolve from a grassroots environmental activism group to a private environmental governance model that focuses on legislative change, consumer education, and other aspects like private standards and labeling.

##### *A. Improve Energy Efficiency Standards*

On January 27, 2018, a giant in the field of energy passed away. Arthur Rosenfeld was known as the “father of energy efficiency” and became a champion

of energy-saving requirements for buildings and appliances.<sup>268</sup> Growing up during the onset of the Great Depression, he was raised by parents who taught him “to turn off the lights when leaving a room . . . .”<sup>269</sup> One night during the Arab Oil Embargo, Rosenfeld was working late in the laboratory at the University of California, Berkeley.<sup>270</sup> He noticed all of the lights his colleagues left on after leaving work, even for the weekend.<sup>271</sup> He turned off these lights on his floor and then decided to calculate the “amount of oil-equivalent energy wasted . . . .”<sup>272</sup> Rosenfeld reflected on this recounting:

At the office, late one Friday night in November 1973, I knew I’d have to wait in a half-hour line on Saturday to buy gasoline. I compared that with the equivalent gallons used by my office over the 60-h weekend. My too-brightly-lit (1 kW!) office burned the equivalent of 5 gal/weekend of natural gas back at the power plant. I was one of only a few on my 20-office floor who ever switched off the lights in our offices and perhaps in the hall, but on the way to my car that evening, I decided to switch off the lights in the other 19 offices. The problem was to find the switches. A few were only hidden behind books. The challenge was finding the rest that were hidden by file cabinets, bookcases, and posters. After 20 min of uncovering light switches (and saving 100 gal for the weekend), I decided that UC Berkeley and its Radiation Laboratory should do something about conservation.<sup>273</sup>

On a national scale, it was only after the first oil price shock in 1973, that the United States was ready to tackle efficiency. Largely ignored throughout the advent of the age of post-World War II petroleum, it became an issue of paramount importance during the 1973 Arab–Israeli War. Within months of the disruption of Middle East supply, the price of crude oil doubled.<sup>274</sup> The infamous lines of cars around gas stations grew as the price further increased over the year. The first energy measures took place and included the creation of the Strategic Petroleum Reserves, in addition to the promulgation of the first automotive efficiency standards.<sup>275</sup>

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<sup>268</sup> Kate Galbraith, *Arthur Rosenfeld, Zealous Champion of Energy Efficiency, Dies at 90*, N.Y. TIMES, Jan. 29, 2017, at B6.

<sup>269</sup> *Id.*

<sup>270</sup> *Id.*

<sup>271</sup> *Id.*

<sup>272</sup> *Id.*

<sup>273</sup> Arthur H. Rosenfeld, *The Art of Energy Efficiency: Protecting the Environment with Better Technology*, 24 ANN. REV. ENERGY ENV’T 33, 36 (1999).

<sup>274</sup> Tony Long, *Oct. 17, 1973: Angry Arabs Turn Off Oil Spigot*, WIRED (Oct. 17, 2011, 6:30 AM), <https://www.wired.com/2011/10/1017opec-arab-oil-embargo/> [<https://perma.cc/KB32-BCEA>].

<sup>275</sup> SPR QUICK FACTS AND FAQs, OFFICE OF FOSSIL ENERGY, <https://www.energy.gov/fe/services/petroleum-reserves/strategic-petroleum-reserve/spr-quick-facts-and-faqs> [<https://perma.cc/SC9J-ABM9>].

A key example of the lacking energy efficiency efforts is the failure to implement strict fuel efficiency requirements for automobiles. The Corporate Average Fuel Economy (“CAFE”) standards are a key example of the potential of energy efficiency. During the OPEC Oil Embargo, Congress passed the CAFE standards.<sup>276</sup> At that time, the fuel efficiency of American cars manufactured in the early 1970s was about the same as it had been in the early 1930s.<sup>277</sup> Technology had indeed advanced, but there was little motivation for automobile manufacturers to improve technologies.<sup>278</sup> Consumers voiced little concern for automobile efficiency as gasoline prices remained relatively stable during the same period. Thus, despite an era wrought with technology advances such as transistors and integrated circuits and the successful launch of the American space age, automobiles manufactured in the United States had fuel efficiency averages of about thirteen miles per gallon, “wasted at least 85 percent of the purchased fuel, and performed no better than they had before World War II . . . .”<sup>279</sup>

Following the first Oil Price Shock, Congress instituted new automotive fuel efficiency standards—the CAFE standards—in 1975.<sup>280</sup> They effectively doubled fuel efficiency from 13.5 to 27.5 miles per gallon by 1985.<sup>281</sup> No additional efficiency standards were promulgated until the Obama Administration in 2008,<sup>282</sup> which also coincided with the highest West Texas Intermediate prices since those Oil Price Shocks of the 1970s.

There was no rational energy or environmental policy behind the failure to implement higher fuel efficiency standards. Rather, cheap fuel prices, accelerated and exacerbated American dependency on crude oil imports and increased trade deficits.<sup>283</sup>

Arguably, as oil and gas prices decreased, consumer citizens’ attention—and thus legislators’—waned with respect to promotion of efficiency efforts. Even now, with the threat of climate change looming large, calls for energy efficiency lag, rising only when gasoline prices increase over \$3.00 per gallon.<sup>284</sup>

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<sup>276</sup> *A Brief History of U.S. Fuel Efficiency Standards: Where we are and where we’re going*, UNION OF CONCERNED SCIENTISTS, <https://www.ucsusa.org/clean-vehicles/fuel-efficiency/fuel-economy-basics.html#.XDP2eS2ZPVo> [<https://perma.cc/9AUN-X4WG>].

<sup>277</sup> VACLAV SMIL, ENERGY MYTHS AND REALITIES: BRINGING SCIENCE TO THE POLICY DEBATE 2 (2010).

<sup>278</sup> *Id.*

<sup>279</sup> *Id.*

<sup>280</sup> *See id.*

<sup>281</sup> *Id.*

<sup>282</sup> *Id.*

<sup>283</sup> *Id.* at 2–3 (“By 1990, America imported 47 percent of its crude oil, compared to 37 percent in 1973. At issue here is not domestic energy self-sufficiency, but the enormous trade deficits created by oil imports that weaken the nation’s currency and long-term security and affect its strategic position. In 2008, the United States bought 65 percent of its crude oil abroad, and the cost of imported oil and refined oil products was the single largest contributor—48 percent—to the country’s more than \$700 billion trade deficit.”).

<sup>284</sup> R. Neal Elliot et al., *Natural Gas Price Effects of Energy Efficiency and Renewable Energy Practices and Policies*, ACEEE (Dec. 2003), <http://www.apscservices.info/EEInfo/>

The Movement could rekindle the appetite for efficiency. For example, “[i]ndustrial energy use accounts for approximately one-third of the world’s energy demand.”<sup>285</sup> Using the increased concern about climate change as an impetus for efficiency could be a new and important focus for the Movement.<sup>286</sup>

Energy-related emission accounts for 9.9 Gigatonnes of carbon dioxide in 2004, which is an increase of 65% from 1971 levels. With the current best available technologies (BAT) and given the huge amount of energy wasted, energy efficiency is almost regarded as the most cost-effective tool to battle carbon dioxide emissions and hence climate change.<sup>287</sup>

Internal incentives for firms to embrace efficiency include reduced production costs and increased competitiveness.<sup>288</sup>

So why has there been a lack of enthusiasm for corporate energy efficiency pursuits? One factor is the relative low cost of energy. Economists have identified additional factors such as market failures, including “the principle-agent problem and imperfect information.”<sup>289</sup> Using a noneconomic approach, engineers and policymakers have identified financial barriers, social barriers to technology adoption and innovation diffusion, and behavioral and attitudinal responses.<sup>290</sup> Interestingly, despite analyzing numerous studies on barriers to energy efficiency, “there remains no consensus on which barriers are the most important. The attempt to classify barriers into different categories, while interesting, reveals nothing substantially new on the nature of these barriers.”<sup>291</sup>

The Keep it in the Ground Movement needs to move from a “Keep it in the Ground” focus to a “Reduce the Use” movement, harnessing the passion of its supporters and refocusing that passion on the adoption of energy efficiency, which includes energy reduction as a robust component of the energy portfolio. This refocusing of efforts addresses the “energy efficiency gap,” which is the “paradox of gradual diffusion of apparently cost-effective energy efficient technologies.”<sup>292</sup> Creating an energy labeling effort akin to the EPA’s Energy Star efforts is one method to overcome information barriers to energy efficiency. Once the private labeling initiative gains acceptance with consumers, government bodies may be pressured to adopt a similar mechanism.<sup>293</sup>

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natlgaseffects2003.pdf [https://perma.cc/PY26-ZAEM].

<sup>285</sup> Kah-Hin Chai & Catrina Yeo, *Overcoming Energy Efficiency Barriers Through Systems Approach—A Conceptual Framework*, 46 ENERGY POL’Y 460, 460 (2012).

<sup>286</sup> *Id.*

<sup>287</sup> *Id.*

<sup>288</sup> *Id.*

<sup>289</sup> *Id.*

<sup>290</sup> *Id.* at 461–62.

<sup>291</sup> *Id.* at 460–61.

<sup>292</sup> *Id.* at 461.

<sup>293</sup> *Id.*

*B. Advocate for Carbon Tax*

As President George H. W. Bush discovered, the American electorate does not appreciate taxation. Both pro-development and anti-extractive industry groups have therefore been understandably reluctant to call for the imposition of a carbon tax as a measure to reduce greenhouse gas emissions. Neither group desires to alienate its followers. However, in terms of economic simplicity and utilization of a pure deterrent-based solution, imposition of a carbon tax has the potential to deliver immediate impact on carbon consumption. Additionally, a carbon tax provides a fiscally-stable tax regime for oil and gas producers and others along the petroleum hydrocarbon-chain, which would include all manufacturers and consumers of petrochemical based products. Indeed, most American majors and independents agree upon use of a carbon tax, including the former Chief Executive Officer of ExxonMobil, Rex Tillerson, and current Chief Executive Officer of Pioneer Natural Resources, Scott Sheffield.<sup>294</sup> A tax adds a quantifiable and hedgeable risk, as opposed to regulatory risks—via bans and moratoria—which are unknown and difficult to predict and hedge.

Various carbon tax regimes have been called for or proposed with little support. One recent effort comes through the Climate Leadership Council (“Council”), which is an organization formed by senior establishment Republicans, attempting to bridge the Congressional party divide with respect to an environmental policy designed to address climate change.<sup>295</sup> The Council works to compose a carbon tax policy that would appeal to both Congressional parties. Appealing to Democrats, this climate policy consists of a traditional carbon tax that prices carbon dioxide at about forty dollars per ton.<sup>296</sup> The Council’s policy would target coal most harshly, followed by petroleum hydrocarbons.<sup>297</sup> Under this tax mechanism, low carbon and renewable energy sources would be competitive and eventually establish themselves as prevalent and reliable sources.<sup>298</sup> To assuage Republicans, the carbon “tax” would not be collected by the federal government and would instead be proportionately distributed back to citizens in the form of a dividend.<sup>299</sup> This purportedly revenue neutral aspect is central to the Council’s policy. Further attempting to endear itself to conservatives, the Council proposed a repeal of existing environmental

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<sup>294</sup> David Hasemyer & Bob Simson, *Exxon’s Support of a Tax on Carbon: Rhetoric or Reality?*, INSIDE CLIMATE NEWS (Dec. 21, 2015), <https://insideclimatenews.org/news/18122015/exxon-mobil-carbon-tax-rhetoric-or-reality-climate-change-rex-tillerson> [<https://perma.cc/9S52-8JC2>]; Jeff McMahon, *Oil Industry Does Better Under Democrats, Fracking CEO Says*, FORBES (July 20, 2016, 12:01 AM), <https://www.forbes.com/sites/jeffmcmahon/2016/07/20/oil-industry-does-better-under-democrats-fracking-ceo-says/#2e809c7a64a8> [<https://perma.cc/B98A-Q22J>].

<sup>295</sup> Editorial, *US Republican Idea for Tax on Carbon Makes Climate Sense*, 542 NATURE 271, 271 (2017).

<sup>296</sup> *Id.* at 272.

<sup>297</sup> *Id.*

<sup>298</sup> *Id.*

<sup>299</sup> *Id.*

regulations, arguing that its tax mechanism would supplant piecemeal regulations targeting coal and petroleum.<sup>300</sup> To address imbalances in climate policies with respect to trade, the Council proposes “levying fees on imports from countries that do not have comparable policies” and “receiv[ing] rebates on carbon taxes they have paid when exporting to those countries.”<sup>301</sup>

There are several global examples of carbon tax instatements and their resulting climate benefits and unpopularity. An example of the latter is seen in Australia, which instituted a carbon tax of US\$18.00 per ton of carbon dioxide in 2012.<sup>302</sup> Two years later, the tax was repealed.<sup>303</sup> Canada offers a more recent and more positive outcome. The province of British Columbia instated a carbon tax of US\$23.00 per ton of carbon dioxide and has seen resulting decreases of greenhouse gas emissions.<sup>304</sup> This province’s tax is considered a global best-case scenario of carbon tax instatement. Alberta and the federal Canadian government also both instituted carbon taxes this year.<sup>305</sup> But an important note about the successful British Columbian tax is that BC Hydro, the provincial crown utility, produces an abundance of electric power needs through hydroelectric power—enough to export—and thus has had little original need for hydrocarbons. Conversely, Alberta, which is a hydrocarbon rich province, has little hydroelectric power and relies on natural gas and coal for most of its electric generation.<sup>306</sup> Long the economic driver of the Canadian economy, depressed global crude prices and the newfound American energy independence, along with barriers to interprovincial pipelines and the subsequent liquefied natural gas markets, has deprived the Canadian oil and gas behemoth from its traditional markets. The European Union has a carbon price, but at an incredibly low US\$4.20 per ton, it is hardly any deterrent to carbon use.<sup>307</sup>

By proposing or supporting a carbon tax, the Keep it in the Ground Movement has the potential to reach its supporters and base and encourage them to think of energy as a cycle and increase their responsibility for their own actions. The Movement could also utilize its power by forming a private carbon labeling initiative in cooperation with various commercial enterprises that would label items at grocery stores with their carbon footprint. But keeping in mind the Alberta example, the Movement must be aware that a carbon tax is not a one-size-fits-all policy.

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<sup>300</sup> *Id.*

<sup>301</sup> *Id.*

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

<sup>303</sup> *Id.*

<sup>304</sup> Kathryn Harrison, *The Political Economy of British Columbia’s Carbon Tax* 18 (OECD Environment Working Papers, No. 63, 2013), <http://dx.doi.org/10.1787/5k3z04gk khkg-en> [<https://perma.cc/CN3D-5XM5>].

<sup>305</sup> Dana Nuccitelli, *Canada passed a carbon tax that will give most Canadians more money*, GUARDIAN (Oct. 26, 2018, 03:15), <https://www.theguardian.com/environment/climate-consensus-97-per-cent/2018/oct/26/canada-passed-a-carbon-tax-that-will-give-most-canadians-more-money> [<https://perma.cc/X8KV-3TXK>].

<sup>306</sup> *Provincial and Territorial Energy Profiles – Alberta*, NEB, <https://www.neb-one.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/ab-eng.html> [<https://perma.cc/W49V-MGD8>].

<sup>307</sup> Harrison, *supra* note 304.

### C. Solving Energy Poverty

Unless the Movement broadens its base, it risks alienating a large segment of the American population that lives in energy poverty. Energy poverty is defined as the state where households spend more than 6–10% of their income on energy-related expenses.<sup>308</sup> A majority of Americans far below poverty are spending about 35% of their income on energy-related expenses.<sup>309</sup> Such energy poverty renders this population unable to have reliable or affordable access to energy in the typical form of electric power (e.g., light) and heat. For many Americans, deciding whether to pay the power bill or the gas bill over the grocery bill and other necessities is a daily choice.

Natural gas and coal, because of their prevalence and ability to cycle quickly for electric power generation, offer the opportunity to break cycles of energy poverty. Movements such as Keep it in the Ground often inadvertently ignore those suffering in energy poverty by exasperating a quick transition to renewables, which may further aggravate this fiscal situation. In global studies of energy poverty, a lack of energy or lack of reliable or affordable energy results in “unmet basic needs and depressed economic and educational opportunities that are particularly pervasive among women, children, and minorities.”<sup>310</sup>

The Movement needs to ensure it addresses these voiceless populations to assure them of basic energy needs. This address could take the form of a shifting in ideology away from a 100 percent reliance on renewable energy to the working with technology providers and utilities to ensure that access to affordable energy is provided to households in energy poverty. If the Movement chose to support a carbon tax effort, it could do so knowing that those already suffering from energy poverty are not likely to suffer from the further ill-effects of a tax burden. The U.S. Department of the Treasury supports the idea that Americans at the lower end of the income spectrum—about 70% of the population—would benefit from the Council’s proposal, discussed above, because they are lower consumers of energy.<sup>311</sup>

Finally, the Movement has incredible benefits: promotion of low greenhouse gas emissions; a heightened or new awareness of climate change and the effect of hydrocarbon combustion; and serving as a catalyst for change within the environmental community. This demonstrated passion and enthusiasm should continue, but with an acknowledgement of our energy reality.

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<sup>308</sup> Adam Chandler, *Where the Poor Spend More than 10 Percent of Their Income on Energy*, ATLANTIC (June 8, 2016), <https://www.theatlantic.com/business/archive/2016/06/energy-poverty-low-income-households/486197/> [<https://perma.cc/WLG5-6TEE>].

<sup>309</sup> *Id.*

<sup>310</sup> Christian E. Casillas & Daniel M. Kammen, *The Energy-Poverty-Climate Nexus*, 330 SCIENCE 1180, 1181 (Nov. 26, 2010) (writing on international (non-U.S.) examples).

<sup>311</sup> *US Republican Idea for Tax*, *supra* note 295, at 271.

## CONCLUSION

*“It’s going to take a very long time before we can wean ourselves from fossil fuels, so I think that to keep it in the ground is naïve, to say we could shift to 100 percent renewables is naïve.”*<sup>312</sup>

The Keep it in the Ground Movement has tremendous potential as a leader with its employment of strategies and efforts that involve public participation and raising awareness of climate change. Indeed, public participation in environmental activism should be lauded—it is, in fact, the citizen lawsuit that is the most unique and fundamental feature of American environmental legislation. But to continue and effect lasting, positive environmental change, the Movement must adopt Energy Realism.

The Darwinian perspective on energy mandates an eventual evolution of energy sources, in all forms and with their own benefits and negative externalities. Energy Realism accepts this eventuality. In order to keep its momentum, the Movement must adapt to our energy reality, which includes the continued use and reliance on crude oil and natural gas, with a gradual shift to low carbon and zero carbon sources. Denying reality prevents forward momentum, but also creates the ill effects such as increased geopolitical risk and energy poverty.

The above-discussed adaptations that the Movement could use include the support for energy conservation, efficiency, and a government-led or private environmental governance tax effort. Energy Realism should not deprive the Keep it in the Ground Movement of its momentum; rather, it should only refocus its mission on addressing energy consumption efforts instead of prohibitions and accept that natural gas and crude oil will be necessary on our future path to a world powered by renewables.

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<sup>312</sup> Sammy Roth, *Sally Jewell: “Keep it in the ground” protests “naïve,”* DESERT SUN (May 6, 2016), <https://www.desertsun.com/story/news/environment/2016/05/06/sally-jewell-keep-ground-protests-naive/83992074/> [<https://perma.cc/PZ7D-EK8W>].